THE CHALLENGE OF THE EMERGING SMART CUSTOMER

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The realization that building the Smart Grid would be very difficult, even more than conservative planners had guessed, started to sink into the collective consciousness of the industry in 2009 and 2010. Consumers began objecting to smart meter rollouts in California (Pacific Gas and Electric Company), Texas (Oncor) and Maine (Central Maine Power) and consumer advocates stalled a Smart Grid rate case in Maryland (BG&E) - one that promised to bring in an additional $200 million of federal stimulus funding. As these conflicts were resolved, consumers discovered a voice on Smart Grid in state regulatory proceedings and the utility industry began to organize to recognize these changes, such as launching the Smart Grid Consumer Collaborative in March 2010.

We also saw a steady, rising drumbeat of headlines in the Smart Grid trade journals proclaiming the need for improved utility/customer communication and dialogue, specifically trumpeting the need for a cogent explanation of how the Smart Grid benefits the consumer – in dollars and cents. As we will explore in this white paper, the central issues of general consumer skepticism on change and objections to Smart Grid expenses in particular represent a key challenge to the industry. Addressing this challenge is Step One for utilities intent on pursuing a Smart Grid transition. Perceived value and total cost of ownership contribute to these challenges, but the crux of the issue centers on the very nature of the relationship between the utility and the consumers it serves.

Utilities face a risk in gaining approval for Smart Grid expenditures, but they also face the risk of a stranded investment if they build a grid poorly suited to meet emerging consumer needs. If customer adoption proves inadequate, utilities may find themselves in a difficult position for justifying the millions, even billions of Smart Grid cost recovery they seek from their consumers.

Smart Grid planning is a difficult needle to thread for utilities and policymakers alike. Both a strong business case and consumer education is paramount to garner political support. Any key influencer skeptical on the value of Smart Grid can bring a program to a standstill. For example, Com Ed, the utility giant headquartered in Chicago, recently concluded a year-long Smart Grid pilot. The relatively positive outcome of the pilot coupled with the successful passage of State Bill 1652 had them ready to deploy smart meters statewide. But on September 12, 2011, Illinois Governor Pat Quinn vetoed the bill, putting the future of Smart Grid in Illinois in doubt.[i] Once again, a very public rejection of Smart Grid based on consumer equity arguments has challenged a utility seeking to upgrade its network.

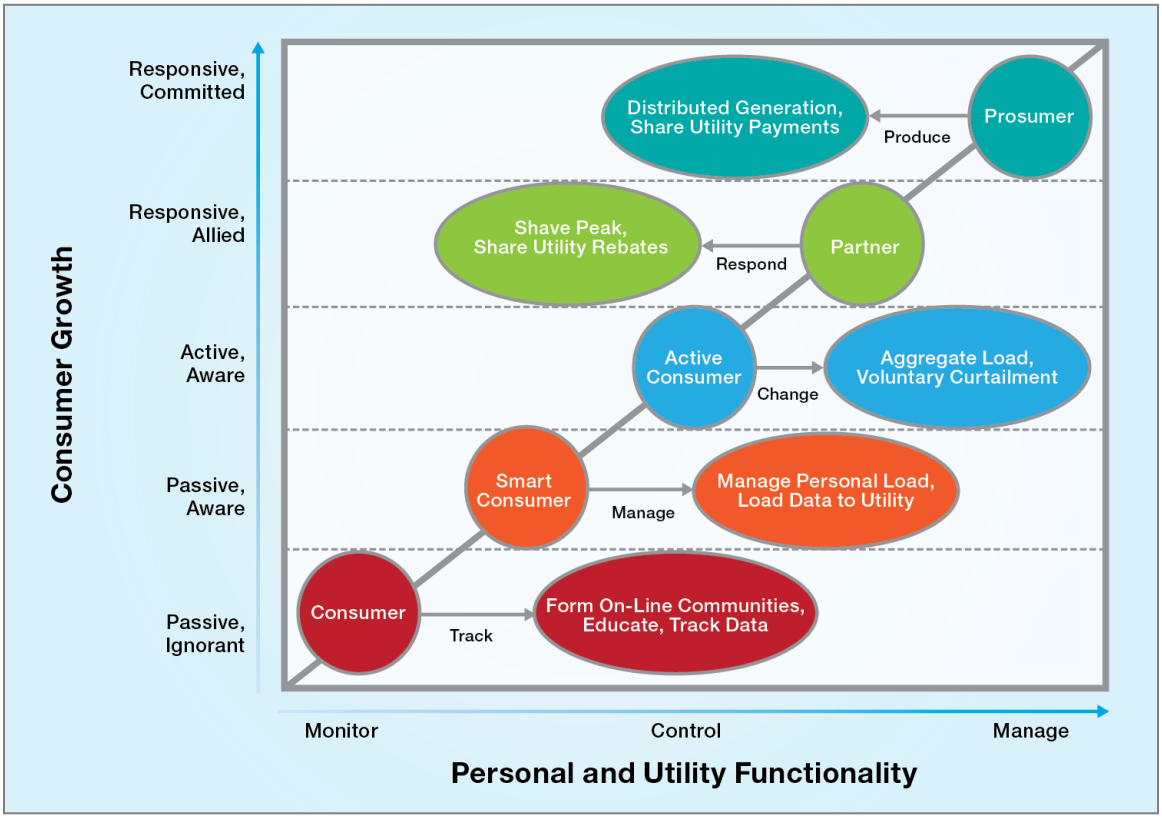
The Relationship between Utilities and Customers

