

Reforming the Energy Vision (REV)
Working Group I: Customer Engagement

Staff Report on the Work of the
Customer Engagement Committee

July 8, 2014

This report is a summary of barriers identified by the Consumer Engagement Committee (CEC), and information received by Staff from the participants of the CEC. This is not a consensus document. Not all the CEC participants agreed that each of the barriers identified by the CEC are barriers nor have the summaries of effective customer engagement been vetted with the entire CEC.

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Customer Engagement Committee(CEC)

Executive Summary

The Customer Engagement Committee (CEC) is comprised of 158 individuals from 90 organizations, Attachment 1. CEC members were organized into the following groups: Utilities, Energy Service Companies (ESCOs), Government, Large Customers, Commercial Customers, and Other. The Other category had considerably more representatives with approximately 50 members, and was represented by a myriad of interests ranging from non-profit research institutions; energy, demand response and smart grid trade associations; energy efficiency providers; environmental advocates; aggregators; technology providers; solar providers; behavioral science experts; and, real estate boards and companies. The CEC co-convenors are LuAnn Scherer-DPS, Alana Daly Mikhalevsky-Central Hudson, and John Williams-NYSERDA.

The objective of the CEC, which was developed by the participants, is to ***“identify barriers to participation by all customer groups in the new markets and opportunities created by the REV initiative, and to identify and recommend solutions where appropriate.”***

To date the CEC has convened seven conference calls with all CEC participants following an in-person meeting at the REV Symposium on May 12, 2014. CEC first identified barriers to customer engagement by affinity group which prompted more targeted discussions surrounding the importance of those barriers. A sample of topics covered were time of use (TOU) rate structures (Attachment 2 is a Staff Summary of existing Voluntary TOU rates), best practices for customer engagement including on-bill financing, and data availability and security. In addition to the weekly calls, Staff identified a subset of these targeted issues and met with individual committee members to discuss topics such as data access, community/municipal choice aggregation (CCA/MCA), the business model of energy aggregators, and customer segmentation and marketing. Topics discussed in the targeted meetings were then brought up to the larger group for discussion in order to develop an overview of the issues facing customer engagement.

This is not a consensus document. For example, many of the barriers identified by one CEC member received push back by other members. This Report attempts to capture the

comments and discussions of the CEC regarding customer engagement over the last several weeks.

Barriers to Customer Engagement

Currently the vast majority of residential and small commercial customers lack the products, technology, and incentives to actively and fully participate in energy markets and to take control of their monthly bills. Even some large commercial customers that take service under Mandatory Hourly Pricing (MHP) are disengaged with their energy usage, and resigned to consider electricity-related expenditures as a cost of doing business instead of as an opportunity to save money by reducing and/or altering their usage patterns and considering alternative sources of electricity. The CEC has identified nearly one hundred barriers to customer engagement (Attachment 3).¹

The Absence of Markets and Technologies

The majority of the barriers related to access and availability- are due to underdeveloped markets for various Distributed Energy Resource (DER) technologies and products. CEC members state that various enabling technologies and markets are currently underdeveloped. CEC members also cite a lack of commercial availability for many energy efficiency and distributed generation products, as well as the lack of fuel and required inputs for such products. One identified barrier over which the Commission has control is the utility companies' risk aversion, which generally leads to slower adoption of new technologies.

Absence of customer knowledge and awareness

A major barrier to customer engagement is a simple lack of awareness, knowledge, and understanding on the part of the customer. While informing customers of their options and the availability of products and services has typically been the responsibility of the providers of those products, various committee members assert that customer outreach and education should be the job of all market participants, including utilities, ESCOs, and the Department of Public Service.

Some CEC members state that energy and bill savings are not a priority for customers. Others contend that while bill savings are always a priority, it is necessary to understand and

¹ There is a difference of opinion among CEC members regarding the extent to which some of the identified items are barriers to customer engagement, as well as which barriers are most critical.

consider other customer expectations, preferences, and priorities as well. Efforts to dig deeper into customer preferences and expectations are frustrated by a multi-segmented diverse population of customers with myriad goals and values. Even if the DSPP and third parties are able to offer customers products to help manage the customers' energy use, customers' willingness to allow outside control of their energy use is currently unknown.

Some committee members are concerned that customers are not purchasing existing energy efficiency and distributed generation assets and products. Customers may be reluctant to invest because they are uninformed or unaware of the available options and don't consider the potential long-run cost savings. Customers may also be uncomfortable with owning and operating the assets and the potential privacy issues regarding their equipment and data, or otherwise are discouraged by the upfront costs of the technologies. Even sophisticated developers that understand the benefits of acquiring DER and have the means to install the necessary technology complain that there is a lack of available expertise to help customers evaluate, design, and install technology, leaving customers on their own to design and implement projects. The process is further complicated by the lengthy siting and approval processes for some DER.

Billing and Settlement Barriers

Many committee members concur that the current billing and payment process for ESCOs is overly restrictive. Some committee members complain that billing is difficult because the utility tariffs are themselves complicated. A common concern is that the commonly used "Rate-Ready" utility-consolidated billing system is inadequate because it limits the number and type of products that third parties can offer to customers. A "bill ready" utility-consolidated billing system would accommodate a wider range of products. ESCO-consolidated billing could accommodate virtually any product, including expanded on-bill financing options for products other than those currently offered by NYSERDA.

CEC members also suggest that a major barrier to ESCOs being able to offer electricity supply service is the lack of transparency in utility electricity supply pricing. Another complaint is that deferral and reconciliation of forecast market prices in later months further complicates the ability of ESCOs to compete with utility supply on price. Finally, the committee members

note that the supply pricing methods vary from utility to utility, and that there is no central location where consumers can obtain data regarding the “all in” post-adjustment and surcharge prices for all utilities in the state.

Competition Barriers

There are a number of barriers which impede the ability of ESCOs to successfully compete for residential and small commercial customers. First, participants assert that some of the rules for retail access are often different in each utility service territory, because the rules are often determined within individual utility rate cases. Some committee members stated that competition among ESCOs normally operating in various service territories would be simpler if the retail access rules were standardized across the State. Second, committee members assert that ESCOs are not currently held to minimum standards for their products, and some companies appear to be relying on uninformed or unwary consumers as a mainstay of their business model. They argue that requiring ESCOs to qualify and offer products and services that are not available under utility default service would increase the value of third party supply and decrease customer complaints about abusive business practices. Third, with no clear definition of roles, and no coordination between market participants, essential services like customer outreach and education get passed over because no single entity wants to take responsibility. Finally, participants note that the Commission has not yet established a definition of an “energy-related value-added service,” leading to regulatory uncertainty.

Data and Privacy Barriers

Many participants highlight the absence of sufficient data regarding electricity usage patterns due to New York’s lack of installed AMI. CEC members comment that the rollout of AMI and the data it generates is necessary for ESCOs and other vendors to develop and market energy-related value-added services to customers, and to facilitate broad customer adoption of DER. Some committee members also comment that additional data, such as ICAP tags and past historic usage is also required.

Some stated that relying on customers to know their utility account number is a barrier for ESCOs to acquire customers because most customers do not know their account numbers off-hand, and must wait until their next bill to find it. Others note that while additional access to

customer data may be necessary for more and better energy-related value-added services to become available on the market, customer privacy and data must also be protected.

It is noteworthy that not all committee members advocated for wide scale deployment of AMI and some identified engagement tools that do not rely on interval data.

Barriers to Customer Participation in Demand Response

Most of the comments related to demand response are complaints about the current NYISO-controlled demand response programs. Since most utilities, excluding Con Edison, do not offer their own demand response programs, customers interested in participating in demand response must participate through the NYISO. This is identified as a particular barrier to participation by large customers outside of Con Edison's service territory. CEC members note that most demand response programs are focused on reliability and that there are more opportunities for demand response outside of bulk market operations. Some committee members comment that not only are the demand response programs themselves flawed, but the permitting and environmental regulations for generators used to supply demand response are onerous, complex, and that the rules promulgated by various regulatory authorities are not properly aligned. A final barrier identified is that demand response programs should be designed to accommodate both customers who purchase and install advanced visibility and control technology to monitor and change their energy use, and those customers that wish to participate without the use of such technology.

