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MAKING BIG DATA WORK

RETAIL ENERGY

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FOR RETAIL ENERGY COMPANIES, managing data once meant nothing more complex than processing analog meter readings and customer billing information. However, the advent of the smart home, along with the wave of digitization sweeping the industry, is creating major opportunities to tap into an explosion of fast-moving, complex big data in compelling new ways.

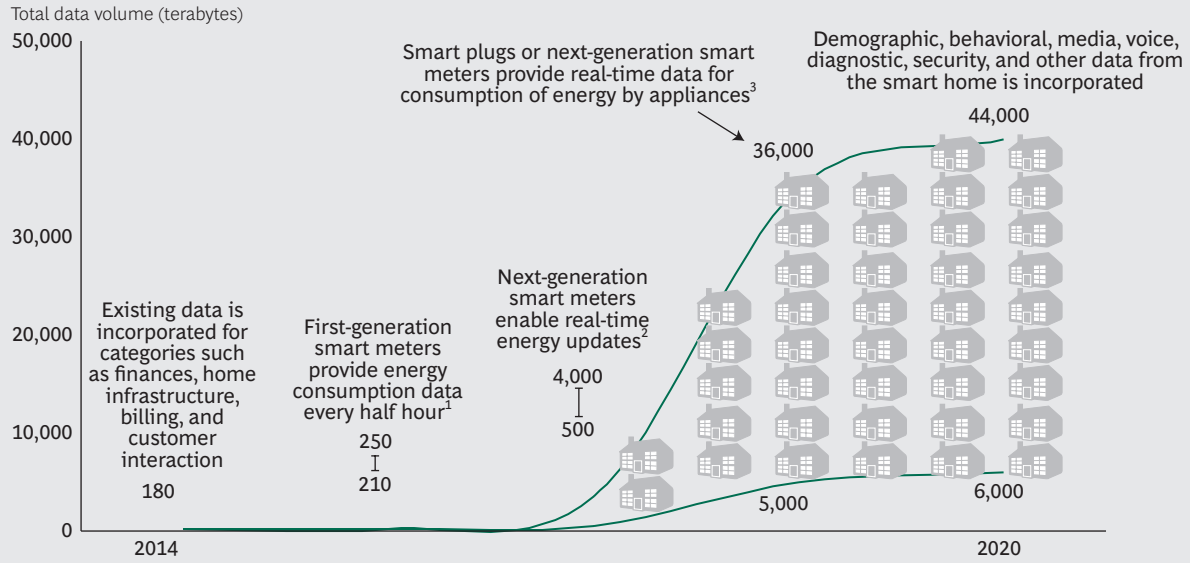
Customers are now generating as much data on the grid as they are on social media. As of 2013, 40 percent of U.S. households had smart meters. In the European Union, the devices are expected to be installed in 60 percent of homes by 2019. Eventually, smart meters will be capable of generating a massive stream of detailed data about energy consumption patterns almost in real time.

Information is also flowing from a host of other connected smart devices and appliances—everything from heating systems and refrigerators to electric cars and phones. These products generate reams of energy consumption data, and the companies that manufacture them are threatening to become powerful gatekeepers between customers and retail energy companies. Services such as Opower and devices such as Google's Nest thermostat already automatically monitor energy consumption and, in the case of the Nest, adjust usage in response to human behavior.

We predict that by 2020 nearly everything in a home will be capable of generating data that can be monitored online and through a device. (See Exhibit 1.) Additional layers of information about demographics, behavior, diagnostics, household infrastructure, and other factors will often be required to make sense of the data, creating opportunities for partnerships with organizations in other industries and forcing companies to adapt to new intermediaries and emerging digital ecosystems. (See "The Age of Digital Ecosystems: Thriving in a World of Big Data," BCG article, July 2013.) Energy utilities—even the strongest among them—must proactively determine their place in these new ecosystems or risk losing their market positions.

EXHIBIT 1 | Data Generated in Smart Homes Will Multiply

The estimated range of data volumes at a large energy company



Sources: A large energy company; BCG analysis.
[1]Data volume range after full rollout.
[2]Data volume range if the smart meters provide real-time energy-consumption data for 10 to 20 percent of homes.
[3]Data volume range if real-time data for energy consumption by appliances is available for 10 to 20 percent of homes.