Consumers rely on their electric utility for a vital service, yet outside of receiving and paying bills and reporting a rare outage, most do not interact much with the utility. Utilities for their part have generally focused on operational excellence, viewing customers as “the less I hear from them the better.” But technological change such as Smart Grid and new service delivery mechanisms such as smart phones hold the potential to create a step change in the utility customer service model. These technological changes, coupled with the introduction of innovative rate structures, will pose new questions for consumers. Some will begin to seek answers, but they will do so within their unique frames of reference. Rates tied to the time of day the energy is consumed will more tightly link energy consumption behavior to monthly bills. Shift your behavior, and you'll see savings; carry on with business as usual, and you may be in for a not so pleasing surprise at the end of the month.

Such changes in perceptions put the onus on utilities to begin now to warm up their consumers with education programs and other forms of outreach, so that consumers aren't surprised down the road when these changes are put into place. To put it another way, utilities may not even make it so far as cost recovery approval if they do not educate consumers first, as rate cases have a way of bringing opponents out of the closet. It will be to a utility's benefit to spend time understanding consumer perceptions and educating them so that future dialogue may be based on facts, rather than fears.

The Smart Consumer Maturity Model

A key challenge in these discussions is managing communications with widely divergent utility and consumer perspectives of Smart Grid. In listening to the two sides, the arguments are so conflicting that one may pause to wonder if they are even using the same facts. In actuality, as the graphic below shows, they may not be. With my co-author Andres Carvallo, I wrote a book on Smart Grid that was published in July 2011. One of the reasons we wrote the book was to share the vision that emerged from our work at Austin Energy from 2003-2010 and in the early stages of the Pecan Street Project in 2009. In Chapter 7 of *The Advanced* Smart Grid [ii], we talk about the maturing smart energy consumer. As the graph below suggests, as more functionality is provided to the consumer, the consumer matures from a traditional energy "Consumer" — passive and lacking in energy knowledge — to a "Smart Consumer," aware of Smart Grid issues and now motivated to manage personal load and relate to the utility in new ways. We call this the ***Smart Consumer Maturity Model***, borrowing from the approach taken by IBM and associates to create a Smart Grid Maturity Model, a pioneer model now managed by the Software Engineering Institute at Carnegie Mellon University.[iii]

