Listening to the heartland:

Insights into a customer-centric strategy for the smart grid

Overview

Through PwC's smart grid customer research program, we gained directional insights on customer attitudes and behaviors in the rapidly changing utility industry. This report summarizes key findings from an approach that included a quantitative survey and follow-up focus groups with Midwest energy customers, exploring how they use energy, how smart grid technology will affect their everyday lives, and how much they expect to embrace products and services related to the smart grid during the next few years.

We conducted a two-phase program to capture this detailed customer data. In Phase 1, held in fall 2011, we fielded a broad, Midwest-representative survey of 900 energy customers aged 18 to 64.[1] In Phase 2, we conducted targeted focus groups to gain a deeper understanding of some of the underlying reasons for behavior- related information reported in the survey.

[1] This survey size provided a 95% to 99% degree of confidence.

I. Executive summary

Building a successful smart grid involves far more than technical savvy. Utilities will need to engage their customers in new ways to manage their use of energy, and persuade them that the new products and services enabled by the smart grid are worth their time and money.

Most customers today simply consume electricity, receive a bill, and pay it. Customer interaction with the utility company is typically limited to a request for starting or stopping service, alerting the utility when there is a service outage, and the occasional billing inquiry.

Smart grid enables a transition to a more interactive, value-based relationship between the utility and its customers. The modernized grid will deliver an unprecedented amount of valuable data regarding a customer's power needs and preferences, for use by both the utility and the customer. It will also enable new rate structures, support new efficiency programs, and facilitate the capture of opportunities relating to environmental trends. Customers will be able to view their power usage in more detail, and adjust their behavior to use energy more efficiently and, ideally, reduce their energy costs. To fully capture the opportunities created by this shift, utilities must develop an entirely new type of customer relationship, one that puts the customer at the center of a utility's business strategy.

And the stakes are extremely high: we continually read articles about utility companies that have embarked on rollouts of smart grid programs and encountered an area-wide backlash from dissatisfied customers, regulators, and government leaders. Such experiences indicate that these utilities haven't fully understood their customers' needs and expectations for service offerings and service quality. And, unfortunately, they don't recognize the need for a

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new way of thinking and acting until too many dollars have been spent and too many negative articles have been written.

To help utilities better understand customers' needs and expectations, we surveyed 900 customers in the Midwest to assess their interest and willingness to adopt smart grid technology. To clarify and supplement these quantitative findings, we also conducted several focus groups with residential as well as small business customers.

What did we learn? First and foremost, money matters. While customers are interested and even excited about smart grid technology, they generally are not willing to pay much more to reap the benefits. However, they are eager to seek opportunities to reduce their energy bills even if that means they have to change their consumption behaviors. Many customers also expressed skepticism about the energy company's capabilities to provide new services and its motivation for doing so.

PwC used its combination of quantitative and qualitative research to gain customer insights on three critical questions:

1. What's important to customers?
2. Are customers aware of the smart grid and willing to adopt it?
3. How much do customers need to save and what are they willing to pay for desired future services?