Barriers to Customer Installation of Distributed Generation

Many of the comments regarding barriers to installation of distributed generation have to do with the Standby Rates which most large DG-owning customers are charged. When a customer installs a DG unit with nameplate generation capacity of larger than 15% of the customer's peak demand, the customer is subject to standby rate. CEC members state that this is a barrier to customers installing larger DG units. CEC members further complain that the contract demand charge based on the sum of all peak demands for each building under the Campus Standby tariff is another barrier to adoption.²

² The Campus Standby tariff is currently in effect in the Con Edison service territory. A customer taking service under the Campus Standby tariff connects CHP generation units located on their premises with nameplate

Several other issues raised are in regard to distributed generation. First, CEC participants assert that the net metering rules favor customers taking full service from the utility versus from an ESCO due to the ESCO's inability to receive and issue net generation credits for the supply-related portion of the net metered customer's bill. Second, CEC participants posit that being labeled as an "electric corporation" for selling excess generated energy to other customers is a barrier to purchasing and installing DG. Third, some committee members claim that there is confusion over the definition of efficiency in regard to qualifying for various exemptions as a high efficiency generating unit. Fourth, committee members claim that a long and costly interconnection process acts as a barrier to greater penetration of DG. Fifth, committee members note that there is a lack of uniform codes and regulations for solar panels across the state. Finally, committee members complain that the Ancillary Services and Demand Response that DG can provide are currently under-valued, or not valued at all, in many service territories.

Barriers arising from Incentives and Disincentives

Split incentives between landlord and renter constitute a major barrier to customer engagement for customers in non-owner occupied buildings. In buildings where residents are metered individually and billed by the utility, the renter has an incentive to install energy efficiency or DG measures to help control their energy bills, but also has a disincentive to do so because they may incur all of the costs but not gain all of the benefits of any such actions if they move away. On the other hand, since landlords do not pay the energy bills, there is no incentive for them to install energy-efficient fixtures or technologies at their own cost. In buildings that are "master metered" but tenants are unmetered, the opposite split incentives exist. In this circumstance, tenants do not pay for the electricity they consume, and have little incentive to reduce or shift usage to off-peak times. There are approximately 400,000 un-metered customers in New York City alone. While the root cause of the lack of incentive for un-metered customers may not be entirely under Commission control, committee members note that policies to promote enabling technology, such as the Modlet pilot program currently available in the Con Edison service territory, can help control load from un-metered customers and are within the purview of

capacity between 2 MW and 20 MW to the Company's High Tension system, and takes Standby service at two or more buildings on their premises, one of which must take service at Low Tension. For more information regarding the Campus Standby tariff see Con Edison's tariff leaves, General Rule 20.2.1(B)(8), and the Commission's October 18, 2012 Order in Case 11-E-0299.

the Commission. This is different than the key findings where we say: More work needs to be done in this area. We should consider meeting with the various Public Housing Authorities in the state to discuss implementation of submetering for unmetered tenants. Similarly, incentives for installing energy efficiency should consider including provisions for metering or submetering of residents.

There are also several barriers related to current utility practices. First, committee members complain that utility tariffs are complex and unclear, which complicates cost-benefit analyses performed for customers to decide whether to go forward with energy-related projects. Second, committee members note that the current customer service quality mechanisms do not properly incentivize utilities to engage with customers concerning energy usage and management. Third, committee members posit that the revenue decoupling mechanism (RDM) applicable to electric utilities in New York reduces any incentive for or against implementing system efficiency measures, since the RDM guarantees the utilities a set amount of revenue regardless of sales. Finally, committee members note that the current practice of levying surcharges such as the system benefits charge and the renewable portfolio standard on an energy-only basis without regard to capacity, provides a perverse disincentive for customers to engage in peak-shifting and demand response activities.

There are various barriers arising from currently existing incentive programs offered through NYSERDA and other State and Federal agencies. CEC members comment that long-term incentive programs for engaging in energy efficiency and demand response should be established to go alongside the current practice of mostly one-time rebate programs. CEC members note that many of the NYSERDA incentive programs are complicated by various regulatory requirements which make participating more difficult for customers. CEC members also posit that the economics of some desired technologies are undesirable without additional financial incentives and suggested that additional funds need to be made available to help incentivize customers to purchase and install EE and DG devices and products.

Physical and Financial Barriers

Comments regarding physical and financial barriers generally fit into three categories: siting barriers, customer financial barriers, and utility financial barriers. New York City presents

several unique barriers to DG penetration. CEC members cite a lack of space and other siting barriers as a major concern. These issues are compounded for renters who do not own the building and may not be allowed to access their building's roof or install DG. Even if the space is available, siting DG in New York City is even more difficult than elsewhere in the State due to additional pollution and noise attenuation control requirements. CEC members note that, especially in New York City, the cost of real estate dwarfs any price signals or potential financial gains from building DG.

There are a number of financial barriers which the customer must overcome when installing energy efficiency measures or DG. First, many customers are unsure of how long they will stay in their residence. Customers may not participate if the payback period for installing EE or DG equipment is greater than the length of time the customer is planning to remain in the residence. This concern is especially salient for renters. Second, buying into the new energy markets including advanced energy use control technology may be cost-prohibitive for low-income customers.

There are several barriers related to utility financial issues. CEC members state that in general, utilities focus on transmission and distribution capital expenditure projects over more customer-oriented projects and expenditures. Finally, there is concern over fair and just cost allocation and recovery for costs related to new technologies, pilot programs, and other costs incurred to implement the changes to the utility industry envisioned in the REV proceeding.

The General Absence of Time of Use Rates

A number of barriers are related to the minimal participation of customers in Time-of-Use (TOU) rates and pricing. CEC members note that on and off-peak usage data needs to be communicated to any applicable electricity supplier for customers who are already on TOU rates, as usage that differs from the class average load pattern for non-TOU customers can impact the ESCO's settlement with the NYISO. CEC members further comment that ESCOs need the time-differentiated metering in order to offer time-based supply products to customers. Other committee members note that TOU rates, as they are currently designed, are not favorable to low-usage customers because of a relatively high monthly customer charge which must be overcome to accomplish bill savings. CEC members comment that TOU pricing currently only places usage into two periods, on-peak and off-peak, and that a higher degree of differentiation would give clearer price signals to customers to change their usage. Finally, CEC members

complain that there is a stigma against landlords offering non-traditional rate structures to their tenants due to the concern that such rates may be unfair to tenants.

Barriers Summary

There were several major themes among all of the barriers identified by the CEC. First, there is a lack of consistency among the State and local agencies involved in the electricity business (such as NYSERDA and the myriad environmental regulators) as well as the various utilities, leading to a checkerboard of different rules, regulations, and opportunities across the state. This lack of consistency makes participating in different service territories difficult. Second, the markets for DER technologies and the products and services they provide to the electricity grid are for the most part currently underdeveloped. The lack of penetration and proper pricing makes purchasing and installing DG complicated and expensive, and makes the prospects of recovering that investment more risky. Third, DG owners and developers face considerable financial and regulatory hurdles when designing their systems. There are a number of lengthy, complicated, and potentially expensive processes which DG owners must overcome including siting, emissions permitting, and interconnection with the utility grid. Fourth, complex and opaque utility documentation of tariffs, surcharges, and electric supply pricing makes analysis and comparison of supply price difficult. Benefit-cost analyses required by DG developers, estimation of bill savings by making use of DER or customer usage changes, and ESCO competition versus the utility basic service price are all complicated by difficult to understand documents and information from the utility. Fifth, the NYISO management of demand response and ancillary service markets and the lack of alternatives to the NYISO markets discourages customers from providing DR and ancillary services. Customers complained that the NYISO rules for participating in these markets change too often, that the products are not priced according to their value to the grid, and that customers only have the choice to participate or not in the NYISO markets because utilities generally don't offer alternative markets or programs within their service territories. Finally, the needs and expectations of customers are generally unknown and the duty of educating and engaging customers is shared among many committee members. It remains unclear what customers do and do not understand regarding their energy usage and utility bills, their preferences and

expectations when they do engage in programs and activities that modify their energy use, and their willingness to give up control of their appliances and data for the purposes of a smarter and more responsive grid. Furthermore, it is unclear which stakeholders are responsible for educating customers, whether it is the sole job of a single party or spread amongst many.