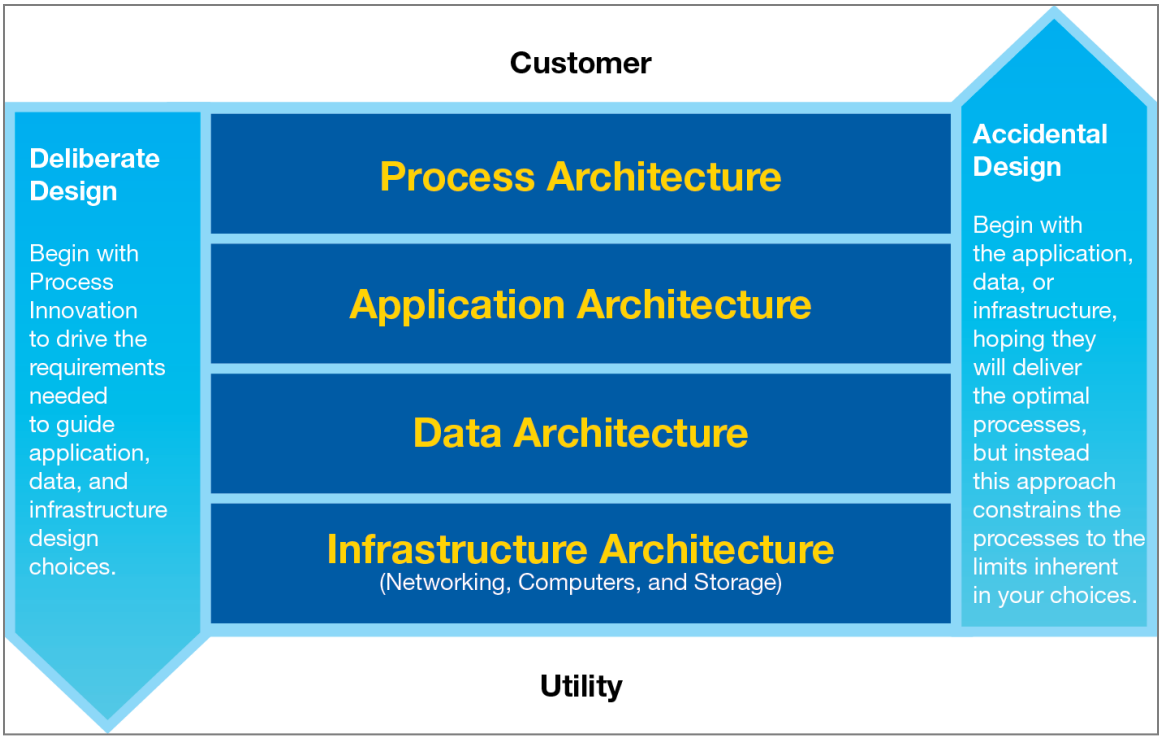


The nature of the Smart Grid *Maturity Model* is to identify utility traits along a maturity continuum, so utilities may assess where they are in the process of transitioning to a Smart Grid framework. In similar fashion, we pose that smart consumers may be organized and their relative maturity assessed based on their progress along a similar maturity continuum. A key challenge for utilities will be the dynamic nature of this maturation process: the utility/customer relationship and communication/educational strategies will need to shift as customers mature, with the utility recognizing these different maturity levels and adjusting its communication strategy to accommodate the shifting ratio of customers at each stage of this maturation curve.

Customer Use Cases

If we accept that the way customers are using electricity will change in fundamental ways and that customers are moving along a continuum to become more mature energy consumers, then it is logical to conclude that utilities should understand how customers use electricity, not just now, but looking ahead, in the short term as well as the long term. Understanding how customers will relate to electricity – ten years from now – is a critical component in strategic planning, specifically, in planning for a Smart Grid. A useful Smart Grid planning tool is the examination of "customer use cases," which describe how customers use energy in new ways.

Why Use Cases? In *The **Advanced*** Smart Grid*,* we proposed that advanced or second-generation *Smart Gri*d projects must start with an architectural framework designed to support a new infrastructure capable of meeting the future needs of customers. We proposed that such a design must start with customer use cases, which inform process innovation, and support decisions on applications, data systems, and Smart Grid infrastructure, if the Smart Grid is to meet its intended purposes. Starting with customer use cases and architecture design is a radical departure from the current conventional wisdom, where Smart Grid projects start with smart meters and Advanced Metering Infrastructure (AMI). But by starting with customer use cases, the Smart Grid architect creates a more robust infrastructure that will meet customer objectives as well as those of the utility. If for no other reason than to ensure functional relevance down the road, a utility should get in touch with its consumers to understand their distinct values.



In the graph above, we compared deliberate designs with accidental designs. A *deliberate* Smart Grid design discerns customer use cases that the Smart Grid must ultimately support in order to inform process innovation and shape the process architecture. Applications can then be architected to support the defined processes of the organization going forward. With an understanding of application architecture, the IT staff may design a data architecture that maps data flows. Finally, understanding the data architecture enables the utility to architect the necessary infrastructure (networking, computers, and data storage) to achieve its long-term goals. When utilities start elsewhere to design a Smart Grid, they end up with a Smart Grid that may not do all they need it to do, leading them to settle for less, or to make costly fixes to address new customer use cases they had not foreseen.

Documenting customer Smart Grid use cases at the granular level will require utilities to do the spadework in marketing as described in the next section, Five Marketing Challenges. Educating, motivating, listening and leading customers, segment by segment, will position utilities to engage with customers and develop use cases. A key challenge in this regard will be to grasp the changes occurring in the industry and develop an internal core competency in imagining the future and the fundamental changes impacting utilities and customers. Utilities will need to ask the right questions and exercise the appropriate processes to lead customers in future scenario development exercises, and then explore ways that customers may engage differently with electricity and with their utility. In the end, utilities must first understand customer use cases if they are to plan effectively for Smart Grid.

Five Marketing Challenges to Customer Smart Grid **Adoption**

As utilities begin to better understand the emerging smart consumer, they will need to plan and strategize appropriately to consider customer perceptions that may challenge Smart Grid adoption. **First**, most utilities by now are recognizing that pervasive energy ignorance among most residential energy customers and customer education programs are key challenges. Most customers are not motivated to spend considerable time mastering electricity issues, and lacking motivation, most never will be, which makes market programs to provide appropriate incentives a **second** challenge. Utilities will need to solicit and then manage inbound market information and intelligence gathering about their customers to an unprecedented degree – the **third** major challenge. **Fourth**, utilities will face the challenge of market segmentation, in contrast to the traditional industrial, commercial and residential market segments of the past. **Fifth**, utilities will be challenged to create cogent messaging and manage outbound market communication, using new channels and strategies to reach targeted segments, with a common goal of generating trust. And finally, utilities will need to document customer use cases regarding the Smart Grid, the **sixth** key challenge, leveraging all their past efforts in meeting the previous five challenges.

