Customer engagement through smart meter portals

An E Source white paper

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Nearly one in three homes now has a smart meter collecting data every 5 to 15 minutes—a significant upgrade from the monthly data collection method that's dominated the utility industry for the past 100 years. Despite these advances, most people don't even know if they have a smart meter, much less how the data can help them save energy and money.[1] Presenting this valuable data to customers in a concise, easy-to-understand smart meter portal can help open the door to energy-saving action, a critical step in justifying the deep capital investments that utilities have made in smart meters. Without customer engagement in smart meter data, this investment represents little beyond a slightly more accurate and efficient billing system. With customer engagement, however, this data is the key to fulfilling the true promise of smart grid, enabling behavioral demand response, dynamic pricing, and more.

How E Source can help with your smart meter strategy

Fill out this short form to start a conversation about your needs and how E Source can help.

Smart meter portals hosted on your website are compelling, actionable, and available on customers' preferred communications channels. With the increasing prevalence of industrywide standardized data formats such as the Green Button initiative, creating portals that can easily integrate with smart meter data can be a more streamlined process than ever before.

E Source has created a framework to compare the various components that are currently being used in several smart meter portals designed by third parties, utilities, and nongovernmental organizations. Though it's a bit early in the evolution of these portals to definitively determine which elements are critical to driving energy savings, this framework may help utilities consider the options that are available for their smart meter portals. These options include bill payment, energy-saving and budget goals, energy-usage patterns, high-usage alerts, disaggregated usage by appliance, comparisons over a variety of time periods, comparisons with peers, entry into contests and sweepstakes, and even gaming.

Establishing a framework for smart meter portals

We identified nine elements of successful smart meter data portals. We present them in a framework that prioritizes each element from high importance to low importance (**Table 1**). Also critical but not included in the framework is the communication component. Making energy-usage information available to customers across a variety of communication platforms—including mobile, social, and the utility website—is crucial to success. Finally, another consideration is whether the customer has to opt-in to retrieve his or her data from the portal or whether the portal automatically pushes the data out to the customer, in an opt-out model.

TABLE 1: Key elements of successful smart meter data portals

This framework describes the nine key elements of smart meter portals and prioritizes the importance—high, medium, or low—of including each element. The table notes that providing granular smart meter data in more-frequent intervals (such as hourly) is essential to engaging customers and giving them the information they want.

Feature	Description	Importance
Bill payment and budgeting	Utility smart portals should feature a prominent option for paying the utility bill. They should also allow customers to set monthly budget goals and arrange for automatic alerts when energy-usage trends do not align with those goals. These alerts can be sent by text, e-mail, or both, according to customer preferences.	High
Smart meter information	Smart portals should deliver personalized, granular, and current data to the customer. Usage information can be presented in hourly, daily, weekly, or monthly increments, as well as compared to past months or years. Ease of use for switching between different timelines is essential.	High
Energy-use information	Energy-use information can include disaggregation of data by appliance or other levels, trends year over year, comparison of days, peak demand information, time-of-use periods, tiers for rates, and more.	High
Target savings	Customers can receive reminders for specific energy-saving actions such as turning down the heat when they're out of the house, turning off the lights when they leave a room, or raising the temperature on the air conditioning.	Medium
Incentives	Smart portals should automatically alert customers to available incentives and rebates for energy-efficient equipment and programs when the information is most relevant, such as when the customer is viewing a high monthly bill.	Medium
Rate options	Based on the customer's energy-usage history, a portal should present analysis of rate options and outcomes that would be most favorable for reducing the customer's bill.	Medium
Social gaming	Portals should offer customers a variety of extrinsic and intrinsic motivational opportunities such as peer comparisons, leaderboards, badges, points, virtual prizes, and real-world rewards.	Medium
Electric vehicles	Portals should present information and a visualization of what impact charging an electric vehicle would have on a customer's electric bill at various times of day.	Low
Renewables	Smart portals should show customers the energy-use and financial impacts of installing a solar system or of participating in other renewable energy options. It should also show them data about how their participation in such an option would affect the environment.	Low

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For all of the features in the framework, portal designers can give users the choice to opt in or opt out. With the current version of Green Button, portals are largely obligated to adopt an opt-in strategy where customers elect to retrieve data from the portal into their application (app). However, as the Green Button Connect initiative becomes more robust, customers will hopefully have the option to authorize their energy data to automatically connect with a variety of third-party portals, instantly updating the platforms on a regular basis.