Effective Customer Engagement

Since May 12, 2014, the CEC has identified numerous reports and documents that discuss successful methods of customer engagement. In addition, the Staff team met with numerous experts in the field of customer engagement and behavior, including representatives from the Rocky Mountain Institute. Summaries of some of the document review and meetings follow.

Peter Cappers and Michael Sullivan

Following the May 22 Energy Symposium Department staff met with Peter Cappers from the Lawrence Berkeley National Laboratory's Electricity and Policy Group and Michael J. Sullivan, Senior Vice President of Nexant, who has spent his career analyzing utility customer behavior and preferences. Mr. Sullivan recommended that the Department implement a statewide energy campaign with a unifying message, similar to the California Flex Your Power Program. Flex Your Power was California's statewide energy efficiency marketing and outreach campaign. Initiated in 2001, Flex Your Power was a partnership of California's utilities, residents, businesses, institutions, government agencies and nonprofit organizations working to save energy. The campaign included a comprehensive website, an electronic newsletter and blog, and educational materials. Mr. Sullivan also recommended that we rigorously test different approaches to customer engagement and couple an emotional message with a financial message. Mr. Sullivan also spoke of Nevada Powers "Play, Learn and Win" program, a multi platform dynamic pricing trial that motivated 3,000 Nevada residents to play and learn by working educational materials into game clues delivered via email campaigns, print mail, a card deck and a mobile app.

SmartPower

On June 16, 2014 Staff met with Brian Keene, who is the President of SmartPower, a non-profit organization dedicated to promoting clean renewable energy and energy efficiency through community-based campaigns. Using a political campaign-style approach, SmartPower

mobilizes people to take actions as part of a “community” rather than acting alone. Mr. Keene advocates for a door-to-door, friend-to-friend marketing model to raise awareness, and states that peer pressure and competition bring issues into the public domain. He advocates working through local community organizations that are already in place such as faith-based organizations, schools, Rotary Clubs, Chambers of Commerce, large employers, etc. He spoke of the RI Energy Challenge and the “Find Your Four” campaign.

*RI Energy Challenge and the “Find Your Four” campaign*³

In May 2013, SmartPower joined in a partnership with National Grid and Opower to create a high visibility, community-based, on-the-ground campaign to increase energy efficiency. The *Rhode Island Energy Challenge: Find Your Four* campaign resulted in a dynamic program that engaged thousands of Rhode Islanders to change their energy use behaviors by taking four energy actions in their home. SmartPower partnered with local municipalities, faith-based organizations, businesses and non-profit groups to achieve a 5% household participation rate. On March 18, 2014, National Grid named the town of North Smithfield —Rhode Island’s Energy Champion” after they became the first community to successfully complete the Rhode Island Energy Challenge. In addition to the designation as an “Energy Champion”, North Smithfield received a check for \$7500 from National Grid to help the community invest in further energy savings and three street signs, to be posted around the town on key roads heading into North Smithfield, that proclaim them Rhode Island Energy Champions. National Grid’s survey of Challenge participants found that 75% indicated they were more aware of their energy use after participating in the Challenge. National Grid credits the Rhode Island Energy Challenge for significant increase in participation and savings in their home energy audit program, *EnergyWise*. They experienced over 3,000 more inquiries for *EnergyWise* compared to the prior year which result energy saving of 215% of their target MW savings goal.

³ <http://www.smartpower.org/our-work/the-rhode-island-energy-challenge-findyourfourcom>;
http://www.nationalgridus.com/aboutus/a3-1_news2.asp?document=8324

Solarize Connecticut⁴

In the spring of 2012, the Clean Energy Finance and Investment Authority (CEFIA), launched the Solarize Connecticut program in partnership with SmartPower. Working closely with municipal leaders, CEFIA and SmartPower initiated campaigns in four pilot communities in Connecticut: Durham, Fairfield, Portland and Westport. The goal of this collaboration was to advance the adoption of residential solar PV systems by lowering acquisition costs and making solar more affordable to residents using the Solarize model. The Solarize Connecticut program consists of 1) tiered group buying discounts, resulting in a continuous drop in pricing as more customers sign up; 2) outreach provided by participating towns and volunteers; 3) one competitively-selected pre-approved solar installer; and 4) an end date for the offer, motivating customers to take action. In every Solarize community, residential solar installations more than doubled during the 20 weeks of the program, compared to the previous seven years. Additional results include:

- More than 2.2 MW of new solar PV capacity deployed across the four communities, close to triple what was installed in those towns during the preceding seven years;
- Approximately 280 signed contracts for solar, representing at least a doubling in the number of homeowners “going solar” in all towns, with Durham quintupling its solar ownership;
- Dramatically reduced costs for solar PV, with all towns achieving the lowest tier of pricing and cumulative savings of over \$2.2 million. The average Solarize customer saved \$7,500 off their system as compared to current market rates;
- Compelling drops in customer acquisition costs, at less than \$90/kW from a direct program spend perspective and \$135/kW all-in costs – significantly less than both the industry average of \$670/kW (per U.S. Department of Energy analyses) and local installers’ estimates at \$250-\$500/kW.

The program success was attributed to the following:

- 1) **Community-sponsored program with municipal buy-in and support.** Town and local volunteers take responsibility for community

⁴ <http://solarizect.com/about-solarize/solarize-ct/>; and Attachment 4.

outreach, giving residents confidence to move forward with the selected installer.

- 2) **Recruitment of local solar champions.** People who have solar are the most passionate and best spokespeople for solar, and the Solarize program created a great opportunity for them to reach out to friends and neighbors by designating them –Solar Ambassadors.”
- 3) **Below market pricing.** It is clear to residents that they are getting a once in a lifetime bargain. Return on investment is more aggressive and solar is accessible to more homeowners when installers can pass savings on to their customers.
- 4) **Visibility.** Lawn signs, banners, events, workshops, social media, and traditional media promote the program, ensuring no one fails to hear about the opportunity.
- 5) **End date.** The campaign end date ensures that prospective customers take action. The last week of the Solarize campaigns across the four pilot communities saw a 40% uptake in sign ups.

Although Solarize Connecticut Phase 1 exceeded expectations with approximately 280 homeowners signing contracts to install solar, one goal of the program was to learn more about participants’ experiences in order to improve the effectiveness of the initiative. At the conclusion of the campaign, customers who signed contracts, as well as prospective customers who had expressed interest but did not sign a contract, were surveyed using quantitative methods. Additional information was gained through quantitative surveys of volunteers and town leaders, and qualitative surveys of Solarize installers. The survey findings and conclusions included:

- Newspaper articles, kick off Solarize workshops, and yard signs were the most effective way the program was communicated to both customers and prospects, along with hearing about the program from a friend or solar customer. Town support for the program was also cited as an important element.
- The Solarize model reduced the time required to make a decision regarding installing solar. Previous research indicated that the average decision time was

approximately 1-2 years. Through the first phase of the Solarize Connecticut pilot, almost 20% of customers who signed contracts had not considered solar before the program.

Clean Energy Solution Inc. (from RMI)⁵

A September 2010 paper, prepared by Clean Energy Solution Inc., discussed strategies for effective marketing of community-based energy-efficiency programming. This paper was written from the point of view of the Local Energy Alliance (LEA) that administers the program and is responsible for the program's targets and goals. The paper states that messaging is critical and should be customized for different groups of end users, since each customer group faces unique challenges in achieving energy efficiency. The paper recommends the use of focus groups before launching an outreach program. Across the board, saving money is a much more attractive message than reducing GHG or other environmental impacts, and specific steps or programs are more motivating than providing general information. The paper identified effective marketing techniques by sector:

- residential - competition or “keeping up with your neighbors” is effective.
- commercial - testimonials from similar building owners are motivating.
- larger customers - require more direct and customized outreach strategies.

The paper also identified three critical partnerships to consider when developing a LEA.

- 1) Community Partners - Partner with organizations that can assist with marketing, technical upgrade work, and workforce development. These organizations include contractors and trade groups, big box retailers, universities and community colleges, neighborhood organizations, affinity nonprofit groups, economic development organizations, and business organizations such as the Chamber of Commerce or Rotary Club.
- 2) Utilities - Partnership with the local electric, gas, and water utilities can assist with joint marketing efforts, outreach to high usage customers, bill stuffers, on-bill financing, and co-branding.
- 3) Local Government - Use local government to generate trust and co-branding. Also, the local government may help with financing, web presence, staffing, and demonstration projects.