II. Key findings and implications

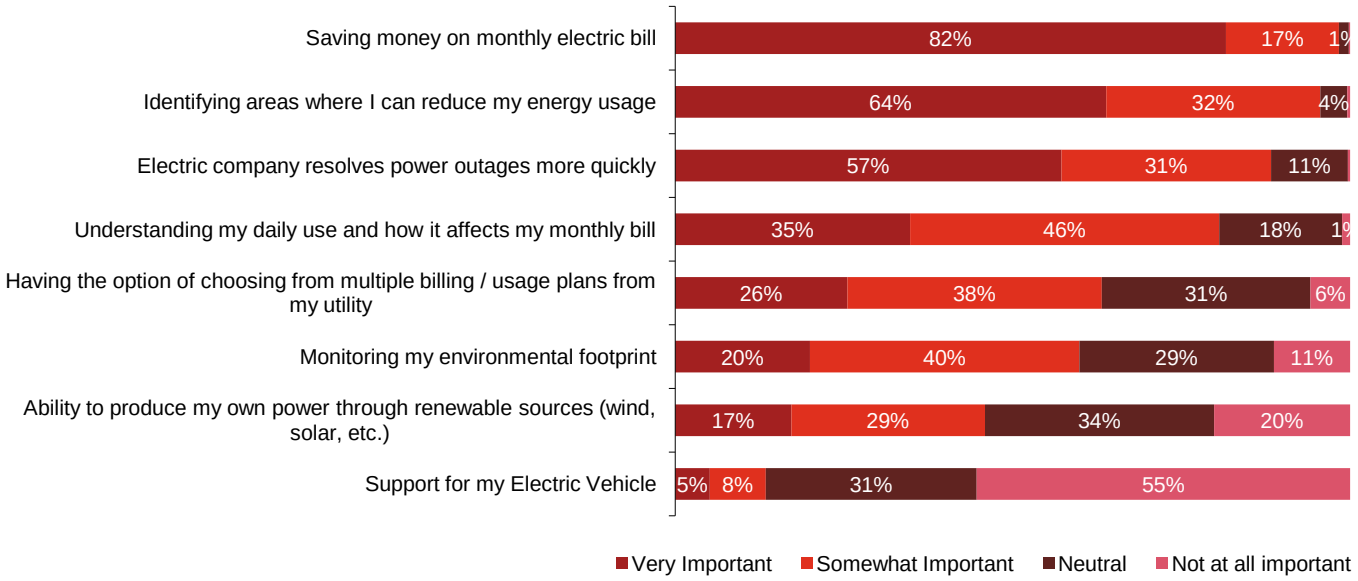
What's important to customers?

1. Saving money is the top priority among customers and they seek ways to reduce and monitor their energy usage to help them do this.

Not surprisingly, nearly all survey respondents told us that "saving money on the monthly electric bill" was important to them. But these customers told us that other goals were also important, such as understanding daily usage and how it affects their bill, identifying ways to reduce energy usage; and resolving power outages more quickly (See Chart 1).

In reviewing our survey findings, while customers share an interest in keeping costs down, we found a diversity of opinions within each customer segment regarding issues such as energy conservation. And regional differences played a key role. For example, the customers we surveyed showed little interest in getting the utility's support for an electric vehicle (i.e., charging stations) – only 13% said it was somewhat or very important. In contrast, customer interest for electric vehicles is a much higher priority for customers in other regions of the U.S., where customers have generally shown more interest in electric vehicles as a means of protecting the environment and reducing fossil fuel consumption.

Chart 1: What customers want



2. **The survey revealed key distinctions in attitudes and behavior among younger and older age groups.**

Focus group participants expressed equal interest across age groups with respect to identifying areas where energy usage can be reduced, understanding how daily use affects the monthly bill, and monitoring their environmental footprint. Digging deeper into the more granular survey results, however, we found that age matters:

- Identifying areas where energy usage can be reduced is significantly more important to both the 45-54 and 55-64 age groups than the 21-34 age group.
- Understanding how daily use affects the monthly bill is significantly more important to the 35-44 age group.
- Monitoring the environmental footprint – while neutral to not important overall (40% of sample) – is significantly more important to the youngest (21-34) and oldest (55-64) age groups relative to the 45-54 age group.

3. **Customers want more control of their energy usage, including generating their own power, and they are willing to partner with their utility to make this happen.**

Focus group participants sought more control and flexibility in their energy usage than they have today, primarily through generating their own energy, and in some cases, for the added benefit of selling excess energy. Without being prompted, our focus group participants expressed interest in generating power through renewable resources as a critical part of their "energy nirvana" (i.e., their ideal use of energy). Focus group participants understood the benefits of renewable energy resources, such as reduced environmental impacts and saving money for the utility company by potentially eliminating the need to purchase energy on the open market or build expensive new power plants.

Focus group participants also sought the ability to work with their utility company in setting a budget or goal for energy usage, manage this usage with mobile devices or online, and receive alerts when approaching their set limit. And they were receptive to using a measuring "tool" that monitors energy consumption and alerts them during peak pricing periods. Overall, focus group participants clearly expressed interest in developing a better "relationship" or "partnership" with their utility company, for the mutual benefit of helping "each other use less energy…meet each other's needs."