Energy portals can lose their effectiveness if they fail to keep customers actively engaged in information. Maintaining this connection requires that portals regularly push out information that people care about in a simple, compelling format on communication channels that they're already using. For example, receiving a short text message alert when the utility bill is due is valuable information for a customer, especially if that

message contains a link to the customer's account login page.

Online energy portal case studies

We reviewed more than a dozen smart meter portal platforms and identified several leading examples that most effectively promote customer engagement. These examples present the data in a compelling format on appropriate communication channels from three main sources: Green Button data, utilities, and vendors.

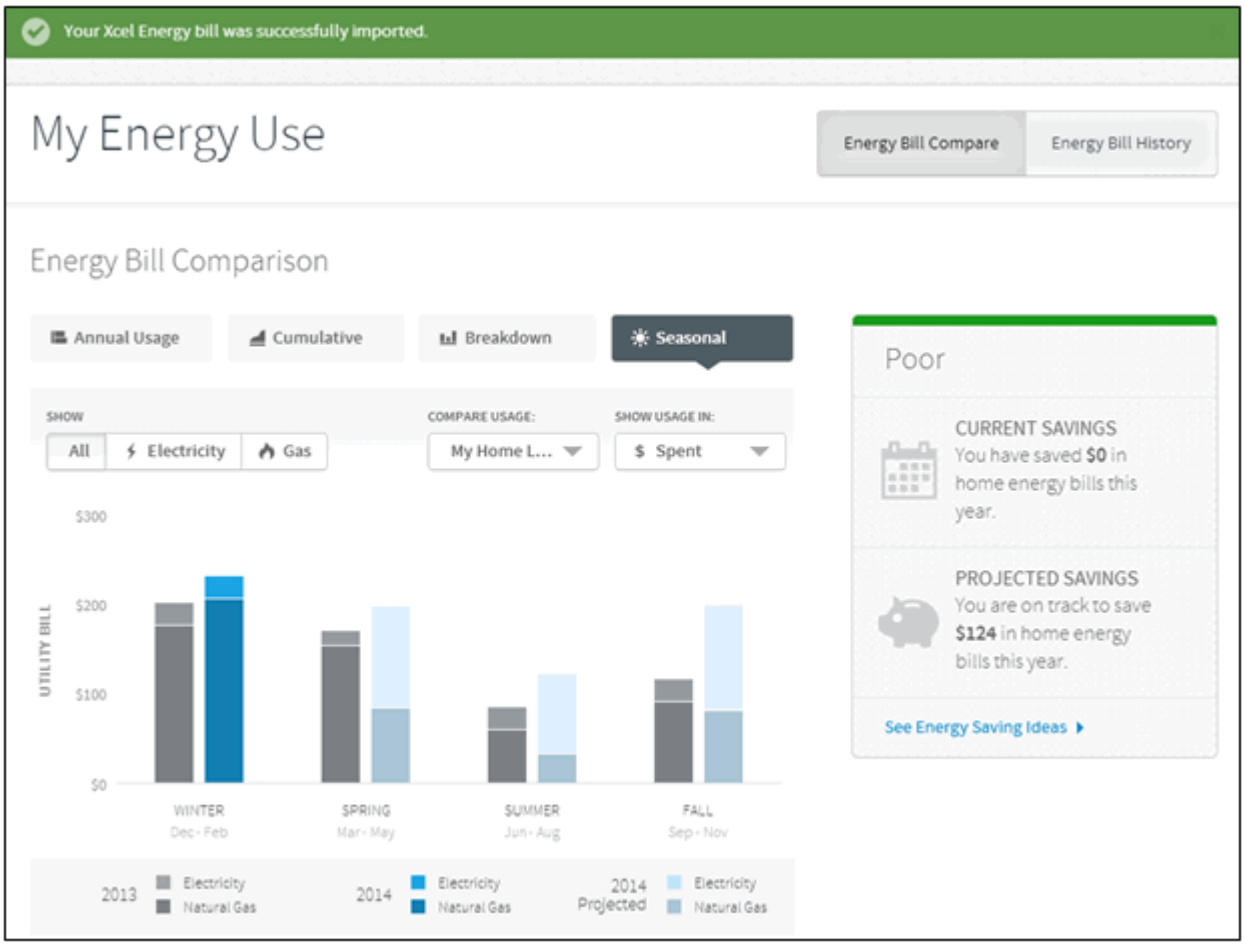
Green Button Portals—WattzOn

The Department of Energy (DOE) and other organizations have sponsored several contests to encourage development of smart meter portal apps using the relatively new Green Button data standard. Although the DOE contest received about 60 apps using Green Button data, most of the portals have not been completed to the point where data integration could be successfully accomplished.[2] However, one portal, WattzOn, has successfully integrated a variety of data including Green Button information.

Integrating utility billing data with the WattzOn portal is a relatively simple process. First, a user enters his or her online utility account username and password. Then, after just a minute or two of retrieving the data, the portal allows the user to view his or her information in a variety of useful ways, such as graphic comparisons of annual and seasonal billing information for both electricity and gas. **Figure 1** shows the energy usage of a