There's a near-term challenge as well. Retail energy companies have demonstrated much less sophistication in their data capabilities than companies in other sectors: systems are often fragmented, data sets are incomplete, and business processes and decision making frequently underexploit available information. But as advanced analytical tools, techniques, and sources of information begin to permeate everyday business life, utilities face an enormous opportunity to generate value from the data they can access now. They could use big data to expand their offerings to both new and existing customer segments, to make business processes more efficient, and to create new revenue streams—or even entirely new businesses—out of that growing volume of data.

Three High-Potential Opportunities

Against this dynamic and rapidly evolving backdrop, it may be difficult to see how a retail energy provider could begin capitalizing on big data right away. In our work across a broad range of companies in the sector, we see three opportunities that offer high potential for retail energy companies in the near term. Exploiting them can generate a significant increase in revenues and profits for energy providers. (See Exhibit 2.)

Accelerating Customer Insight. Many retail energy companies lack even basic data—much less big data—about their customers, which inhibits their ability to fine tune the way they market and sell their offerings. Industry regulations have limited the incentive for companies to focus on customer relationship management, while many incumbent companies in deregulated markets have legacy IT systems that simply cannot talk to one another. As a result, many companies find it hard to identify and target a set of offerings that will be attractive to specific customer segments, to cross-sell and up-sell products to those customers, and to set prices that reflect the value that customers assign to certain product features.

To begin to extricate themselves from this predicament, companies can enhance the data they already hold, enriching it with internal and external information, as regulations allow, about sociodemographics, transactions, online activity, energy use

EXHIBIT 2 | Three High-Potential Opportunities for Retail Energy Providers

Tactic	Examples	Sources of value	Total EBIT impact (%)
Accelerate customer insight	Improve bundling, cross-selling, and up-selling	Increase product penetration and revenues	7–20
	Boost retention	Reduce acquisition spending and churn	
Streamline business processes	Reduce bad debt	Improve recovery rates	
	Increase billing and monitoring accuracy	Lower complaint-handling costs and increase revenues	6–11
	Improve management of customer complaints	Boost customer advocacy	
Establish a beachhead in the ecosystem	Create affinity deals through customer access	Generate advertising and commission revenues	7–22
	Sell insights gleaned from data	Create new sources of revenue growth	

Source: BCG analysis.
Note: EBIT = earnings before interest and taxes.

patterns, financial assets, and other predictive factors. Doing so can help them create behavioral and value-based segmentations for improved customer targeting, acquisition, and cross-selling. It also allows them to analyze customer and product profitability to prioritize particular segments. Energy retailers could use these segmentations, for instance, to develop bundled offerings of appliances and monitoring services to "green" customers who have a propensity to adopt energy-efficiency products. Or, as one U.S.-based energy supplier did, they could use big data from smart homes to identify the types of appliances customers own and generate tangible insights for cross-selling purposes.

In competitive markets, companies can also significantly improve performance by using big-data tools and techniques to retain any customers—especially the best ones—who seem likely to switch to a competitor. To identify the patterns that indicate when a customer might leave, retail energy providers can analyze both structured data about online account activity and unstructured data in customer-service call logs and other big-data sources. They can then put in place early interventions to slow attrition. For example, when a multinational natural-gas provider faced an increase in churn that it could not easily explain, it developed a predictive model that pinpointed client segments with a high probability of leaving the company and then created targeted actions—including differentiated pricing, premium service levels for high-value clients, and fixed payment plans—to keep them. The moves required little time and investment, and they ultimately decreased the churn rate by 7 percentage points within just three months.

Efforts such as integrating information to provide a comprehensive view of the customer, blending together products and targeting them at different segments, and improving customer retention can add revenue streams and improve customer profitability. Indeed, we calculate that these efforts can improve annual earnings before interest and taxes (EBIT) margins by 7 to 20 percent of sales in the near term and 50 percent or more of sales over the long term.

Streamlining Business Processes. Emerging big-data analytical techniques can also help maximize the value derived from standard business processes. Consider the case of bad debt, which accounts for up to 3 percent of energy retailers' revenues. Predictive analytical techniques can identify the patterns that indicate when a customer segment, and eventually even a given individual customer, will default. Companies can look at transaction history, address, energy use, and other data to calculate the probability of nonpayment and pursue tailored actions to improve recovery rates. When third-party data, such as social-media profiles and search engine activity, is added, companies can create even more accurate and refined credit and risk profiles for customers. In the worst-case scenario, they can find contact details for customers in default who have become unreachable. These tactics are already in widespread use in other industries, such as retail banking.