⁵ <http://cleanenergysol.com/insights/>

The paper identified a number of strategies for effective marketing such as neighborhood canvassing, creating a website and updating it frequently with useful information, blogs, social networks, peer-to-peer comparisons, email lists, contests and games, partnering with affinity groups or contractors, and the use of the “green lease” concept for renters. The Green Lease allows for the landlord to increase rent on the property if any upgrades are done that lead to measurable energy saving on the tenant’s utility bills. These contracts are structured so that there is cost sharing between the owner and tenant, and so that the tenant’s rent does not increase more than the projected savings on the tenant’s energy bills. In addition, the lease can specify the tenant’s responsibility to attend a resident efficiency training session to learn about behaviors that will maintain the energy efficiency captured through the upgrade. A municipality can encourage the adoption of green leases by certifying rental properties that participate in energy conservation programs. This creates a market for renters looking for efficient properties.

Smartgrid.gov⁶

The American Recovery and Reinvestment Act of 2009 (Recovery Act) provided the U.S. Department of Energy with \$4.5 billion to modernize the electric power grid and implement Title XIII of the Energy Independence and Security Act of 2007. DOE summarized the lessons learned from the various projects in the area of customer engagement.

- Use Focus Groups - Focus groups, surveys and other tools are vital components for test marketing terms and concepts that will attract customer interest and engage them to participate in the rate being offered. For budget planning purposes, this should be considered as part of program implementation.
- Test Your Messages - Validate the messaging that comes out of focus groups with other test marketing efforts across a variety of customer segments and circumstances to develop the most effective messaging for your new time-based rate recruitment campaign.

⁶ https://smartgrid.gov/recovery_act/consumer_behavior_studies/lessons_learned; summaries are directly from website.

- Communication Skills are Important - Customers have limited opportunity to interact with their utility. Make sure all employees who will play that role are informed, committed, and enabled to making that experience a positive one for the customer. One way to do this is by focusing on communications skills as much as technical skills when hiring or recruiting people to fill these positions.
- Plan for Time to Adjust Messaging - In addition to substantial internal planning and test marketing, make sure sufficient time and resources are allocated between soft launch and hard launch of the recruitment effort to adjust the messaging and other details accordingly based on feedback.
- Set Realistic Recruitment Expectations - Before determining if a new rate or product offering is to be paired with a form of enabling technology, utilities could benefit from spending time understanding potential customer concerns with that technology and identifying the available pool of participants who would qualify for and be willing to accept such technology so that realistic expectations for recruitment can be set ahead of time.
- Avoid Confusing Messages - Without better education material, more effective communications methods, including consideration of how customers prefer to receive information, and more consistent messaging strategies, the chances for confusion and misunderstandings are very high. This can undermine success of the study as well as other customer-facing activities and programs.
- Notification on price changes - Ensure notification processes include options for customers to dynamically select the frequency of delivery (e.g., individual messages, daily summary, etc.) and specific method(s) for delivery (e.g., e-mail, text, phone, etc.)
- Developing Tests and Protocols - When developing internal tests and protocols for major process steps, logistics and procedures, make sure to include plans for addressing impacts on one system due to problems that arise in another (e.g., billing system needs due to communication system problems).
- Friends and Family Participation- Having “Friends and Family” of the utility (e.g., company executives, CBS program managers, and staff) “participate” in the study and readily report back issues and problems frequently is helpful in

alleviating them before they happen and/or resolve them faster when they do occur.

- Use Your Own Experience and Data - If customers are provided with enabling technologies which will be paired with time-based rate or other programs, careful planning for acquiring, provisioning, managing, and supporting this equipment is paramount. Plans cannot be based on vendor claims and marketing materials alone, they must be tempered with actual utility experiences. This often means that processes need to be tested and documented under circumstances similar to those expected when the technologies are actually made available to customers. Otherwise, the risk of major hurdles is high.

Simple Energy

Through relevant messaging and engaging software services, Simple Energy helps consumers make sense of their energy usage, save more and enjoy doing so. Simple Energy provided a series of documents for our consideration. They have found through their work with utilities that rewards like redeemable points for gift cards or prizes, are most effective in driving behavior.

Case Study: San Diego Energy Challenge

In an effort to demonstrate value from smart grid implementations to residential customers, in June 2012 San Diego Gas & Electric (SDG&E) partnered with Simple Energy to deliver the San Diego Energy Challenge to over 500,000 households (Attachment 5). Together they have encouraged over 3,900 people to participate in the Energy Challenge on behalf of 39 middle schools who are competing for a generous \$10,000 grand prize. The program leveraged the Simple Energy Customer Engagement Platform to engage customers and deliver measurable and verifiable energy efficiency, demand side management, and smart grid results through cutting edge behavioral science techniques.

On November 13th, Pacific Beach Middle School, a participating school in the Energy Challenge held an event to help SDG&E promote the final weeks of the school competition. Attendees watched presentations about energy efficiency and learned about electric vehicles, even getting to see one of SDG&E's electric vehicles in action. The event was a great success

and the students enjoyed learning more about the different ways they can make a difference in their energy consumption.

The stated goal of the San Diego Energy Challenge was behavioral energy efficiency and peak load reduction results. Simple Energy's online engagement platform delivered targeted messaging to participants, encouraged individual comparison and competition through gamification, and rewarded customers for energy savings. Customers also had the option to participate on behalf of a school, encouraging community-based collaboration and competition.

Key findings included:

- Engaged customers have an ongoing dialogue with their utility company that enables key business outcomes
- Virtual rewards such as badges, status on a leaderboard, and social recognition are a low cost way to further incentivize desired actions from customers
- Resulted in 6.5% sustained energy conservation through behavioral energy efficiency

J.D. Power – Five Emerging Practices to Engage with Utility Customers

On May 7, 2014 J.D. Power hosted a webinar on Five Emerging Practices for Engaging Customers – Insights from J.D. Power's Customer Engagement Research. J.D. Power identified the following five emerging customer engagement practices: (Attachment 6)

1. Develop a Mobile Interface - With 54% of smartphone owners accessing utility information on the utility website, the lack of an optimized mobile solution is a missed opportunity to service customers
2. Reach out proactively - Utilities with proactive notification programs have seen significant enrollments as the programs are launched and promoted
3. Be A Good Corporate Citizen – community events allow for high visibility
4. Leverage Social Media
5. Engage customers through programs and services

The slides provided the following summary/recap:

- Engagement leads to higher satisfaction
- Engagement isn't easy—it takes continual and consistent communications of the right message at the right time using the right channel

- Customers expect utilities to be where they are – so use the emerging channels and devices to help get more customers engaged
- Keep the customer at the center
 - Understand the drivers that lead to a better customer experience
 - Ensure your organization understands the systems and processes necessary to align business strategy and customer expectations and needs

Worcester Smart Grid Pilot

National Grid effectively utilized customer input to design its Smart Energy Solutions Program pilot in Worcester, MA. In September 2011 National Grid hosted an Appreciative Inquiry Community Summit, called Green2Growth, which brought together 300 stakeholders, including customers, students, vendors, and utility personnel, to develop implementable ideas, deployment strategies, and an outreach and education plan for a smartgrid pilot program. The summit introduced a “listen, test, and learn” approach to customer engagement that enables the Company to better understand customer motivations.⁷ The main lessons from this initiative are that customers need to feel empowered rather than forced to participate in demand side management programs. They need to be educated about their options and ultimately have a say in the development of these programs. This will increase initial customer buy-in and overall participation and aid in the development of a successful and effective program.

National Grid’s outreach and education strategy included a pre-launch effort which centered on gaining customer trust, employing local community partners as ambassadors, repeating important messages, using multiple communication channels using segmentation as a guide, equipping customer facing employees, interns, and vendors with knowledge and instilling a sense of positivity and excitement. Once launched, Grid engaged customers as partners, continued regular communications and shared success stories with pilot participants to demonstrate peer engagement, ease of use, and tangible results.