single-family home with solar panels in Colorado. The natural gas portion of the bill packs the biggest punch, since the electric needs of the house are largely met by the solar panels. The projected energy bills for 2014 are most likely inaccurate because the portal currently does not allow the user to indicate that he or she already has solar panels; it only allows the user to collect more information about installing photovoltaic systems.

FIGURE 1: WattzOn displays energy-use data intuitively

The WattzOn portal enables customers to view their electricity and natural gas consumption data in a variety of formats. Customers simply import their utility bill into the platform, where they can then view seasonal or annual data and get tips on reducing their energy use.



Source: WattzOn

Along with this intuitive display of energy-usage information, another useful element of the WattzOn portal is the simple presentation of recommended actions for energy savings. Suggestions such as washing clothes in cold water and reducing outdoor lighting are simple, no-cost ideas that will have minimal impact on the customer's comfort. Other ideas such as installing CFLs, occupancy sensors, and dimmer switches are low-cost actions that many customers simply may not have considered before. Finally, WattzOn offers a list of available rebates for energy-efficient equipment.

Utility portals—Portland General Electric and Reliant Energy

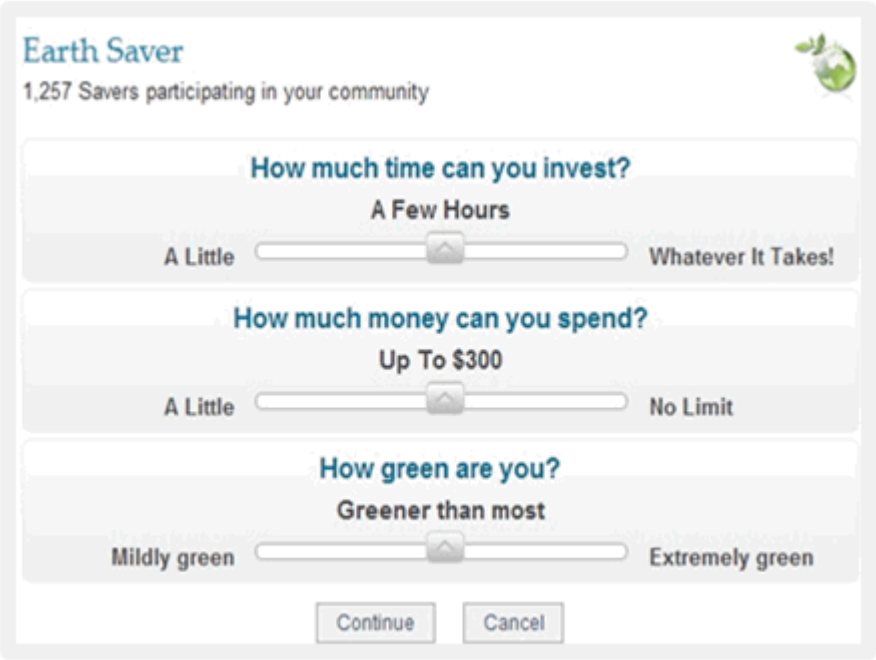
Several utility companies have started to develop and offer smart meter portals to their customers. Two well-developed utility-offered portals come from Portland General Electric (PGE) and Reliant Energy. Both utilities offer customized, robust portals, which are available to customers across several communication channels and present a variety of information in an engaging format.