Another example can be found in ordinary billing errors. Smart meters offer much more accurate data than manual readings. As accuracy improves and people report fewer billing errors, customer service costs go down. And with such rich data, companies can quickly spot energy use anomalies for a particular type of household. In addition to creating opportunities for home-energy-management offerings, these alerts give utilities the ability to much more easily identify structures that are illegally tapping the lines and diverting energy from legitimate customers. As theft goes down, revenues go up.

Big data can also aid in managing customer complaints. The proportion of retail energy customers active in the digital world is growing, particularly among younger generations. These customers can be especially vocal, wielding outsize influence within their community, even if it is currently small. By using advanced analytical techniques, utilities can identify influencers who are active posters on social media and then make sure to quickly address any complaints they may have. Word of mouth can then be turned from negative to positive. (See *Fueling Growth Through Word of Mouth: Introducing the Brand Advocacy Index,* BCG Focus, December 2013.)

We calculate that these kinds of nuts-and-bolts initiatives can improve EBIT margins by 6 to 11 percent of sales per year in the near term through mitigated risks and reduced costs.

Establishing a Beachhead in the Ecosystem. The two tactics we've discussed so far can be implemented immediately. The next wave of innovation will take place over the next decade as companies take full advantage of interconnected smart devices and appliances in the home and the wealth of customer data that they produce. Energy retailers must establish a strong position in this emerging digital ecosystem or risk being disintermediated by the more nimble players that capture such data. Companies that get in the game will build a multifaceted and nuanced view of customer needs as they use data from both their own systems and those of ecosystem partners.

As devices and industries converge, multiple opportunities for utilities to play a powerful role in ecosystems will arise. For instance, energy retailers could automatically target the purchaser of an electric vehicle with a green energy plan that provides discount pricing for off-peak energy use or for micro-generating power. Or they could offer a home-energy-management system to the purchaser of a solar-energy system. Affinity deals could involve marketing energy-efficient appliances to households with high electricity consumption or delivering coupons that offer discounts on insulation. We have found strong consumer demand for programs that bundle energy with home products and services, such as security, heating and appliance repairs and maintenance, home energy management, and broadband.

We calculate that tactics such as these can improve annual EBIT margins by 7 to 22 percent of sales in the near term, mainly through commissions for customer access and other revenue-sharing arrangements. In the future, we see important opportunities for new revenue streams, business

units, and businesses based on the data and insights generated in partnership with ecosystem players. (See "Seven Ways to Profit from Big Data as a Business," BCG article, March 2014.)

How to Begin

Utilities that want to explore these opportunities should begin with the following steps:

- *Make sure that the data meets minimum quality standards.* Most utilities today possess either a basic transaction-by-transaction view of customers or, at best, a limited segment-based perspective. Data sits locked in siloed legacy systems. Integrating data across all customers to gain an account-based view will ultimately generate the most comprehensive customer insight. However, a first step for an energy retailer is to ensure that the data is sufficiently scrubbed and validated before it is used, even for simple analyses.

- *"Smart segment" the customer base.* Big data and advanced analytics can provide insight into how clusters of customers behave and can identify specific cohorts of customers more accurately than traditional segmentation can. They also help companies achieve deeper customer understanding, create more effective targeting, improve bundling, and develop more refined pricing strategies.

- *Embed enhanced data in selected business processes.* From marketing to risk management, data must become an integral part of everyday business for utilities. Many new and enhanced types of data will come into play, including information about customer interactions, household characteristics, financial indicators, usage patterns, appliance performance, and behavior. Retail energy companies need to decide which processes will have the greatest impact on reducing costs and improving customer service in order to meet heightened standards for operations and service.

- *Build ecosystem capabilities.* To enhance data quality, companies must improve the way they manage existing customer data, including methods for its collection, cleaning, and storage. Utilities should also be able to integrate and analyze customer data from multiple sources and services, such as third-party partners. They will need to prioritize the integration of existing smart-energy systems with complementary smart devices on the basis of capability and brand fit, identify aligned partners, and develop business models for such relationships.

- *Ensure trust.* In such a heavily regulated industry, the last thing companies can afford to do is lose the confidence of regulators and customers. Utilities face important constraints regarding the data they can use or sell. To earn trust, companies should transparently communicate their usage of data to customers and demonstrate the important benefits of this new world of the smart home. (See *The Trust Advantage: How to Win with Big Data,* BCG Focus, November 2013.)

BIG DATA IS not just a passing trend that utilities can choose to ignore. In the near term, companies can pursue concrete opportunities for growth during turbulent times. To secure long-term success, retail energy providers must craft profitable data-driven strategies that are based on proven economics—not wishful thinking.

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