

CRAFTING A PERSUASIVE SMART METER CUSTOMER EXPERIENCE

By Peter C. Honebein and Roy F. Cammarano



The four facets of customer performance: Vision, Access, Incentive, and Expertise

Smart metering is sweeping the world, with many short and long term benefits being associated with this trend. For most electric utilities, the business case for investing in smart meters is solidly based on increased operational efficiencies.

For other utilities, the business case must also include achievement of demand response and energy efficiency goals, which requires improved customer performance.

The purpose of this article is to provide ideas for designing smart meter customer experiences that enable customer performance. Customer performance occurs when customers are willing and able to take specific actions that contribute to achieving the demand response and energy efficiency goals that are often part of the smart meter business case.

THE FOUR FACETS OF CUSTOMER PERFORMANCE

Economists have long been the oracles of strategy for shaping customer behaviour with regard to demand response and energy efficiency. For example, if the price of electricity is significantly increased on a peak day, most customers reduce consumption provided they have been informed and believe that they can take action.

The theory of price elasticity is often met with the reality that price is a sensitive issue for utility customers, and it can easily cause customer backlash and ultimately restrictive legislation. Thus, triggering a significant change in

customer performance rarely rests on one strategy. Rather, coordinated, sustained change requires an orchestration of strategies. In work with a variety of companies, across a wide range of disciplines including utilities, four key strategies have been found for enhancing customer performance and changing customer behaviour: Vision, Access, Incentive, and Expertise.

VISION

Vision is showing customers the kind of performance you want from them, and then providing feedback on how well they are achieving the desired performance. The combination of these two elements packs a powerful one-two punch for getting customers to perform differently. Researchers clearly demonstrated over 30 years ago that the combination of a goal and feedback increases performance three-fold when compared to using these tactics individually.

A similar effect with energy usage and smart metering was discovered by researchers in the Netherlands. They found that a goal to reduce energy consumption (by 10 percent) combined with a real time feedback device resulted in increased performance. Consumers with the real time feedback device exceeded the goal, reducing their consumption by 12 percent. Customers with feedback that was less frequent could not manage more than an 8 percent reduction.

These results have an obvious recommendation for smart metering: inform customers of the goal, and then tie the data (feedback) from the smart meter to that goal, ideally in real time.

Goals for demand response and energy efficiency come from a variety of sources. One source for these goals is the smart meter business case. The business case should describe the demand response needed on a peak day, from which can be calculated a rough reduction percentage customers need to achieve.

A second source for goals is consumer behaviour research. The Netherlands research above suggests that 12 percent is an achievable goal. Research from California suggests a reduction goal of 14 percent for customers with central air conditioning, and 8 percent for customers without air conditioning.

A third source for goals is third-party organisations. The Sierra Club has recently started its "2% Solution" campaign. The aim of this energy efficiency campaign is to encourage people to reduce energy consumption by 2 percent per year over the next 40 years. Plus, it has a connection to the broader goal of environmental stewardship.

A fourth source of goals is historical trends, especially if they are a source of pride or competition. For example, over a 29-year period from 1976 to 2005 the per capita electricity consumption in California remained relatively constant, at about 7,000 kWh per person, while in the rest of the country consumption steadily increased from 8,500 kWh to 12,000 kWh per person. Thus, for Californians, the goal is to

maintain or reduce their per capita kWh consumption. For other states, perhaps the goal is to catch up with California.

A fifth source of goals is customers themselves. In our research, this typically reflects customer desire to set a dollar amount for how much they want to spend on electricity each month. With the goal set, data from the smart meter can guide customers in achieving the goal. That's the loop that needs to be closed.



The Toyota Prius' energy monitor displays feedback to the driver

Each of the goals described above requires that there is a clear, easy-to-understand feedback loop. For example, when a person buys a Toyota Prius, they may have a goal to achieve a certain number of miles per gallon of fuel. What helps them achieve this is the vehicle's energy monitor, which displays immediate and average fuel consumption information. Thus, customers can instantly see the effects of putting the pedal to the metal, as well as driving uphill, downhill and at the speed limit.

ACCESS

Access is providing customers with the tools they need to perform. Obviously, a key tool utilities are providing is the smart meter itself. Does this tool have an interface that is useful to the customer? Not yet, but utilities can connect it to a system of other tools that provide useful interfaces to customers.

Let us first discuss tools for providing feedback. In our research, it is evident that customers prefer real time, information-push tools (in-home displays) over historical, information-pull tools (web presentation, paper bills). The reason is effort. An in-home display requires no effort – it is placed in a visible place and it tells how much electricity is being consumed. Web presentment, on the other hand, requires effort. One needs to go to a computer, connect to the website, enter a username and password, and then navigate to the information. But there is a cost to consider. Customers typically must purchase in-home displays, whereas web presentment is typically provided for free to customers with a computer and Internet access.