Incorporating clear graphics and an easy-to-follow navigation scheme, PGE's comprehensive portal is one of the most appealing when rated using our key criteria. This portal also offers energy-saving tips, based not only on cost preferences and time, but also on a customer's selection of an overall energy-usage profile or

persona, such as the “Earth Saver” or the “Weekend Warrior” (**Figure 2**).

FIGURE 2: How green are you?

PGE’s portal asks customers a few simple questions to gauge their willingness and ability to save energy. These questions, combined with actual energy-use history, help inform the tips that are personalized for each customer.



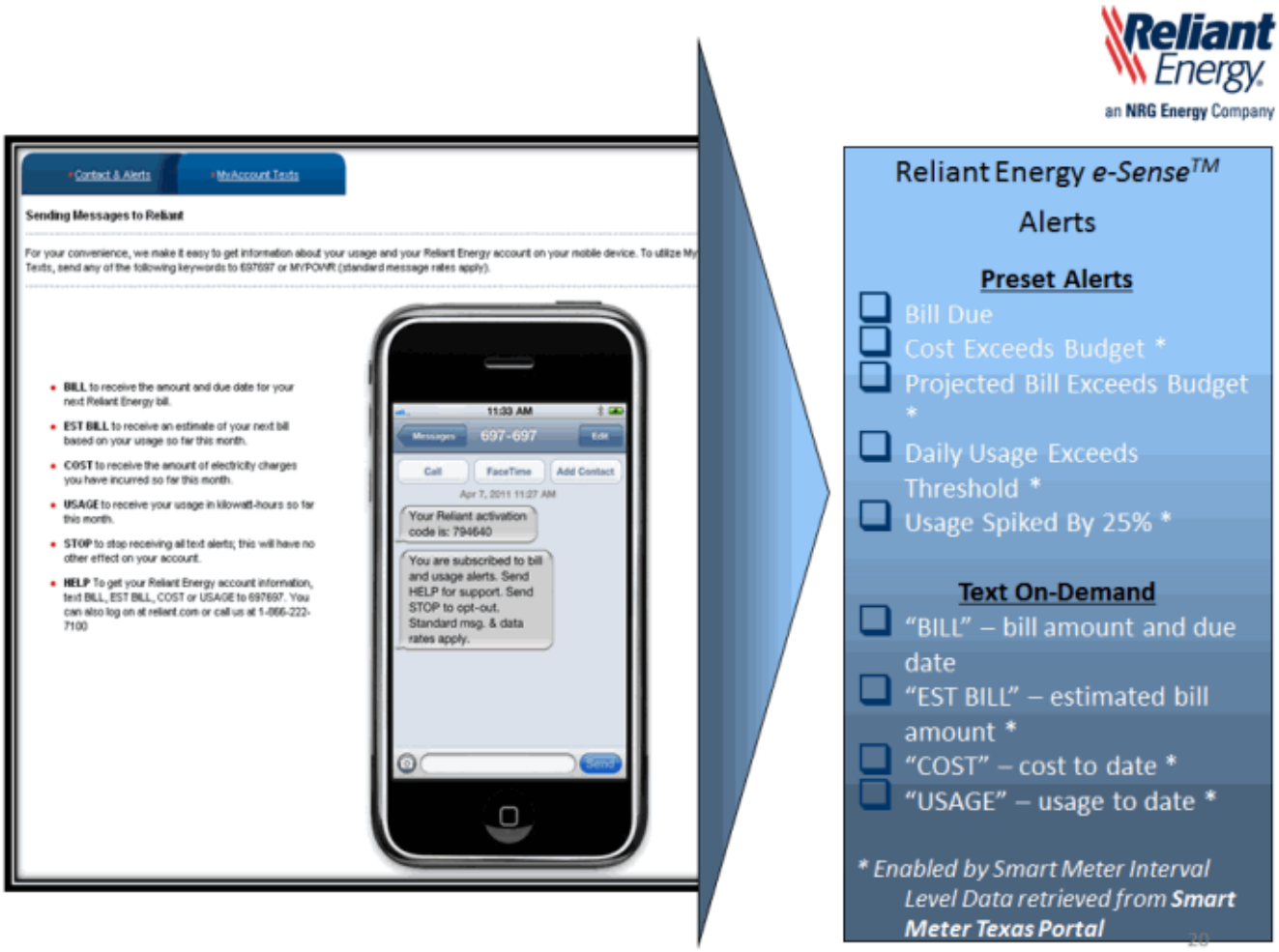
Source: Portland General Electric

The PGE portal also allows customers to view energy usage over time, compare their usage to that of similar homes, and set a savings goal to reduce usage by a certain percentage relative to the year before, automatically translating the percentage into a dollar amount. The portal includes a short home energy assessment survey to help customers learn more about their appliances’ energy use and direct them to rebates for energy-efficient equipment.

Reliant Energy’s portal is available across a variety of communication channels, including e-mail, the utility website, and text message alerts. This robust set of communication offerings was developed with the goal of engaging half a million customers in the utility’s Smart Energy products and services.[3] What Reliant learned from its efforts was that the majority of its online and mobile users want to use the portal to do one thing: pay their bill. Three years after the utility released its first app, the portal’s bill-pay screen continues to get the most hits. Reliant’s text messaging system supports this preference, allowing customers to set alerts for bill due dates and arrange for notifications if their projected bill exceeds their set budget, if their daily usage is nearing a certain threshold, or if their usage spikes by 25 percent or more (**Figure 3**).

FIGURE 3: Reliant Energy's platform has built-in alerts

Reliant Energy has programmed alerts into its smart meter platform to help customers proactively manage their energy bill. Part of the e-Sense suite of tools, the alerts can notify customers when their projected bill exceeds their budget or when their usage spikes or exceeds an established threshold.