Challenge One: Customer Ignorance

Claiming that customers are ignorant is a bold and somewhat confrontational claim to make. And if they are indeed ignorant, one must ask, why? Also, what – if anything - is to be done about it? But when one understands *ignorance* as the lack of knowledge, rather than some kind of moral failing, it becomes easier to accept that most people indeed know relatively little about electricity. When one knows relatively little about a subject that has a great impact on their lives, there is a tendency for opinions to form based on fear rather than on facts. Fear may be associated with rate spikes that will impact household budget plans, or fear may have to do with reliability, outages and restoration times. In either case, customer education serves as an antidote to such fear, as facts and growing awareness — a slow drip of knowledge — empowers the customer and drives out irrational fears – fears not supported by facts.

The nature of customer ignorance is rooted in the incredible success of this industry over the past 50 years. High reliability, low prices and increasing value have given customers a sense of security in the grid. Raised with an electric grid that almost never fails, one grows accustomed to ever present access to the commodity of electricity, believing it will always be there. While utilities have devoted resources over the years to customer education, their lessons have traditionally been focused on safety and more recently, on ways to save money and avoid waste.

With a better understanding of the nature of customer ignorance – areas where customers may need to learn more and areas where they are likely to remain ignorant - the challenge of customer education will come into focus, even if it remains daunting. Customers need to receive the message they're ready for, based on their maturity level and their desire to learn. But utilities also need to understand customer maturity much better to determine appropriate services and messaging. When there is so much to learn, so many different perspectives to embrace and understand, a utility is faced with the challenge of understanding the market far better, in order to

develop educational materials tailored to fit the needs of a diverse population of customers. And for utility organizations used to addressing electricity issues internally among fellow energy experts, it is a cultural challenge to reach out to relatively ignorant customers to craft educational materials and programs designed to educate energy users coming at these changes from multiple perspectives with diverse concerns and priorities. In the end, the principal reason to educate consumers about energy changes may be to prepare them for new energy services coming their way.

Challenge Two: Customer Motivation

Having digested the challenge of educating a widely diversified set of customers about an incredibly complex and dynamic topic, the utility is faced with what we may call a second great challenge: most residential customers, historically passive and ignorant, are relatively happy to remain so, and without the appropriate incentives, are unlikely to be sufficiently motivated to tackle the twin challenges of first learning about electricity and changes and second, acting on that knowledge to change their behaviors.

After all, when a residential customer currently benefits from flat rates not tied to actual costs and electricity remains relatively affordable, not to mention extremely reliable – why should he/she change? Like an actor holed up in their trailer on the set of a movie production, the reluctant energy customer may ask "where's my motivation?"

A utility might ask a similar question on motivation, even going so far as to challenge the premise, asking "what's wrong with passive customers anyway?" As we shift to a greater reliance upon demand response, the challenge of passive customers becomes readily apparent. Utilities need a portion of their customers to understand their new role and change their behaviors accordingly. Utilities would do better to ask, "how many motivated customers do I actually need in my service territory to accomplish my objectives?" If the ***Smart Consumer Maturity Model*** suggests that a small number of early adopters will naturally move up the curve with no external stimulus, how many more does a utility need to motivate with incentives in order to meet its objectives?

The problem of motivation may ultimately challenge utilities almost more than the challenge of education, bringing to mind the adage, "you can lead a horse to water, but you can't make him drink." Utilities have ample experience with incentive programs, but generally on a smaller scale. Utilities typically identify certain behaviors that they deem favorable to their operational interests or to societal interests, and provide incentives - typically monetary, such as rebates - to lead customers in the appropriate direction. But rebates, not meant to last long term, typically have limited budgets that run out over time – good to start a program, but not sustainable over a long period of time.

The nature of this second challenge will be for utilities to find new, appealing ways to nudge customers up the learning curve of the Smart Consumer Maturity Model, because few will move from Consumer to Prosumer rapidly, and few will move of their own accord. More likely, some customers will move at their own pace as change motivates them, while another group will move as utility incentives pull them along. Utilities will need to get to know their customers extremely well to design incentive programs that appeal to different groups at different stages of maturity.

Challenge Three: Intelligence Gathering

Early efforts regarding customer education have centered almost exclusively on customer messaging (i.e., outbound marketing), but focusing on gathering customer information may prove more difficult, given the difficulty for most people to become good listeners. Stephen Covey highlighted the value of listening in his 1989 bestseller, *Seven Habits for Highly Effective People*[iv], with Habit Five: "Seek first to understand, then to be understood." As Covey explains, listening with empathy promotes a trust relationship and results in reciprocation, where the person who has been listened to becomes more open to being in relationship and to being influenced.

Empathic listening in this way fosters caring, respect, and problem solving based on mutually beneficial outcomes. In other words, empathic listening by a utility in a constructive dialogue with its customers may be the best way to get customers to slow down and listen to the messages that the utility would like to deliver, making outbound marketing more effective.