- *"My energy nirvana is to have my house make power and sell it back to the grid." (Residential customer, age group 45-54)*

4. **Small business customers have a range of interests in addition to cost savings, but all want information that will help them reduce energy consumption.**

Although cost savings was a priority for the small business customers in our focus group, some felt responsible for reducing their environmental footprint, and many are actively taking steps whenever they can to reduce it, such as using compact fluorescent lights, adjusting thermostats to more energy efficient settings, and using water conserving faucets. Others, however, were not willing to sacrifice their bottom line to conserve energy.

Participants also wanted assurance that power would be available when they need it. This assurance is especially critical to businesses that depend on power to maintain the quality of the product or service they sell, such as restaurants (e.g., refrigeration) or automotive repair shops (e.g., power tools). Whatever their attitudes and behaviors were toward energy savings, most business customers expressed interest in gaining greater awareness of their day-to-day energy usage. They believed this information would help them make better decisions about how and when to reduce energy consumption.

- *"I think the businesses have to consider their impact because you make a bigger impact. You deal with a lot of people every day…we have switched to…light bulbs that last longer so we don't have to replace them as often. We're very environmentally conscious. We do try to reduce waste. "*
- *"I think I might be in the wrong group here, because my life is not motivated by the environment at all. I just want to save money. So, whatever I do, my motivation is to keep my expenses down…"*

Are customers aware of the smart grid and willing to adopt it?

1. Most customers are unaware of the technology or have limited knowledge.

Before being given a definition of the smart grid, survey respondents were asked about their awareness of the technology. Most (58%) had not heard of smart grid technology. Of those who were aware, this awareness was greater among the 35-44 and 55-64 age groups compared to the 21-34 age group. Among those who were aware of the technology, nearly 80% did not feel very confident about their level of knowledge. This lack of confidence was especially true among the 21-34 age group. Most who were aware had found out through typical media channels such as TV, the Internet or a newspaper.

2. Delivering the right message can promote adoption.

When a written description of the smart grid was provided to survey respondents, they expressed a more positive view of the technology's impact. This positive view was most pronounced with respect to improving energy conservation and providing or restoring power. To a lesser degree, there was a perceived positive impact on greenhouse gas emissions, the cost of electricity, and customer control (See Chart 2).

With this clearer understanding of the technology's benefits, nearly 90% of survey respondents are at least somewhat to very willing to adopt smart grid technology. And of these, there was significantly more willingness among the 21-34 group relative to two of the older demographics (Residential customer, age groups 35-44; 45-54).

How much do customers need to save and what are they willing to pay for desired services?

1. Customers want to save as much as possible, and charges for devices and services can't exceed the expected value of the return.

Not surprisingly, most customers seek to save as much as possible in exchange for altering their energy consumption behavior. Also as might be expected, we found that a somewhat higher percentage of lower to middle income customers (incomes not exceeding $60,000 per household per year) needed to save more on their utility bill to change their behavior (See Chart 3, page 5).