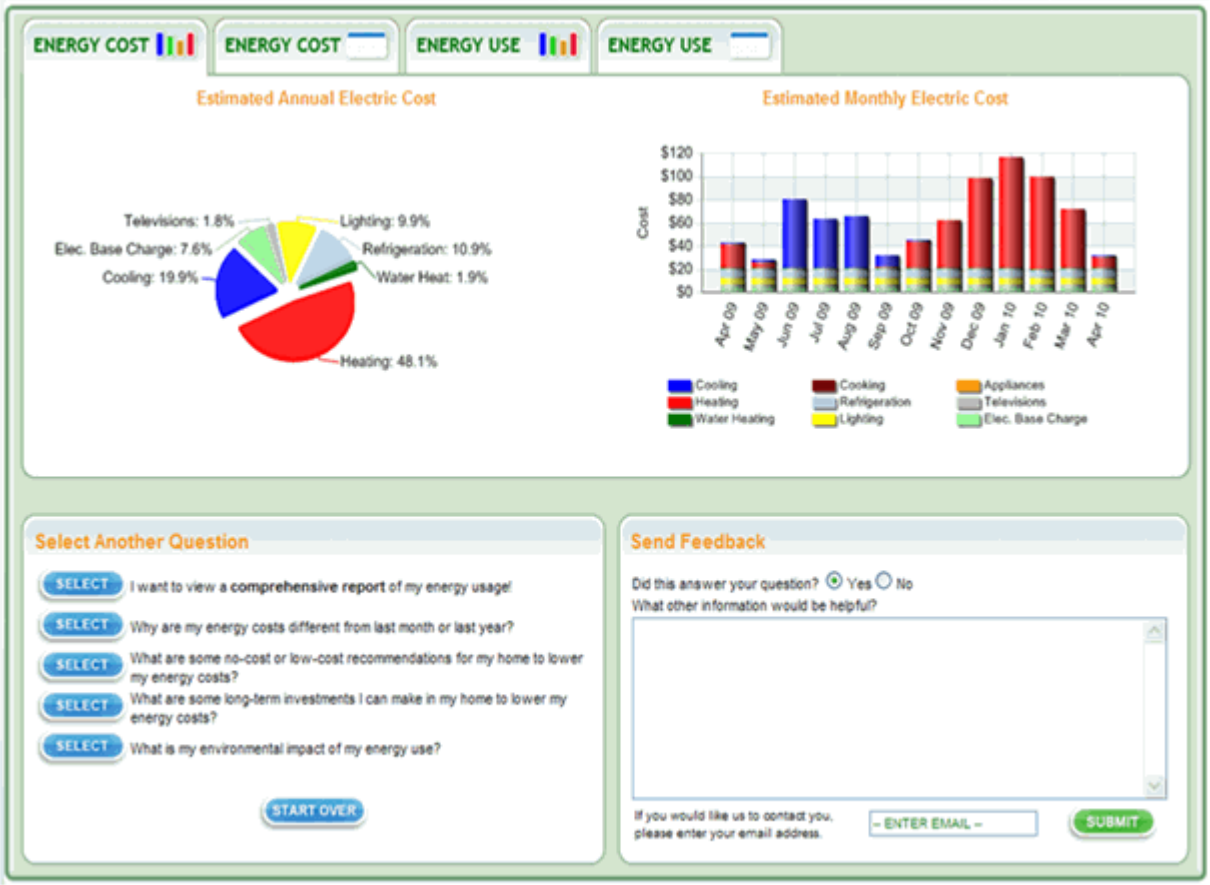
Source: Reliant Energy

Third-party vendor portals—Apogee and Opower

Apogee and Opower both provide apps that can be easily integrated into a utility's offerings. The primary strength of Apogee's portal is its ability to disaggregate customers' energy-usage data to show how heating, cooling, and other activities within the home consume energy and contribute to the total bill (**Figure 4**). The platform also offers both no- and low-cost recommendations to lower energy usage, as well as suggestions for larger-investment energy-saving opportunities.

FIGURE 4: Apogee's portal shows how energy end uses contribute to the utility bill

Apogee's portal shows customers how various energy uses such as lighting, refrigeration, heating, and cooling contribute to overall annual energy costs. The portal also gives customers recommendations on ways to save energy and a tool to view the environmental impact of their energy use.



Source: Apogee

The obvious strength of the Opower platform is the peer-to-peer comparisons that the company pioneered with paper reports based on behavioral science research. In 2014, Opower partnered with Honeywell to link the thermostat with smartphone control and apps (**Figure 5**). The company also launched a Facebook application to encourage online social gaming and competition.

FIGURE 5: Opower's platform encourages customers to set more-efficient temperatures

Partnering with Honeywell, Opower deployed a thermostat platform to help advise customers about how small changes in the temperatures they set can impact their monthly utility bill. Peer comparisons help drive "good" behavior to save energy.

Source: Opower

This digital, social approach to behavior change for energy efficiency and demand-response is one of the latest innovations in energy platforms. For example, Opower is piloting a behavioral-based demand response program with Baltimore Gas and Electric, and software start-up Simple Energy ran a similar program, the San Diego Energy Challenge, with San Diego Gas & Electric during the summer of 2012.[4] The San Diego Energy Challenge encouraged residents within the San Diego Unified School District to earn credits on their utility bills and win challenge points for the middle school of their choice by cutting back their energy use on peak-demand Reduce Your Use Rewards days. Although it's still too early to tell if the results from these programs will be significant or persistent, there are large potential savings that could be captured from effectively leveraging social networks for behavioral programs.

Energy portal best practices

A best-practice energy portal incorporates elements from Green Button apps, utility solutions, and third-party vendor-developed portals.