If a utility is to use active listening to learn about customer concerns and create trust, they will need to unlearn behaviors cultivated over decades in regulated rate case proceedings, where adversarial stakeholders face off in an administrative law case to argue their positions. Many utility managers have a history throughout their careers of arguing with their customers periodically, with millions of dollars in profits at stake. To turn around and listen humbly to customers who need to get educated on the electric industry and its changes may seem counter-intuitive, but this is part of the challenge. Utilities need to learn to look at energy consumers not as ratepayers – a regulatory term – but rather as customers, flight risks in fact, because customers increasingly have buying options and may decide to pursue them at any time. In this sense, learning to listen needs to become a new cultural trait of the utility, which may run deeper than focus groups and community meetings.

Challenge Four: Market Segmentation

With their systems operation perspective, utilities have divided their customers into three basic market segments — *rate classes* that they view through three distinct lenses. **Industrial customers** consume massive amounts of electricity and often have their own, dedicated substation; some can co-generate electricity or even build micro grids. In short, they have alternatives and as large business enterprises and employers, they have significant political power as well. Consequently, utilities view industrial customers through a distinct lens, not unlike the way a shopping mall developer would view an anchor tenant. The ***commercial*** rate class, sometimes divided into large commercial and small commercial, is comprised of business customers, whose electricity is measured with a "demand meter," that measures the peak demand during the billing period, as well as total energy consumption. **Residential customers** as a rate class comprise the large majority of accounts, but only consume about a third of the energy in a typical utility and are only billed for energy, not peak demand. To understand the challenge for utilities, consider how a consumer electronics company looks at its market, perhaps using Facebook marketing to divide its market into micro segments based on multiple axes of segmentation. The challenge utilities face is to move their understanding of the market away from the three rate classes to more effective, more granular market segmentation.

Moving from macro to micro in this way will require utilities to adopt new marketing paradigms and guidelines that are better aligned with market granularity. Where, for instance, will they draw the lines when they segment the market? How small are the segments? What axes to segment along? What will be the appropriate segments? Utilities would do well to learn from marketing giants in other industries, from consumer electronics retailers like Best Buy, to consumer products companies like Proctor & Gamble. Recent studies in British Columbia and elsewhere, highlighted in the Consumer report by the Smart Grid Consumer Collaborative[v] have created new names for customer classes based on how they relate to energy, no doubt the beginning of a new trend of understanding and labeling new customer segments.

Challenge Five: Outbound Market Communication, Messaging and Trust

Now here's a challenge: find the best ways to communicate a highly complex subject to an impatient, unmotivated audience, and use that communication to generate greater trust. That is the essence of this fifth challenge facing utilities, the challenge of becoming a patient subject matter expert to the community during a time of great change. Successful messaging for utilities will be closely tied to other elements of strategic reform within the utility, related to service delivery, organizational realignment, business models and Smart Grid planning.

The nature of this challenge is to manage internal and external expectations while the utility gets more granular in its strategy. Some basics of outbound communication are possible, but to manage a successful messaging campaign, the utility will need to understand where it wants to go and how it seeks to influence its customers.

What does it want them to learn? Who among all their customers will they focus their attention on? The core of the campaign, to be certain, must be to generate trust and goodwill for future messaging. Trust has been identified as a critical component of utility marketing by customer research on Smart Grid over the past year.[vi] Generating trust, at its most elemental, is about honesty, transparency, integrity, and consistency – in a word, under-promising and over-delivering. To manage communication to these standards during these uncertain times will be a significant challenge for the most well-meaning and well-motivated utility.

As a July 2011 study by Chartwell[vii] shows, utilities can start to build trust in this age of instant communication and social networks by focusing on outbound messaging related to their core business – keeping the lights on. Get that right, and customer satisfaction and trust will likely rise, preparing the customers for the more difficult and challenging messaging ahead. The study found that more utilities are setting performance goals on perhaps the most elemental message to customers – when the power will be restored after an outage. Chartwell's Outage Communications Research Council found that roughly 75% of utilities measure Estimated Times of Restoration (ETOR) performance, up from two-thirds as recently as 2008.