Chart 2: Impact of smart grid

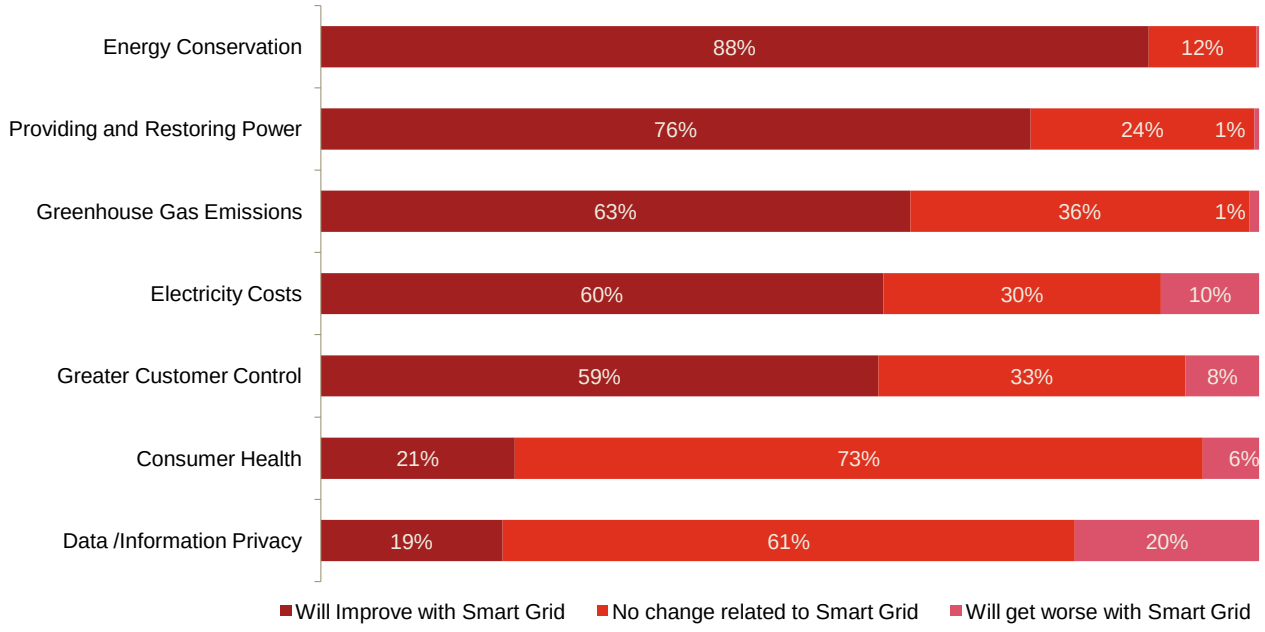
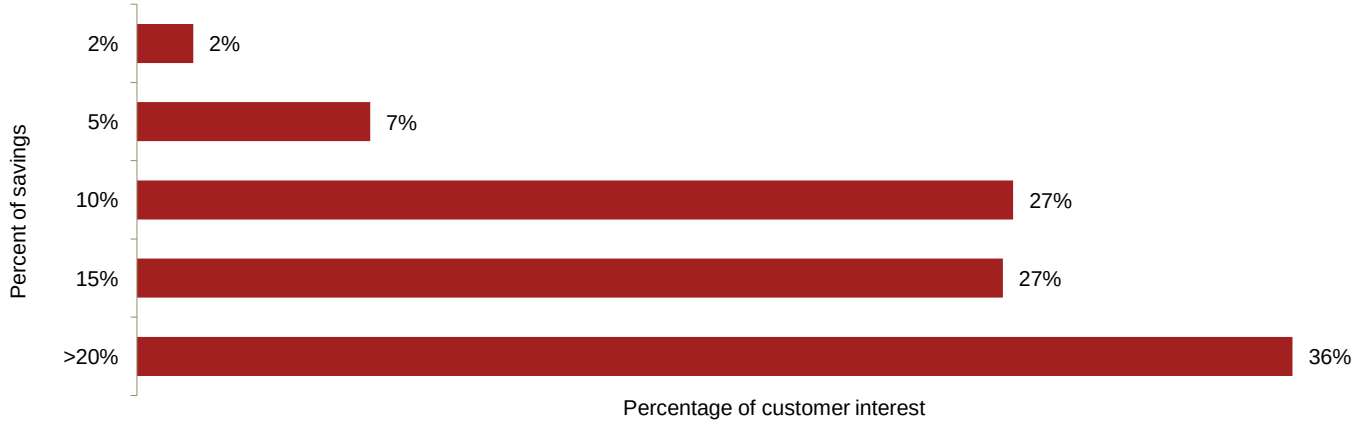


Chart 3: Savings needed to change behavior



This imperative of cost savings was supported in the focus group discussions. Participants were willing to change their energy consumption behavior and adopt a favorable attitude toward paying for devices or systems to help them reduce consumption – but only if doing so resulted in a cost savings equal to or greater than what the utility charged for the device or system.

- *"I want to break even. I would want to be able to save what I'm spending. I don't want my bill to go up $300 a year because I have this." (Residential customer, age group 45-54)*
- *"It depends how much it is. And will it pay for itself?" (Residential customer, age group 45-54)*

2. Customers want additional services, but are not willing to pay much more for them, and they want their utility company to play a role in providing them.