OPOWER

To help determine what utility customers want and to understand how to deliver effective engagement tools to customers around the world, Opower sponsored a global research study to

⁷ National Grid. (2011). Worcester Smart Grid Pilot Customer Outreach and Education Plan.

understand what's on the minds of the utility customers, and to assess how customer needs and wants vary from one region to the next (Attachment 7). Opower found that that there is striking similarity in the desires and expectations of utility customers across the globe. As a result of this study OPower identified the following –Five Universal Truths about Utility Customers”.

1. Utilities are not meeting customer expectations. There is a large gap between expectations and what's delivered.
2. Everyone wants lower bills. Customers are looking for ways to save.
3. People look to their utilities first for energy information. While customers don't like their utilities, they look to them for guidance on how to save.
4. Customers value personalized energy insights. Customers want advice via their choice of channel.
5. Everyone wants to know how they measure up. Customers everywhere have a strong gut reaction to hearing how they compare to others. A behavioral science experiment conducted by Professor Robert Cialdini in 2003 found that the most effective technique for getting people to save energy is telling them how they compare to others.

NYSERDA/Green Jobs-Green New York

Green Jobs - Green New York⁸ (GJGNY) program activities administered by the New York State Energy Research and Development Authority (NYSERDA) include an aggregation pilot, with the goal of increasing energy efficiency improvements in the residential sector. Under the aggregation pilot, which was started in 2012, a collection of eligible homeowners is brought to the GJGNY program by a Constituency-based Organization (CBO) under contract with NYSERDA to perform customer outreach services. The collections of homeowners have agreed in advance to use the same contractor or contractor team to perform audits and retrofit work. Customer aggregation can provide benefits to the homeowner, such as lower costs through standardized pricing and a simplified participation process. Aggregation can also benefit contractors by reducing costs associated with travel and marketing, allowing more efficient use

⁸ The Green Jobs-Green New York Act of 2009, signed into law on October 9, 2009, directs NYSERDA to establish a revolving loan fund to finance energy efficiency retrofits; pursue the feasibility of other innovative financing mechanisms; provide opportunities for constituency-based organizations to help connect community members to the program; establish standards for energy audits and energy retrofit contractors; establish a schedule of fees for energy audits; and enter into contracts to provide employment and training services to support the program.

of crews and bulk material purchases and providing a ready audience of potential leads. This process can also benefit the targeted community by creating employment for local residents. There are currently two active aggregation pilots under GJGNY, in Long Island – the PowerUPCommunities Program⁹, and Buffalo – the Friends and Neighbors Program¹⁰. To date, aggregation efforts have resulted in the completion of 102 energy efficiency projects.

Environmental Defense Fund

Representatives of the Environmental Defense Fund (EDF) provided input on ways to engage households that contribute to the load but do not pay energy bills. Because these citizens do not receive a bill, they have no incentives to change their behavior or invest in energy efficiency/DER. According to EDF, many of these people live in public housing (NYCHA) and likely have old, inefficient appliances, in particular air conditioners. Being able to engage these households can have a large impact on load but will not work with current time varying pricing. However, there are ways to engage them with other time varying mechanisms. For example:

- a. Critical peak rebate with control technology. The idea is that the household is provided with a modlet that can remotely control the temperature of their A/C. If the household successfully participates in this program (for example, by not unplugging the modlet), they will receive a check. The size of the check must be large enough to compensate the household for decreased welfare due to hotter temperatures. Furthermore, since the household does not have the added benefit of a decreased bill (such as would be the case if the household actually paid for energy), the check will likely have to be larger than what would be paid to a bill paying customer to provide this extra incentive to participate. Another extra incentive could be the waiving of their “A/C registration” fee that is common in public housing (this is about a \$25 lump sum payment that is levied at the beginning of the summer for the right to have an A/C).
- b. A/C Clunkers Exchange with modlet: A program could be implemented whereby non-bill-paying customers turn in their old, inefficient A/C in exchange for a new

⁹ <http://powerupcommunities.com/>

¹⁰ <http://www.pushgreenwny.org/friends-and-neighbors-program>

A/C with improved functioning and with a built-in non-separable modlet. The condition for the exchange is that their A/C will be controlled by the utility at times of peak demand. Because this modlet is not removable, this will help to shave peak demand.

The EDF also recommends that there be a variety of rate offerings. Because of the diverse customer base, a one-size-fits-all rate will not be optimal. Rates can vary in the following way:

- a. By timing of the peak window - For example, having some individuals face a noon-5pm peak while others face a 5-11pm peak will still help the aggregate customer load drop even if each household's own change in load does not reflect the overall needs to diminish system peak.
- b. Peak price - If one of the peak windows is less attractive, it can be paired with a lower peak rate to attract more adoption.
- c. Critical peak nature - Some rates could provide a critical peak while others do not.
- d. Staggering of critical peak days - Participation in direct load control programs and critical peak days tends to decrease after the first day in a row, as response fatigue sets in. Thus, making sure that each household does not have to face two or more critical peak days in a row is important to maintaining high levels of participation. Implementing a schedule of Monday and Thursday for some and Tuesday and Friday for others will help reduce the aggregate peak load while minimizing welfare impacts and maximizing participation/conservation actions.
- e. Rebates vs. prices - Critical peaks could be paired with prices or rebates.
- f. Feebates - In this case, the household faces both a rebate and a price. The household faces higher prices if they increase consumption during peak time, but if they decrease consumption during peak time relative to a baseline they receive a rebate. Feebates can also be paired with modlets, providing a rebate for participation in the modlet or a price for non-participation.

EDF also recommends consideration of bill protection measures/"shadow billing", that will help ensure that household's bills will not increase from switching to time varying rates for the first few months. With shadow billing, a household receives a bill demonstrating what the bill would have been under time varying rates. If that bill is higher than what it would have been

with flat rates, then they only have to pay the flat rate shadow price. If the bill is lower than the shadow price, they pay the time varying rate bill. This allows them to benefit from changing their behavior to off-peak times while protecting them from sharp bill increases at least in the first few months of adoption. These measures can help to engage customers since they will be less worried about increasing payments. Finally, EDF recommends any option that offers a rebate. EDF stated, in an e-mail to Staff, that it is demonstrated that people respond more to prices than to rebates, however people will respond more to rebates than to no incentive at all, so it may be a viable option for those who otherwise would not participate. EDF did not provide any studies to substantiate this statement.

The Tolerable Planet

The Tolerable Planet offered examples of customer engagement case studies and innovative products that could be created to engage customers. For example, a utility-hosted online “marketplace” could allow consumers a single location to shop for products and services from multiple third parties. Enabling such a marketplace could be advanced by establishing an open platform wherein independent entities could offer products and services supported by transaction fees, thereby providing a funding source to support the operation and technology of this kind of exchange. The Tolerable Planet offered a case study of Central Maine Power’s (CMP) Advanced Meter Infrastructure (AMI) project (Attachment 8). When CMP deployed AMI its intent was not just to meet operational efficiency mandates but also to better engage customers. As a result, the company developed strategies to connect with customers leading up to and following the deployment. Prior to installing smart meters CMP implemented a repeatable and measurable engagement and outreach strategy. This process involved understanding and addressing specific customer concerns about data privacy, home security, and perceived health effects, as well as establishing a flexible, responsive and customer-focused command center to quickly address any concerns.

After smart meters were installed CMP rolled out Energy Manager, the core of its engagement efforts. CMP’s online tool enables customers to monitor their electricity consumption at any time and use the information available to inform their electricity usage choices. In particular, Energy Manager provides customers with: their electricity consumption by

year, month, day and hour; comparisons to similar households; and energy actions and tips that can be used to better manage use. In addition to Energy Manager, this data is presented in a number of ways, including: a Price Comparison Report that compares costs from standard and time of use (TOU) pricing programs and suggests the most cost effective programs, based on historical usage; the option to download data in the Green Button format, an industry-led effort based on a common technical standard; or a service-layer product called Power House that engages 7th and 8th grade students in math and science curriculum using their family's household electricity usage data. Based on the considerable enrollment in Energy Manager and interest in related products, CMP sees the potential for a large percentage of its customers to become better engaged. In July 2013, CMP had 5,000 customers enrolled to access the Energy Manager Web portal. In less than a year that number grew to 24,000 with as many as 175 customers enrolling daily. Since December 2013, CMP has seen more than 7,000 visits to its "Download My Data" page where Green Button data is accessed. Since the end of January 2014, CMP has seen more than 1,500 visits to the Price Comparison report, with nearly 500 downloads of the report.