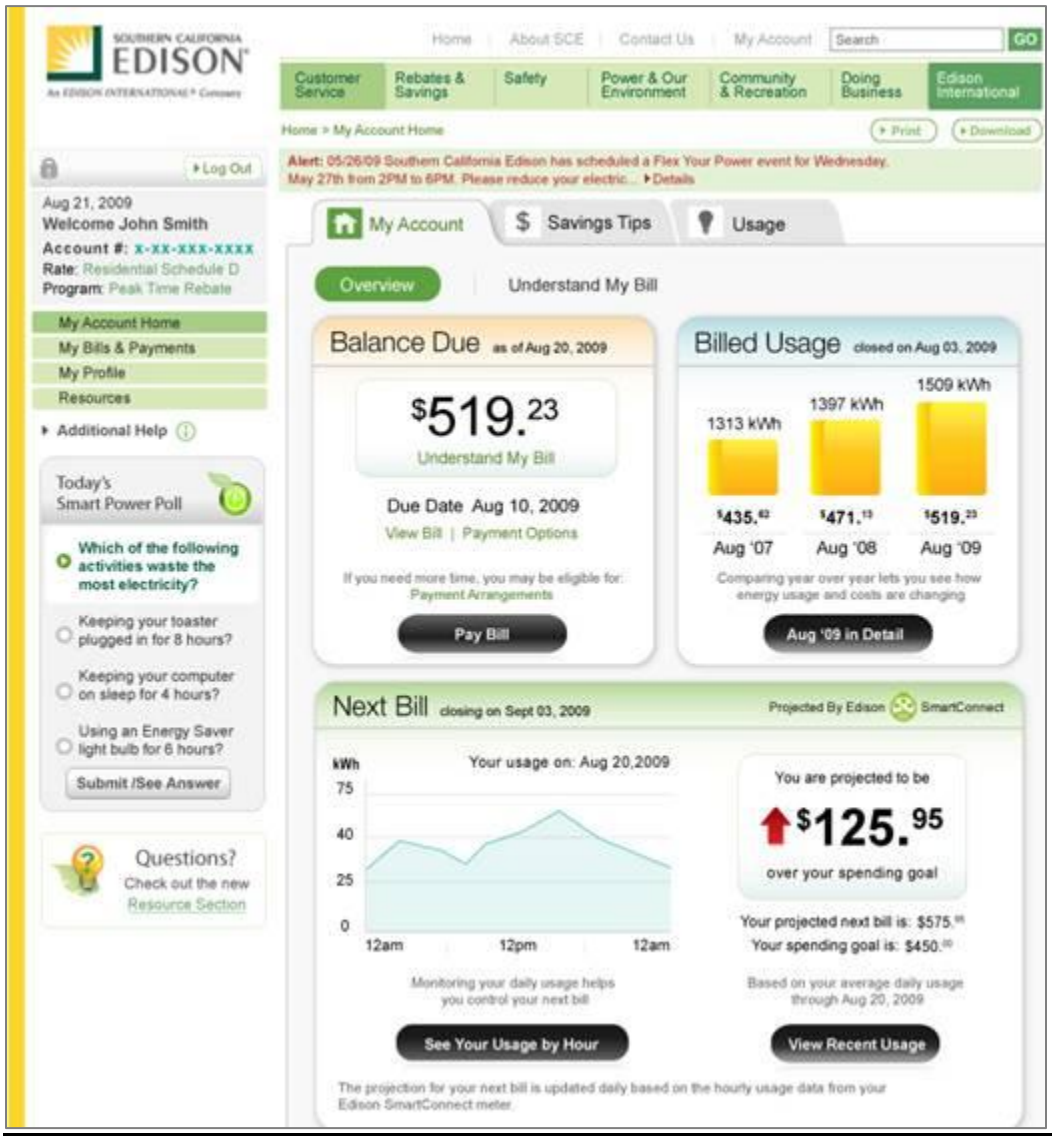
Considerations for Addressing Smart Consumer Challenges

These six challenges to customer adoption of the Smart Grid — the five highlighted above, and the challenge of customer use cases — are organized and presented along a continuum: 1). understand customer objections and educate them; 2). provide incentives to encourage more education and positive changes: 3). engage in dialogue to fully listen to customers and build trust; 4). segment customers along emerging axes; 5). communicate with customer segments according to their maturity levels and needs; and 6) develop future customer use cases to inform effective Smart Grid design. Each of these challenges is manageable and even more so when taken in order as smaller bites that build on success in mastering a challenge at a previous stage.

Likewise, utilities face an array of alternatives to deal with these challenges, based on attitude, priorities, and budgets. Attitude will be important because successful management in this area will be driven, in part, by a new paradigm on marketing, heavily influenced by the internet and social media applications.

At one end of the continuum is the minimalist alternative still practiced by many utilities, especially those who still enjoy monopoly status. Minimal marketing strategies supported by minimal marketing budgets enable bill stuffing campaigns and maintenance of a website with a static message. When needed, the utility may communicate with its customers regarding an outage and estimated restoration times. Some utilities have beefed up their budgets somewhat and added Smart Grid communications, ranging from hints on energy efficiency to tips on HVAC selection or on installing solar PV systems.

At the far end of the continuum are utilities that have adopted a new approach to marketing that is proactive and that leverages new social media tools like Twitter, Facebook, You Tube and LinkedIn. Consider for example the customer portal offered by Southern California Edison (SCE), shown in the graphic below, which projects a customer's upcoming bill based on month-to-date usage and the over/under on the customer's pre-assigned spending goal. SCE lets a customer define themselves by customer type - budget, green, save as much as possible — and the Web site customer view is tailored to match the customer's objectives.