Keep it clear and simple

Integrating data with a format that's accepted industrywide, such as the Green Button standard, allows a portal to be easily adopted by utility companies. This data should be presented in a simple and visually compelling way that allows customers to view and easily compare usage over time.[5] Disaggregated data, such as that presented by Apogee, can be included to help customers better understand where energy usage occurs in the home.

Connect data to savings

The ultimate goal of an energy portal, regardless of its features, is to encourage the customer to save energy and money. Lowering energy costs is the primary motivation for consumers to care about usage data, a fact that rings true for customers across a variety of demographics.[6] For example, many low-income customers use their smartphones to access mobile applications that help them manage their household budget. They're also looking for apps that provide information about energy-efficiency programs and make it easier for them to enroll in such offerings.[7] For this reason, the design of the portal should most prominently feature all elements related to budgeting, including the ability to set goals and receive alerts.

For example, the portal landing page could feature a small energy-usage graph in the upper left quarter of the screen and options to expand the image for more information. The remaining three-quarters of the page could be dedicated to bill payment and budgeting features. These components should be presented in a simple format, using large colorful buttons and straightforward terminology. Finally, customers should have the option to select their preferred communication channel—including e-mail, text, or both—for receiving budgeting alerts. The Reliant Energy portal alerts are a good example of this functionality.

Additionally, a best-practice portal should include energy-saving tips and links to incentives, rebates, and rate options based on a customer's energy-usage and billing history. These features should also be presented in a simple format—such as those in the WattzOn app or the PGE portal—but displayed less prominently than the bill-pay option and the budgeting goals and alerts section of the platform. For example, one of the calls to action in the main budgeting section of the portal landing page could invite customers to learn how to save more money. Then, a link to a second tabbed page in the portal could offer strategies to save based on usage style, modeled after the PGE portal example highlighted above.

Expand functionality to target early adopters

Providing a quick and easy way for customers to pay their bill will keep them coming back to the site—at least on a monthly basis. A best-practice energy portal should get customers to stay on the site by including optional features such as social gaming, smart thermostat mobile apps, solar panel options, and electric vehicle visualization. These features may appeal to a smaller segment of early-adopter customers, but they can help utilities appear active in competitive emerging markets. And though these features may appear optional now, they will likely be much more mainstream in coming years, since the market for home energy automation is projected to grow exponentially.[8] Any energy portal that fails to include these features will be quickly outpaced by offerings from companies such as Google, Comcast, Lowe's, and other large, competitive players.

Expand accessibility across communication channels

In addition to these functionality considerations, it's essential to make the portal available on a variety of

communication channels, including smartphone apps, and to design the portal with mobile functionality and features. Research shows that mobile consumption of content is increasing dramatically across all demographics. In fact, users now spend more than half of their time on the Internet connected through a mobile device—12 percent on tablets and 39 percent on smartphones.[9]

Push relevant content to customers

The last component of a best-practice portal is the ability to push data to customers rather than expecting them to log in to view their information. Studies indicate that most customers spend fewer than six minutes per year thinking about energy, making it unlikely that the majority of users will log in to energy-usage portals without a compelling reason to do so.[10] Billing and usage alerts as well as weather-related data are examples of useful information that customers would be interested in having pushed out to them. Apogee's new Weather Insights app is successfully engaging customers with information they're already seeking. According to a press release from the company, "The newly released website application not only shows the weather forecast for any area but also the estimated daily energy use and costs to heat or cool a home in that area."[11]

Moving forward with smart meter portals

Following the massive investment that utilities have made in smart meters, engaging customers in the data with effective energy-usage portals is essential. Our framework for designing these portals can help utilities connect customers to their usage data and deliver other relevant information, including details about rates and renewables, incentives, and energy-efficiency programs.

The key to customer engagement in smart meter data is presenting this information effectively by using portals that are compelling, actionable, and available to people on the communications channels they prefer to use. The industry is moving toward the development of effective portals—as the examples in this report illustrate—but we still have a long way to go to create the ideal, best-practice portal.

Notes

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