California PUC

A White Paper prepared by the staff of the Policy & Planning Division (PPD) of the California Public Utilities Commission (CPUC) identified customer's participation as critical to achieving emissions reductions goals (Attachment 9). The CPUC identified two primary actions that the utilities and regulators should consider: prioritize customer engagement through program designs and service offerings using analysis of customer needs and motivations; and, expand the service offerings of the utility to include services that will facilitate and automate the customers' energy management opportunities. The CPUC found that utilities and the energy community are conducting and refining their customer research efforts through the development of customer segments in order to better understand exactly what customers' attitudes and behaviors are when it comes to customer-oriented programs. Customer segmentation is the effort of assembling customers into distinct groups with similar characteristics, behaviors, or attitudes. Utilities began using segmentation methods in the 1980s to more effectively market their energy efficiency programs. According to the White Paper, utilities have gravitated from demographic classifications, which groups customers according to their similar race, gender, or age to "lifestyle" segmentation, which focuses more on grouping customers based on similarities in

their decision-making frameworks. This segmentation approach provides richer information not only on *what* a customer did, but more importantly *why*.

The White Paper, reviewed three segmentation efforts. In April 2009, Opinion Dynamics presented its report on a statewide ethnographic study and segmentation project conducted as an extension of their evaluation work on utility energy efficiency programs. In addition to behavioral energy usage traits and attitudes, the customers were divided into segments based on demographic information on age, household size, geographic location, race, education and any other characteristics that researchers could find that overlapped within the customer groups. Opinion Dynamics found five distinct segments or personalities, each of which demonstrated significant opportunities and challenges to adopting energy efficient behaviors based on their attitudes, knowledge or financial limitations. J.D. Power recently conducted a national segmentation study entitled, “2011 Smart Energy Consumer Behavioral Segmentation Study” in order to segment the electric residential customer population according to both their current and future energy usage behavior patterns. The study identified six distinct segments of customers based on their energy activities and the degree of control they indicated they would undertake to manage energy cost and environmental impact. The customers ranged from those who outright rejected smart energy management behaviors and engagement with the utility (“Indifferent”), to customers willing to embrace both new technology and new behaviors (“Innovator”). Finally, each of the California investor-owned utilities has also conducted extensive market segmentation studies of their own. The White Paper highlight PG&E’s segmentation study, which was based on a number of factors, with the primary two factors being the actual engagement levels of the customers and their utility requirements. PG&E defines “engagement” as any interaction with the utility from calls for outage assistance to participation in low income bill assistance programs and participation in energy efficiency rebate programs. As opposed to a survey-based approach, PG&E segmentation efforts use actual customer data, enabling segment definitions to be created and connected to each individual customer. After analyzing its customers on multiple dimensions, PG&E’s customers fell into four segments: High Requirements/High Engagement, High Requirements/Low Engagement, Low Requirements/High Engagement, and Low

Requirements/Low Engagement. Further refining the four segments with lifestyle data, eleven personalities or “personas” emerged. Each quadrant has one major persona in it.

Some industry experts believe segmentation is unnecessary as there is a disconnect between what customers say and what they do.

The New York State Distribution Utilities

The New York State distribution utilities provided a document which described their customer engagement successes (Attachment 10). In order to better understand the methods of customer engagement utilized by the utilities the CEC asked the utilities a series of questions. The questions and the utility responses are summarized below.

1. Please provide a list and brief explanation of your efforts to identify which individual customers are engaged in electricity management, usage and purchase (e.g. shopping) decisions. (E.g. compile and maintain lists of customers who have inquired about these issues, customers who have inquired about these issues, customers who have visited utility webpages containing this information, etc.) For each item on your list, please explain how your efforts differ among service classifications, and explain when you began that effort.

The DUG (Distribution Utility Group comprised of: Central Hudson, Consolidated Edison, Orange & Rockland, National Grid, & NYSEG/RG&E) all offer programs that encourage customers to manage their energy usage: energy efficiency programs, Time of Use rates, Retail Access, and Hourly Pricing Programs for large demand customers. The utilities actively promote customer participation in energy efficiency programs (marketing examples include cable television spots, radio and newspaper ads, websites, website banner ads, social media, email, direct conversations with customers, and bill inserts). The programs are differentiated between residential and nonresidential. Most utilities currently have a program which provides customers with their past energy consumption and encourages them to reduce energy usage (examples include OPower Reports, Green Button, and/or personalized on-line audit tools). For energy efficiency programs, the utilities become aware of customers who are engaged in electricity reduction management by the application for energy efficiency program incentives. Generally, the utilities do not actively track those customers’ usage except as required as

part of the measurement and verification process. Customers may elect to install a demand response system behind the meter (i.e. Johnson Controls systems) and if the customer requests the utilities will provide a relay device that sends “pulses” to their equipment. Utilities are not actively tracking this. For example, Con Edison offers demand response programs for all customer classes, using incentives to engage customers. These demand response programs encourage customers to become aware of which appliances or building functions contribute most to their energy usage and actively participate in alleviating system critical situations. Retail Access offers residential and commercial customers the ability to manage their supply costs by shopping for their energy supplier. Certain utilities offer customers comparison options such as calculators and shopping tools found on utility websites. These tools generally allow residential customers to compare bill amounts that include marketer charges (from their selected ESC) to bill amounts for the same periods for gas/electric usage that their utility would have charged for the same service. All utilities have specialized call centers or dedicated customer service representatives that address customer inquiries related to energy efficiency programs.

2. Do you measure the extent to which individual customers are engaged in energy management, usage and purchase decisions? If so, please explain how you do so and what you currently do with this information, how your answer may differ according to service classification and when you began such measurement.

All utilities have data regarding participation in the various programs (i.e., customer counts). Some utility EE programs have specific participation targets, which drives activities. Other programs do not have specific targets, but are tracked regularly solely for informational purposes. EEPS has been measured since the program began in 2007. Historical data for other programs varies based on each utility customer information system’s data availability. Other than learning about individual customer activities which are associated with specific energy efficiency incentive applications, we do not measure

participation in energy management through energy efficiency programming. Large industrial and commercial customers are most actively engaged through utility account representatives who handle energy usage management with the customer, including participation in energy efficiency programs.

3. Regarding questions 1 and 2, please explain what you expect to do differently in the next 6 months, 12 months and 5 years.

The utilities see several opportunities for action in short, intermediate and long terms. These are not necessarily program specific, but different aspects can be applied to each program where it is a good fit. The utilities believe that the results of the REV proceeding will drive future planning.

- Research: Customer research and analysis of data to segment and target customers for products and services. For example:
 - National Grid has been collecting customer usage data from distributed energy resource solutions (including EV charging stations in Upstate New York) in market or in pilot to analyze and evaluate actual customer behavior. This will be used to inform and shape future solution development to drive greater customer engagement. (Begin within next 6 months and will be an ongoing source of customer knowledge)
- Preference Management: Solicit and capture customer interest in communications and products (bill alerts, efficiency messaging, outage alerts).
- Customized Service: Offer customers the ability to define their relationship (or engagement) with their utility through products and services and preference management:
 - Optional pricing plans (pre-pay, TOU Supply, price comparison tools)
 - Billing and Payment (pick your billing date, eBill, AutoPay)
 - Energy Usage information. Potential examples include on-line usage portals, email and text alerts, mobile app push notifications, and Green Button
 - Communications (bill alerts, outage alerts, targeted promotions)
 - Utilization of Smart Meters

- Potentially integrate additional web tools to assist customers in understanding and managing their energy usage.
4. What do you believe are the near term opportunities for improving customer engagement in DER?

Below is a list of potential near term opportunities to improve customer engagement in DER. Whatever programs are undertaken should ensure that the outreach and education is targeted to the appropriate audiences across the State to ensure that all utilities are performing in a consistent fashion.