Consideration: Customer Motivation

Monetary rebates remain a traditional utility alternative to provide customers incentives. Building on those traditional programs, more involved alternatives would include public relations campaigns, campaigns based on innovative behavioral research applications (e.g., OPower programs), and campaigns focused on specific aspects of Smart Grid, such as electric vehicles. The chosen alternatives for customer motivation will be tied closely to the efforts at customer education and to the lessons learned from listening to customers, as described in the next section.

Consideration: Intelligence Gathering

Alternatives for market research on the inbound side may start with surveys delivered manually or online, including instant Web polls. Specific market segments may be pursued with greater vigor, with on-site research at public gatherings, with ad hoc contests, and in cooperation with such natural partners as electric appliance retailers and electric service companies (HVAC installers, etc.). The opportunities for listening abound, and will be greatly enhanced by a significant effort to use new social media software coupled with new data analysis software.

The opportunity to understand customer segments, buying behavior, and opinions on products and services has never been more fully developed. The challenge for utilities will be to adapt to these new methods and either train internal resources or outsource to experienced professionals to gather information and increase customer understanding.

Consideration: Market Segmentation
The default alternative to segmentation is to continue with the tried-and-true industrial, commercial and residential segments. This default approach may prove quite difficult to shed, given that many utility systems operate on this basic segmentation. Building on the previous section, the alternatives for market segmentation will be driven by intuitive, natural ways to segment the market, and then further segmentations based on revelations on customer buying preferences, etc. This is a huge area for alignment with the market, given the lack of alignment today. Utilities would do well to borrow from well-known consumer companies – in fact, the opportunity will arise soon when Procter & Gamble's CEO Bob McDonald speaks at the November 2011 GridWise Alliance Global Forum.[viii]

Consideration: Outbound Utility Messaging
Of course, one alternative may be to continue current utility practices of communicating needs to customers based on the utility perspective, minus the work described in the four previous sections. But those utilities that invest in the significant work at marketing research and outreach to listen will have the opportunity to craft and deliver fresh outbound utility messages that build on trust and knowledge of customer perspectives. Outbound messaging will range from traditional media to online media, including new social media channels.

In addition to the considerations previously mentioned, it's important to note the value of communicating customer use cases in outbound marketing to address challenges facing utilities. Apply customer use cases when building hypotheses based on lessons learned from previous marketing exercises. Use hypothetical cases to draw out customer feedback, when customers may balk at a blank page but find it easier to embrace the opportunity to comment on a hypothetical case. Focus groups and community engagement further this data gathering process. After a multitude of use cases and opinions have been collected, they can be consolidated and then ratified by surveys to determine priorities and appropriate structure, providing insights for Smart Grid design, architecture, and planning, plus providing utilities an important communication channel back to their constituencies.

Consider the Risk

In a few well publicized cases customers have rejected Smart Grid initiatives. It should be noted that in many more, there was no discernable customer objection. But in the process, these loud voices have managed to shine a bright light on the need for utilities and the industry to educate energy consumers and stimulate a more mature consumer perspective to add to the debate on Smart Grid. The nature of the debate in a rate case is the allocation of risks, where an administrative law judge hears various stakeholder arguments on a variety of economic and technical areas in order to arrive at a fair distribution of stakeholder risk and reward in the new rate structure. And there's often the rub when it comes to Smart Grid changes. It may be understood by all parties that the grid needs to be upgraded, to be made more flexible to adapt to future needs. But how far should an upgrade go, how flexible should the grid become, and when? The devil, as they say, is in the details, and specifically, in the details of who will pay for what and who will benefit.

In the ComEd example mentioned earlier, the utility piloted dynamic pricing and demand response capabilities and tested the impact of using smart meters to shift peak consumption. Unfortunately, while the pilot's results were deemed a success, they were still less clear than hoped for, which didn't help Com Ed make its case for $3 B in new rates. At issue as well is the guaranteed recovery of all costs in rates, which shifts the risk of future benefits over to

the ratepayers, away from the ComEd shareholders, leading the state's governor and attorney general to balk at signing the legislation.[ix]

Similarly, the issue at hand in Baltimore last year was the initial request by BG&E for approval of a rate case valued at more than $800 million, specifically the structure and intent of the request to shift costs almost exclusively to the ratepayer, well ahead of anticipated ratepayer benefits, which would not accrue, if they did at all, for years to come. After an initial and very public rejection, state regulators allowed BG&E to amend and resubmit their request, ultimately granting approval. The bottom line risk for the utilities in these two cases was directly related to the ability to recover costs and take on new technologies without financial harm – perhaps one of the gravest risks any utility may face, IOU, MOU or Coop.

