UTILITIES ARE GETTING 'SMARTER' ABOUT USING BIG DATA

Initial use of advanced analytics requires a new industry mindset

Utilities gather huge amounts of data, but they struggle to apply it to critical business problems, according to a new survey of utilities executives worldwide. The survey was conducted by Oracle in partnership with WSJ. Custom Studios and IPSOS North America Market Research.

"The industry overall is still in the early stages of understanding the full potential of big data platforms combined with machine learning, what an analytics strategy entails and what big data and analytics can deliver to the business," says Roberta Bigliani, associate vice president and head of Europe, Middle East & Africa for IDC Energy Insights, who is based in Milan, Italy. "To fully leverage big data and analytics, utilities need to develop a culture of collaboration across internal departments, but also with external partners."

Utilities that are on the cutting edge of developing such cultures are applying analytics to new uses and new kinds of data. Take the issue of unpredictable energy demand: Shifts in customer behavior, such as the growing use of plug-in electric vehicles, have made it increasingly difficult for utilities to predict how much energy will be needed by using traditional forecasting techniques. A sudden, unexpected bump in demand can cause blackouts or require a utility to acquire the energy at a high cost.

Predictive analytics can reduce such problems by combining weather data ("How cold will it be?") with location data ("Where will people be?") to more accurately forecast consumption over a specific period. "Depending on the utility's grid capabilities, those predictions then can be used to manage consumption peaks within the network and even steer consumption through incentives," says Aapo Markkanen, a principal analyst with ABI Research in London.

HEADING OFF EQUIPMENT FAILURE
In the same way, predictive analytics can be applied to a wide range of industry issues, such as energy procurement, rates and tariff modeling, and asset health and risk. For example, utilities are applying analytics to predictive maintenance, using data to determine when equipment is about to fail.

"People talk a lot about smart metering, but that's capital-intensive and requires the utility to touch a lot of homes and commercial places," says Mark Peacock, a principal in the strategy & operations practice of the Hackett Group, a consultancy based in Miami, Florida. "There is also progress being made in pulling information off other types of equipment so utilities can do better equipment maintenance."

Such early warning systems can give a utility subtle indications that small fluctuations in energy uses in a person's home—which in the past would probably go unnoticed—signal a coming problem. Predictive maintenance allows a utility to swap out equipment before it fails, saving costs and avoiding interruptions in service that can cause customer satisfaction to plummet.

Analytics are also enhancing safety, a critical issue for any utility. In one case, a utility used sophisticated analytics to immediately determine that high gas usage in unoccupied premises was not a false positive due to pool heaters. In fact, thieves were going into the building and stealing copper pipes, resulting in gas leaks that could have caused deadly fires if repair trucks did not roll out quickly.

Crunching data about weather and the age of power lines and other equipment in different service areas can allow utilities to position repair trucks in strategic places when storms are approaching. This lets them address problems quickly and minimize the consequences of downed lines.

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FOCUS ON NEW TECHNOLOGY

The growing demands to provide better service to customers at a lower cost will put a premium on ways to rapidly process huge amounts of data—such as the cloud and in-memory computing. "Utilities are focusing on new technologies that will improve operational efficiency, safety, reliability and customer engagement," says Victor Jimenez, utilities executive and analytics leader at technology and consulting firm Capgemini.

Over the past two years, customer information has been—by far—the fastest-growing data type among utilities, according to the survey. For example, utilities are employing "customer sentiment analysis," which allows them to search out and analyze customer's comments on the web. This gives them insight into developing new marketing programs and services.

This higher level of personalization, shaped by the use of data and analytics, will be a growing force in the utilities industry in the years ahead. Indeed, more personalized service is a component of almost every use of customer analytics by utilities, from alerting customers of unusual spikes in usage to giving call-center reps a full view of a customer's account so issues over bills can be resolved quickly.

Utilities are also using analytics to place customers into relevant segments (like company size) and analyze their energy usage to provide them with strategies for reducing consumption and savings costs. Having this type of "demand-side management" at an individual level was nearly impossible in the days before smart meters and analytics. In addition to using these new technologies, these advances require utilities to shuck off their traditional information silos and share information across departments.

NEW MINDSET TO DATA

To make effective use of their growing stores, leading utilities are embracing not only new technology, but a new mindset around data. "Utilities have seen themselves as a unique industry, and they are often not interested in hearing about best practices from adjacent industries," the Hackett Group's Peacock says. "IT people generally begin and end their careers in the utilities industry, and their entire perspective is based on traditional industry practices. When utilities upgrade their infrastructure, they also need to teach people to think differently."

As utilities explore greater use of analytics, "The kind of questions we should ask are, for instance: Do we have a revenue protection problem? If yes, how can we effectively address it using the data we have? What benefits can we generate through investing in analytics?" IDC Energy Insights' Bigliani says.

The answers provided by big data and analytics may be, quite literally, empowering—and essential in an era when customers want to exercise increasing control over their energy usage and costs.

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