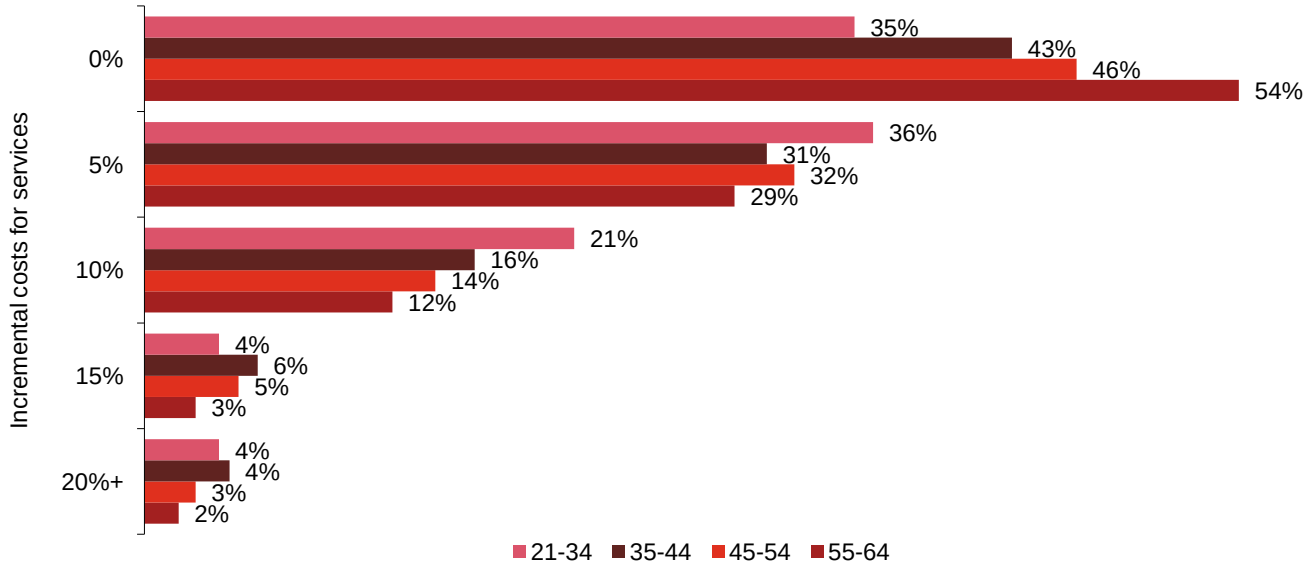
Survey respondents expressed an interest in receiving additional services from their utility company. The additional services evaluated in the research are:

- Electric vehicle charging
- Install solar panels on home or business (lease or buy)
- Ability to store power to be used later
- Remotely adjust thermostats, lighting, appliances, security systems
- Monitor power usage statistics, price, sources of electricity
- Weather stripping, insulation, window tinting
- Inspection of your home's energy efficiency

The services most attractive to the survey respondents were the ability to monitor power usage statistics, price, and sources of electricity, and to store power for later usage.

Survey respondents were not willing to pay much more for these additional services. Across the sample, 77% of customers said they would pay between 0-5% more for such services. But age matters a lot. Those in the older age groups – especially the oldest (55-64) -- were the least willing to pay any incremental cost for services (See Chart 4, page 6).

Chart 4: Willingness to pay more for services



Focus group participants provided interesting observations in response to the idea of the utility company providing additional services. Some participants regarded this as a huge convenience, because the utility company would do the "legwork" to vet suppliers and save customers time and hassles. But others clearly did not trust the utility company. They voiced suspicion regarding why the utility company would branch into other services and what their "take" would be. As was the case among the survey respondents, focus group participants were unwilling to pay much more for additional services, as they believed some of these services should be included in the price of their energy consumption.

- *"It's like a conflict of interest. You don't want to say they're crooked, but they can deliberately do something to benefit them and you're allowing it, just by letting them install or have them involved in it." (Residential customer, age group 21-34)*

III. Strategies for Successfully Promoting Customer Adoption of Smart Grid Solutions

What are the core elements of a customer-centric smart grid strategy?

1. Know your customer and earn their trust.

Customers are not mandated to use smart grid products and services provided by their local utility. Consequently, the success of a utility company's smart grid program depends on having customers who are willing to participate. To motivate their customer to adopt the smart grid, utilities must offer services that are aligned with their customers' values, interests and expectations. But this will be a challenge for most utilities because they know very little about their customers beyond the billing process. Therefore, utilities must greatly expand their understanding of what is important to their customers as a prerequisite to success.