Customer Research & Analysis

There could be opportunities to do a quantitative and qualitative assessment of customer needs, interest, priorities, and preferences. In conjunction, an assessment of current participation in efficiency, supply markets, alternative energy products will assist in identifying customer segments (early adopters) and support/barriers to entry.

Customer Marketing

Utilities may have the ability to build on successful marketing efforts from energy efficiency programs, low-income programs, etc. Many customers see their utility as their trusted energy advisor looking for insight and expertise. By providing additional outreach and education to our customers we can enhance their ability to make informed decisions with regard to their energy purchases. Potential methods include increasing emphasis on trade ally networks, enhancing digital access and information, providing targeted marketing based on customer profile, and continuing traditional means as well. Whenever possible, DERs should be marketed as a package of energy solutions, such as energy efficiency together with demand response.

Energy Data Management Tools

Energy data management tools like the Green Button, that standardize the format of customer utility consumption data, and Portfolio Manager, that allows for benchmarking

against peers, can help customers better analyze and understand their consumption patterns, and possibly opportunities for managing their energy use.

Financing Opportunities

Access to financing had been identified as a barrier to market acceptance of some clean energy technologies. By informing customers of opportunities like those available through On Bill Recovery, the New York Green Bank and program specific opportunities, customers are more able to move from awareness of clean energy opportunities to execution and implementation of DER projects. CEC participants have identified the length of the time to obtain on-bill financing through NYSERDA stating that it takes over 4 months. Central Hudson, in collaboration with NYSERDA and the subcontractors, are working to cut the lag time from four to two months by having the subcontractor, rather than the customer, complete the on bill financing forms.

Time-of-use Rates/Critical Peak Pricing Rebates

Time-of-use rates, including rates for electric vehicles, provide opportunities for customers to respond to prices and lower their energy bills by adjusting their behaviors to consume energy during off-peak hours. Critical peak pricing rebates where customers lower their usage during critical periods may also help improve customer engagement in DER.

Expansion of Behavioral Programs

There is potential opportunity to expand existing energy efficiency behavioral programs to all customers, transitioning traditional utility-customer relationships to relationships that empower customers, provide platforms to build the demand for energy services, and foster dynamic energy services economies. The utility's assets—a trusted brand, customer energy data, grid topology data, and the potential ability to monetize demand reduction could be leveraged to help jump start the market for home energy automation with tools like smart thermostats and the establishment of inexpensive residential demand response programs.

Targeted DSM Potential

The utilities are at different stages in the deployment of targeted DSM. Some utilities have successfully implemented a program while other utilities are investigating the

potential of targeted DSM pilot program in areas of the service territory in need of capital investment as a result of accelerated growth in peak demand.

5. Are you aware of any studies of what DER related services customers in different service classifications want, and what they'd be willing to pay for and, if so, please provide.

Generally there are not many studies available. National Grid is in the process of completing a marketing research study to provide customer needs input into Innovative Solution Development. The objective of this study is to better understand what customers need and value in the context of new and future energy solutions for home, business, and transportation.

Since 2010, O&R has participated in the NYSERDA Geographic Balance Program to encourage the installation of large scale Photovoltaic (PV) in selected areas of the service territory. The Company will continue its efforts with NYSERDA to install PV in areas where peak demand reduction is needed to help offset capital investment.

6. Are you aware of examples of successful customer engagement efforts (possibly through EEPs or DR Programs) and, if so, can you please provide.

National Grid

National Grid has been working with customer for many years in New York, Massachusetts and Rhode Island and has observed that customer engagement and customer satisfaction are driven by:

- More robust product offerings;
- Increased levels of customer communications;
- Simplified processes from beginning to end (e.g., automated incentives).

National Grid's EEPs Electric and Gas Residential Building Practices and Demonstration Programs have been successful in engaging customers in management of their home energy consumption. These programs utilize a social marketing campaign, with

normative messaging techniques, to encourage responsible energy behavior and choices. The campaign provides home energy reports (HERs) to households in National Grid-NY's combined gas and electric service territories in upstate New York. The HERs provide recipients with feedback on their household energy use including a comparison of the recipient household's energy usage with that of neighboring homes, thereby introducing a subtle form of peer pressure (often referred to as "social norming") among households to achieve energy savings. The recent program impact evaluation found that participating customers not only consumed less electricity and natural gas, but were also more likely to participate in other energy efficiency programs offered by National Grid when compared to the control group.

Customer Targeting, Profiling , Modeling - National Grid uses extensive internal and external data including attributes, attitudes, transactional and interactions to form the foundation of how we connect with customers, including understanding who has or has not engaged in electricity management. For the past year or so, we have utilized our extensive customer data to inform how we reach and communicate/educate customers about electricity management. In leveraging the data, we develop both residential and commercial customer profiles which help us more effectively reach customers. These profiles help to depict groups/segments of customers and provide key insights such as which Energy Efficiency (EE) or other products they may be interested in, what are the best channels to reach them and what messages would more likely resonate with them. Beyond Profiling, a further and more sophisticated use of Grid's extensive data is utilizing it more analytically to develop propensity models. Propensity models use data mining technology to provide a quantified estimate of an individual customer's anticipated likelihood to participate in a specific solution, such as an EE program. From these models, Grid is able to produce a ranked list of customers based on their likelihood to adopt an EE program. In order to develop these models for a specific EE program, a significant number of data must be obtained and therefore time is needed to acquire it. Grid has undertaken developing these models for the NY EE programs, providing it with an understanding of who is more likely to participate in a particular program. During this past year, National Grid developed propensity models for both EE eligible Residential and Commercial customers. For the most part, the methodology used to develop the

models were similar for both Residential and Commercial customers. For residential customers Grid was able to use the target market identified through the propensity model to develop more robust customer profiles for a specific EE target market, such as the Refrigerator Recycling Program. These robust profiles were then leveraged to better market to customers. Results of this very targeted approach is under review however in other states Grid has seen this approach achieve up to double digit increases in customer response and participation thereby making its marketing more effective and efficient.

Transactional Emails - An average of 500,000 emails are automatically sent each month in Upstate New York after customers transact with Grid on the web. Within the email, Grid can promote Energy Efficiency and energy management tips, as well as drive customers to the National Grid Energy Efficiency landing pages where they can learn more about how to better manage their energy. Therefore, utilizing an email list is another avenue to understand who engages regarding energy management.

National Grid Website - National Grid's website is a key area of engagement for its customers and one which it utilizes to track energy engagement. Grid has the ability to pull web data to identify online customer engagement with specific content/pages related to electricity management, usage data and purchase decisions. Grid plans to utilize this information for targeted communications and identifying opportunities to increase engagement via, for example, content recommendations and improved site design.

ESCO Calculator - Upstate New York only - An example of an energy management tool that provides another window to residential customers' engagement is Grid's ESCO Calculator. National Grid provides all UNY customers with information needed for them to proactively manage their electricity costs by enabling them to choose their energy supplier. This tool allows customers to compare bill amounts that include marketer charges (from a customer's selected ESCO) to bill amounts for the same periods for gas / electric usage that National Grid would have issued if we were purchasing energy on the customer's behalf.

National Grid spends significant effort on measuring the effectiveness of how it engages customers on EE programs. Historically, it has done much of the measurement through

manual tracking however it recently invested in an automation system, Gridforce, that enables it to track mid-sized and large commercial customers from a response to through participation. Currently, this system is not being utilized for residential and small business customers as the programs for these segments are heavily dependent on vendor partners, who currently do not have access to the system. In addition to tracking and measuring results, it also benchmarks them against best-in-class results, regardless of industry.

Central Hudson

An example of customer engagement through EE is Central Hudson's Home Energy Report Program. This is an approved PSC program through 2015. Central Hudson sends 110,000 Home Energy reports to residential customers (both electric and dual fuel) to make them aware of their usage as compared to similar homes in their general area, and encourage them to take some type of action. Action includes, as easy as hanging clothes to dry to participating in an EE program to receive a rebate. Other CH programs such as CH's Residential Electric and Gas HVAC and Commercial Gas HVAC are driven by Trade Allies. 54% of the customers that participate in these programs have heard about them through their Trade Allies. Keeping the Trade Allies engaged in turn keeps customers engaged. All CH programs have some sort of customer engagement. All of these programs have marketing components that work to educate the customer and provide information on what they can do to take control of their usage.