In the case of another giant utility, PG&E had already received approval for its multi-billion dollar smart meter deployment when it ran into customer opposition. In the face of consumer claims of inaccurate meter readings and health concerns that arose in Bakersfield and Fresno, the utility suffered a series of very public debates with consumers, ultimately leading to a directive to initiate customer opt out programs for smart meters. Likewise, Central Maine Power faced objections from small but vocal groups citing health concerns, which led to a more detailed review of Smart Grid plans, and ultimately, a recommendation for opt out provisions as seen in California. Some utilities, however, may propose opt out fees because opting out adds cost to the smart meter program.

In each of these cases, utilities made plans for Smart Grid implementation and recognized only in hindsight that they had left out an important step – getting the customer, a vital stakeholder in the process, behind their efforts at an early stage in the Smart Grid deployment. As recent studies show, the impacts of losing alignment with customers, incurring rejection, and eroding trust for the utility may become increasingly significant. One study suggested support for third-party services to compete with utilities; another study contrasted decreasing customer satisfaction with power quality and price, two critical customer value points, offset somewhat by rising satisfaction with operational improvements.[x]

A risk that is overlooked and/or undervalued by utilities in this area is the risk of inaction. The default of carrying on with the status quo - continuing programs that suffer from under-budgeting and/or decreasing effectiveness - carries with it a significant risk. Based on developing experience in this field, a Smart Grid program may well lack sufficient support when launched, or even incur active resistance from customers. Because the opportunities of developing understanding and trust by listening are well documented, continuance of the status quo carries another risk, which is the opportunity cost of failing to follow a path that promises improvements and benefits. Working to develop an internal utility skill of market intelligence and effectiveness will take a considerable amount of time and resources, which highlights the importance of starting early and leveraging all available resources.

Conclusion

This approach – a thorough understanding of the challenges associated with customer engagement, followed by consideration of the alternatives – is process-driven and designed to provide the greatest understanding and insight, thereby avoiding the assumptions and missteps that can lead to considerable costs for the utility that employs a less rigorous process. A common theme uncovered in customer-oriented Smart Grid research over the past year is the need to develop greater trust among customers for utility communications and initiatives. A common theme in this white paper, correspondingly, is to use listening to develop the understanding that builds trust, ahead of utility efforts to communicate values and messages to customers.

Preview of Coming White Papers

In future white papers, we will explore the impacts of a changing customer environment, starting with realignment of utility service delivery processes and utility organizational structures, and moving on to data management and analytics and other key issues in the Smart Grid *arena.*

[i] Quinn Vetoes Smart Grid, Lawmakers Already Talking Override, Illinois Statehouse News, September 12, 2011

[ii] *The Advanced* Smart Grid*: Edge Power Driving Sustainability* by Andres Carvallo and John Cooper is available at major bookstores and online at Amazon, Barnes & Noble, and at Artech House (publisher)

[iii] Carnegie Mellon's Software Engineering Institute is now home to the Smart Grid Maturity Model

[iv] Steven Covey's Seven Habits of Highly Effective People describes a methodology for first becoming independent (Habits 1-3) and then interdependent (Habits 4-6) and finally, for rejuvenation (Habit 7).

[v] The Smart Grid Consumer Collaborative produced a landmark study on consumer behavior, titled "The 2011 State of the Consumer Report" in early 2011.

[vi] Operationalizing Privacy by Design: The Ontario Smart Grid Case Study, June 2010; GE Survey Shows Consumers' Love for Smart Grid is Growing, treehugger, July 23, 2010; Consumer Trust In The Smart Grid Requires More Education, Silicon Valley Watcher, October 27, 2010; IBM consumer survey reveals where utilities are still getting it wrong, Smart Grid News, August 25, 2011; etc.

[vii] More Utilities Measuring Performance in Communications with Customers During Power Outages, Chartwell Research Shows, Reuters, July 11, 2011

[viii] GridWise Global Forum, November 8-10, 2011

[ix] ComEd 'Smart Grid' Bill Reaches Quinn's Desk, Gov Vows Veto, CBS Chicago, August 31, 2011

[x] An April 2011 study by Accenture, "Revealing the Values of the New Energy Consumer," found that the majority of consumers would buy electricity, energy-efficiency products and related services from companies other than energy suppliers, indicating a shift away from commodity-status to more of a lifestyle choice, in the eyes of consumers. A July 2011 study by JD Power and Associates reported decreases in power quality and price satisfaction among residential power users, but also that those negative trends were offset somewhat by steady operational improvements, appreciated by utility customers.

About the Author

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John is a creative thinker, author, researcher and project manager, active in the energy, telecommunications, IT services and government research industries since the mid-1980s. John has led innovation projects in all aspects of the emerging Smart Grid, ranging from utility IP networks, wireless AMI, distributed generation, demand response, energy efficiency, utility-scale energy storage, virtual power plants, and EV charging infrastructure. John is the co-author of the recently published *The Advanced* Smart Grid*: Edge Power Driving Sustainability* and the author of *The ABCs of Community Broadband*, a guide for community leaders, as well as numerous white papers and magazine articles on Smart Grid.

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