Based on our research, customers want more frequent interactions with the utility regarding their consumption, notifications by alarms and alerts (via text message, for example) regarding information on pricing and outage restorations, and specific recommendations for managing energy usage that are tailored to their unique needs. And they want this information to be available across several communication platforms. The more a utility can demonstrate to customers that it understands their needs and interests, the more likely customers will be to trust their utility.

To help customers make this adjustment and thereby drive successful adoption, utility companies must become more effective marketers. Developing a case for change, conducting a stakeholder analysis, and developing a robust communication strategy and plan are among the ways that utilities can engage customers more effectively.

2. **Offer ways for customers to control their energy usage and be open to partnering with them.**

Utility companies have an opportunity to promote the smart grid to customers by emphasizing how it will enable them to take greater control of their energy usage. One of the smart grid's most valuable customer benefits is the access it provides to detailed, near real-time information about energy usage, pricing, and the status of smart appliances. By delivering this information to the customer's computer desktop or mobile device, the smart grid gives customers the ability to control, among other things, thermostat settings and household lighting, 24 hours a day.

We also learned from our research that customers clearly want more services from their utility besides electricity, gas or water. For example, customers are willing to work with their utility company as the prime contractor to install and manage the customer's renewable generation and electric vehicle systems. Our research also shows that customers are very enthusiastic to help their utility company with reliability issues. The most successful demand response programs involve actively partnering with the utility to help meet the utility's goals related to load shedding. Because demand response programs are voluntary, the utility company is dependent on a partnership with the customer to make the programs successful.

To ensure the success of adoption efforts, utilities must emphasize and clearly communicate to customers how smart grid technology can allow them to take greater control of their energy usage and how it provides new opportunities for the customer and the utility to develop a "partnership" for their mutual benefit.

3. **Craft targeted messages and communicate through conventional and new marketing channels.**

Relevant and timely communication is a key success factor in the effort to influence customers to adopt smart gird products and services. In crafting communications, it is critical to keep in mind that all customers are not created equal. Utility companies must tailor their communications to their customers' unique needs and interests. By improving their understanding of customer demographics, utilities can target their communications more appropriately, not only to educate customers but also to move further toward the goal of achieving higher adoption rates.

Customer mobility, new technologies, and new channels mean the conventional communication mechanisms of bill inserts and door hangers simply are not enough to reach a critical mass of today's customers, much less convince them to change their behaviors and perspectives. By implementing a multi-channel strategy – including email, text messaging, video calls, social media, bill inserts, face-to-face community events, and town hall meetings – utilities can further extend the effectiveness of their customer outreach.

Utilities must understand customer segmentation, beyond the traditional residential, commercial, and industrial categories, to establish effective communication. Utilities should consider how customers want to be communicated to, how often, and what the key messages are that interest and benefit them. Our research shows that before customers are willing to embrace the smart grid, they need a clear understanding of the service and what is expected of them to utilize it.

Conclusion

Bottom line: Customers want to buy efficiency and they want to reduce their overall energy costs. As customers continue to evolve in a changing market, utilities need to evolve with them by aligning their products and services with what customers want to buy.

Our research found that customers are genuinely interested in forming a mutually beneficial "partnership" with their utility company to control their own consumption and help the company achieve its objectives. These mutually beneficial goals related to the smart grid include increasing the amount of renewable generation sold to customers, reducing the number of outages and promoting faster recovery times, and reducing demand on the grid during peak demand periods.

Our findings suggest that smart grid programs must be well designed, well communicated and "sold" to customers and other stakeholders. By taking this approach, utility companies will be able to drive home the benefit value, earn customers' trust regarding the utility company's capabilities and motivations, and create alignment between the utility company and their customers among the myriad of new products and services that are communicated to customers through the ever-growing number of media channels. Tailoring offerings to address the unique needs of various customer classes and segments is critical to gaining their buy-in.

Overall, utilities must recognize that more nimble, customer-focused 3rd Party energy services companies are either on the ground competing for business or getting ready to do so. To prevail in this new competitive landscape, utilities must stop thinking of their customers as "rate payers" and start listening to what these increasingly savvy customers are telling them about the services they want. They must also get over their fears of losing the control they have traditionally enjoyed in their customer relationships. Utilities that adopt this new way of doing business will be able to craft their offerings and communications to meet their customers' increasingly well informed – and diverse – needs and expectations.

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