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Green Innovation Starts With Data

New competitors and customer demands are pushing utilities to up their green game.

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Utilities are under extreme pressure from customers, legislators and investors to play a larger role in the Biden administration envisioning a carbon-free power-generation market by 2035, utilities are competing for solutions to invest in, while continuing to provide reliable, cost-effective power to their customers. That's where data, which increasingly comes from smart meters that deliver real-time, detailed information on energy use, comes in.

"Utilities need to help customers understand their current impact on the environment, and then motivate customers to take the next step," says Abhay Gupta, CEO of Bidgely, a software company that helps utilities do so effectively. "Part of that motivation comes from using smart meter data to tell customers how much energy they are consuming, or how many are buying electric vehicles, so they see what others around them are doing."

The stakes couldn't be higher, for both the environment and the utility industry's future. While utilities have long held monopolies over local energy distribution, which insulated them from market forces, new competitors are emerging: solar providers to electric car makers to startups that want to help meet the growing demand for clean energy.

"The danger for utilities, if they don't respond, is that they could become anachronistic," says Patty Duggan, CEO of Smart Energy Consumer Collaborative, a nonprofit focused on consumer energy markets in the U.S. "Customers will go to rooftop solar companies or third parties to get their electricity needs met in the way to get what they want. They will go to rooftop solar companies or third parties to get their electricity needs met in the way to get what they want."

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offers residential customers an instant rebate of up to \$3,000 on the purchase or lease of an electric vehicle. In addition, Duquesne Light's transportation electrification team worked with officials of the Port Authority of Allegheny County to develop Pittsburgh's first fully electric buses. The utility also helps commercial customers develop strategies to switch their equipment from gas to electricity.

"We want to be that trusted energy advisor for consumers who are thinking about moving down that path," says David L. Johnson, Duquesne Light's chief customer officer. "Many of our commercial customers are looking for ways to drive sustainability and support clean energy at their sites. We are looking for dynamic partnerships where we can support our community, sustainability and clean air."

These partnerships are built on data, primarily generated by advanced metering infrastructure (AMI), the "smart grid" that pours out a constant stream of information about energy usage. Johnson says that smart grid data is also used to inform customers how they can adopt green technology and lower their costs. "Many of our customers now are coming to us saying that they want to have battery storage, or they want to have solar and other things," Johnson says. "Our customers really want to be educated about energy."

Driving smart decisions

Duke Energy, a Charlotte, North Carolina, utility with operations spanning several states, has a lot of infrastructure—the utility's distribution lines could wrap around the world 11 times. And, not surprisingly, the company collects a lot of data. Duke's smart meters collect over 570 million new rows of data every day.

Like Duquesne Light, Duke has adopted a practice of understanding customers through AMI data and guiding them to make better and cleaner energy choices. The utility has launched initiatives like a five-year, 100-megawatt solar rebate program, which helps pay for the significant upfront costs of solar power systems. Such programs come out of the deep dives that the utility makes into its AMI data, says Lon Huber, vice president, rate design and strategic solutions at Duke.

"Where AMI data really shines is being able to see how customers are impacting the grid and how these different technologies are changing the way electricity is being used," he says. "We're using that information to give the customer solutions that they truly want while providing meaningful utility system benefits."

Overlaying AMI data with customer demographic data has provided insights to guide customers to cleaner energy choices. For example, Duke encourages and rewards owners of electric vehicles who wait to charge their vehicles until after 11 p.m., rather than earlier in the day when energy usage is high.

"We can avoid peak disturbances and give the customer a great experience, because who doesn't want to save more money each month by just setting their charging time a few hours later?" Huber says.

Smart grid data and analytics provide Duke with insights about how [electrification](#) and other green initiatives will impact customers. When people embrace EVs, Huber says they are even more concerned about the reliability of their power to ensure they'll have transportation. Adopting green technology means addressing all sorts of subtle issues like that, which can be understood only [through data](#).



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