To make web presentment more alluring to customers, organisations create user interfaces that are both attractive and functional. An example of a compelling user interface was created by Oberlin College and its partner, the LucidDesignGroup. This interface provides energy consumption data for each of the college's dorms. One can view data by the hour, day, or month, and select a "currency" that expresses an emotionally-linked consumption unit: watts, lightbulbs, fuels, automobiles, burgers, and dollars.

Other tools that utilities should consider integrating into their smart meter system are email, text messaging, and voicemail. According to the Pew Internet and American Life survey, 91 percent of Internet users between the ages of 18 and 64 send or read email. Most developed countries now have cell phone penetration exceeding 75 percent. The widespread adoption of these technologies makes them ideal

communication vehicles to communicate not only feedback to customers, but goals as well. California's "Flex Your Power" program offers FlexAlerts, which notify consumers of statewide demand response events via email or text messaging.

Another kind of tool that utilities are offering customers is passive demand response systems. Examples of this are automated air conditioning and pool pump cycling. Gulf Power's "Good Cents Select" programme offers customers a smart meter and a programmable, controllable thermostat. These tools allow Gulf Power to automatically control the customer's air conditioner, pool pump, and hot water heater.

The advantage of these kinds of tools is that customers do not need to do anything to respond to demand response events. The utility raises the customer's thermostat or turns off the pool pump. Yet many customers are wary of these kinds of passive tools due to their perceived lack of control or mistrust of the utility. The most requested requirement when these systems are discussed with customers is that there is a manual override.

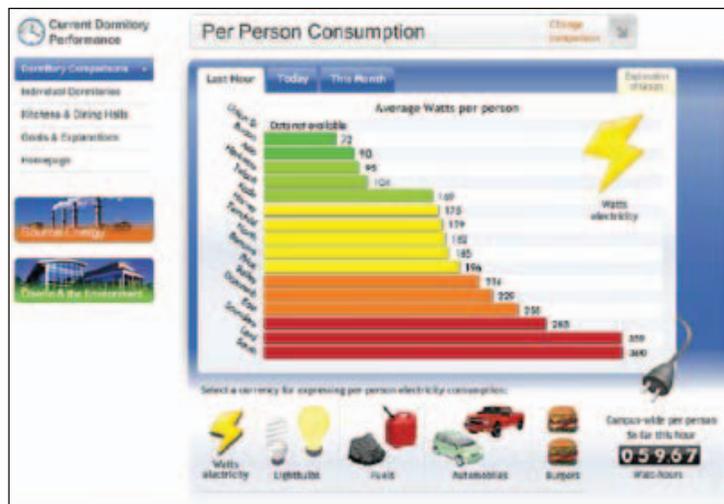
INCENTIVES

Incentives provide customers with an external motivator to perform in a specific way. Incentives are typically required for any kind of new customer performance involving new technologies. For example, when Southwest Airlines introduced its online reservation system, it offered customers the incentive of double Rapid Rewards points for booking tickets online. This encouraged customers to book online rather than on the phone. Other airlines, such as American Airlines, combine an incentive and disincentive: Booking a reservation online earns 1,000 miles (an incentive), whereas booking a reservation by phone incurs a charge of \$10 (a disincentive). Both types of incentives are often necessary to initiate customer performance.

Like the airline examples, utilities need a similar strategy for driving customer adoption of smart meter-related demand response and energy efficiency behaviours. The strongest incentive utilities control is dynamic, time-based pricing. Making electricity inexpensive at times of low demand is an incentive that motivates customers to push certain activities into different hours. For residential customers, this might mean washing clothes in the evening rather than during the day. For commercial customers, it might mean pre-cooling buildings or changing a manufacturing schedule. The disincentive, of course, is the higher price charged during peak times, especially during critical peak times when the cost of electricity is significantly higher than normal. These pricing schemes are affectionately known as "sticks", which reflect their punishing nature. And the research shows that they are very effective.

Some utilities, however, may opt for more of a "carrot" approach in their pricing, which is all about rewards. This incentive is a "peak time rebate", and it rewards customers when they reduce consumption on peak days. For example, if customers reduce consumption on a peak day (when compared to a preceding five-day average), they earn some specific dollar per kWh rebate.

Which approach is better, the carrot or the stick? Economically speaking, for residential customers both options are relatively equal. Over the course of a year, if an average customer uses less electricity on peak days,



Oberlin College's dorm energy web presentation system.

he could either earn \$50 in rebates, or avoid paying \$50 in additional charges. But from a consumer psychology perspective, the \$50 carrot has less perceived motivational influence than the \$50 stick.

From customer interviews and data from Whirlpool Corporation it is known that \$50 may be a weak motivator for energy saving behaviours that make customers less comfortable. Thus, a package of incentives may be a better strategy. There is some evidence that suggests that non-price incentives, such as surge protection insurance, outage notification services, and green power options that are included as part of the smart meter package, have additional motivational benefits.

EXPERTISE

Expertise reflects the knowledge and skill customers must acquire to be able to perform tasks. To provide customers with knowledge and skills, utilities use a variety of customer education solutions. But before picking solutions, it is important to know what customers want to know and when they want to know it.

Like any new innovation, smart meters involve customers across three distinct phases: before, during, and after. In the "before" phase, customers are first introduced to smart meters. They want to know who, what, why, when, where, and how regarding the technology, with a heavy emphasis on the benefits. After all, if the smart meter does not offer anything interesting or compelling, then customers will direct their attention elsewhere. Often it is directed towards the loss of jobs at the utility and in some instances a resistance to the technology causing the loss of jobs.

In the "during" phase, the focus is smart meter installation. For some customers, like those in California and Ontario, Canada, there isn't a choice – everyone gets a smart meter. But in other locations, such as Florida, smart meters are an optional service. Regardless, customers want to know when the smart meter is going to be installed, and what they need to do to prepare for installation.

Finally, in the "after" phase, customers want to know how to use the technology to their benefit. Customers need to understand such complex topics as dynamic rates and demand response. They may even want to learn how to use associated tools, such as web presentment and in-home displays.

Given that over 70 percent of people in the US have broadband Internet access, the web becomes an attractive, single-source solution for all smart meter education. All kinds of content, from articles to videos to Flash-based tutorials, can be centrally located and distributed via the web. For example, Ontario, Canada's Hydro One provides not only a Smart Meter Answerbook on its website, but also an installation video and an installation photo gallery. Gulf Power's "Good Cents Select" programme provides a video, which is aimed at selling this optional service, as well as text-based information. Chicago-based Commonwealth Edison, along with its partner Converge, have developed a site providing compelling Flash-based smart meter education.

Since most smart meter initiatives receive minimal funding for customer education, distribution of educational materials beyond the web must be carefully considered. Bill inserts, direct mail, and door hangers are the most likely media

for educating customers, as are public events. Advertising through newspaper, TV, and radio is an option, but it is expensive and may not be cost effective if the smart meter installation spans several years. The same holds true for traditional public relations efforts.

A promising strategy is using third-parties to educate customers about smart meters. An ideal context is schools. The schoolchildren of today are the generation in which smart meter systems will be a part of their everyday lives. Content involving smart meters may be integrated into science classes, and smart meter systems in the schools can be integrated into curricula.

CONCLUSION

In this article a model is provided that orchestrates various elements of a smart meter system to drive customer performance. The primary customer performance utilities desire is participation in demand response events. Secondary performance is energy efficiency. To achieve desired customer performance, utilities must structure a customer experience strategy that orchestrates vision, access, incentives, and expertise.

At the outset of crafting a smart meter customer experience strategy, the following principles should be kept in mind:

1. Know your customers. Identify who are the innovators and early adopters in the market, and target them. Also, note that there are significant differences between residential and commercial customers, and each will require its own strategy.
2. Create the smart meter experience by design, not by default. Develop a marketing strategy for the smart meter implementation. If possible, conduct controlled experiments to prove the tactics that are used to support the strategy.
3. Give customers choices. Avoid providing customers with only one option. Rather give them a choice of services that accompany the smart meter system. Utilities can utilise draconian methods of compliance, but this will not facilitate customer satisfaction. It will result in a rate payer who is potentially hostile.
4. See customers as co-creators of value. Recognise that once the technology is put in their hands, customers will be the ones to figure out how to best use it. Be sure to capture their innovations and use them as models for other customers.
5. Reduce the effect of silos. Although a part of most organisations, silos are a significant threat to a seamless customer experience. Be sure to envision the smart meter experience from the customer's point of view, and not just the utility's. ■



ABOUT THE AUTHORS: Peter C. Honebein, Ph.D. and Roy F. Cammarano are principals of the Customer Performance Group LLC, a management and marketing strategy consulting firm, and authors of the award-winning book *Creating Do-It-Yourself Customers*.

Honebein has created products, such as DTP Advisor (Broderbund Software), designed a system that tracked the cleanup of the Exxon Valdez oil spill, and consulted on the design of numerous products, including the system that sequenced the human genome. He is also an adjunct professor at Indiana University and the University of Nevada, Reno where he teaches classes in customer experience design, marketing, and performance consulting.



Cammarano is a business consultant and formerly division president with Premiere Global Services. Additionally, he has led three INC. 500 companies and was an executive officer and consultant in the publishing, leisure, retail, and consumer product industries. He has been a contributing editor to *Success* magazine, and was a featured speaker at INC. magazine's business conferences.

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