Solar Integration - For four years, CH has hosted an Annual Solar Summit for installers, which have in turn, helped installers to engage homeowners and streamline the process of interconnection of DERs by better understanding the utility needs. CH also maintains a website dedicated to DG: <http://www.centralhudson.com/dg/>, which includes links to key information as well as the ability to apply for interconnection and review the status of an application via the web. CH's call center includes a subset of employees specifically trained to answer billing-related DG questions, and its Engineering staff is available to walk installers and customers through the process. CH's engagement has resulted in 1,878 DER systems installed and 327 pending which represents nearly 2% of its system peak load.

Smart Meter Pilot - Central Hudson worked with NYSERDA and Consert on smart meter/load control project. The objective was to demonstrate the ability to manage customers load in order to reduce demand during peak or emergency events. Consert's Virtual Peak Plant (VPP) was used for the project. VPP allows both the customer and the utility, through a web portal, the ability to control the usage of central air conditioners, electric water heater, and pool pumps. A total of 240 residential customers that met the air conditioning requirement were targeted for the project and the final participation was 57 customers. A total of 16 test events were conducted spanning from 1-8 hours in duration on days when the anticipated high temperature was in excess of 90 degrees. During the events the average reduction per customer ranged from 0.52-1.76 kW. Overall this project confirmed the ability of a utility to control and reduce customer demand through the modification of equipment temperature settings or by turning off the equipment. However there was limited type of load that could be curtailed; mainly central air conditioners. The northeast does not have a high saturation of central air conditionings as compared to other regions. Existing homes in the area likely use window air conditioning for the limited amount of cooling required. Therefore it becomes difficult to realize a significant decrease in demand if the type of load that utility is controlling is not prevalent. In addition, the overall outcome of the program was hampered by limited participation within the targeted customer group. Customers were reluctant to participate unless there was an incentive or reward to justify their time investment and sacrifice. Customers had the option to "opt out" of an event and at times the rate was above 50%. While Consert's utility web portal was relatively easy to use to schedule load curtailment events there were issues with customer learning curves associated with their programmable thermostats. There were also equipment problems, both customers equipment not up to code and failure of cellular modem interface installed in the meter.

NYSEG/RG&E

NYSEG and RG&E have seen active participation in its EEPS programs. NYSEG and RG&E operate a full suite of Energy Efficiency programs which successfully engage customers, supporting trade allies and ESCOs. A brief summary of those engagement

efforts, including the YES portfolio advertising campaign and the current Silver Creek Targeted Demand Side Management Pilot Program, follows.

Residential and Commercial Rebate, Recycling and Direct Install Programs - For these programs, the Companies implement an integrated marketing plan engaging both customers and trade allies as appropriate. Individual vehicles may include but are not limited to direct mail, collateral materials, the Companies' Web sites, news releases, events and individual and small group outreach. Each program uses a portion or all of the following engagement activities, often in concert with the program implementation vendor. Specific engagement vehicles used to market to targeted audiences that have produced successful results:

- Email – Mailings to customers and specific trade allies to stimulate interest in the program.
- Webinars – General and specific sessions held to promote the programs and engage customers and trade allies.
- Collateral – Program forms, brochures, and applications will be presented in a collective folder during customer visits and are found online.
- Events and outreach – Program workshops/seminars to promote program awareness and dialogue on program features and processes. Attendance at various trade shows used to educate audiences, network with participants and stimulate participation.
- Advertising
- YES Campaign – general energy efficiency program advertising to promote overall program awareness (see more information below).
- Web site – nyseg.com and rge.com contain information to inform customers and trade allies about program features and updates. All program forms are available for download from the Companies' Web sites.
- Press releases – program successes will be promoted through this medium as appropriate.
- Trade Ally Network (CIRP only) – organized periodic communications and program updates provided to the network participants.
- Outreach Staff – both Company Marketing personnel and individual program (vendor) personnel provide customer engagement for these programs.

- In some programs, free energy efficiency measures are used to engage customers with an initial opportunity for energy savings, which often leads to greater customer engagement.
- Leveraged engagement from third parties is often used as in the Refrigerator Freezer Recycling Program's partnership with Sears to engage customers at the point of sale.
- Fulfillment centers for low and no cost energy savings measures are being introduced to engage online customers.
- Program cross promotion (between energy efficiency programs) is also used successfully to more fully engage customers as participants.

Block Bidding Program - The Block Bidding Program is a unique program, utilizing a somewhat different engagement strategy which engages not only customers, but ESCOs and related service providers who aggregate customer projects. For this energy efficiency program, large customers and aggregators (offering combined project size of at least 100 MWH) are targeted through web site notifications, press releases, email, and individual phone and in person contact, during an open Request for Proposal (RFP) period. The engagement of third party aggregators (ESCOs, suppliers, trade allies) is essential to meet the larger project thresholds needed for this program.

Silver Creek Targeted Demand Side Management Pilot Program - The Village of Silver Creek is located on the shores of Lake Erie, within the Town of Hanover, Chautauqua County, New York, in an area of Western New York known as the Concord Grape Belt. NYSEG would like to relieve some of the demand on two circuits in this area by helping customers use energy more effectively. This Silver Creek Targeted Demand Side Management Pilot Program is the proposed solution using the Energy Efficiency Portfolio Standard (EEPS) nonresidential programs Small Business Direct Install (primary), Commercial and Industrial Rebate Program (secondary), and residential Refrigerator and Freezer Recycling Program (RFRP) (tertiary) offering various measures that will reduce summer peak load. This project will take place during June, July and August 2014.

Small Business Direct Install Program Solution - Currently the Companies offer up to 70% customer incentives for measures in this program. This initiative will target customers who are within the designated capacity constraint areas with 100% customer incentives. Targeted outreach and customer communications, including a letter and telephone calls to the customers on affected circuits and outreach to public officials; will be provided. .

Commercial and Industrial Rebate Program Solution (CIRP) - The CIRP solution targets non-residential customers within the designated capacity constraint areas with an average demand of over 110 KW. The CIRP program administrator will make personal calls to the potential customer base that fall into this demand range on these two circuits, explaining the program opportunity and urging them to respond quickly to realize the opportunity. While demand savings are difficult to quantify until a customer identifies a project scope and engineers the solution for implementation the companies assume any projects that become realized will support the future demand reduction on these circuits.

Refrigerator and Freezer Recycling Program Solution (RFRP) - The RFRP solution targets residential customers on Silver Creek circuits 178 and 179 with direct mail –Spring Cleaning” RFRP advertising and current rebate levels.

YES Campaign - An advertising campaign consisting of television, billboards, online, newspaper and social media, the NYSEG and RGE –Your Energy Savings” (YES) campaign kicked off mid-March, 2014. YES uses a visual approach, driving people to a website to learn more about the programs offered. The Social Media campaign began in April with the introduction of the –Say YES to Energy Savings” page. The page gives energy saving tips each week as well as testimonials from customers who have participated in the program. Currently the page has 140+ followers.

Con Edison

Con Edison has energy efficiency, demand response and demand management programs with successful customer engagements at a number of levels from large commercial buildings to single family residential. A key marketing strategy is the creation and brand support of the Con Edison Green Team. The Green Team is a trusted group of employees, implementation contractors, market partners and outreach coordinators who bring energy efficiency, demand response and demand management solutions to

customers. This brand and solution strategy is supported with advertising via traditional media such as television, radio and print as well as non-traditional digital media. At the end of 2013, the Green Team enjoyed a 76% awareness and favorability among commercial customers. Con Edison also utilizes social media platforms, its own website and content management to reach key customers. Internally, Con Edison leverages customer bill inserts, a customer newsletter, call center management and employee communications, such as the intranet and video screens, to promote programs. Community outreach is also a key strategy to create ambassadors and third-party endorsements for programs. The message is disseminated through the Con Edison public affairs group as well outreach coordinators reaching out to business improvement districts, business organizations, community boards and enterprise zones.

Orange & Rockland

O&R has experienced examples of successful customer engagement involving EEPS programs. For example, several customers have participated in multiple programs, receiving rebates for lighting, motors, HVAC and custom-designed projects. One customer who was skeptical of payback estimated in the Small Business Direct Install Program decided to participate at only one of his store locations. After the estimated savings was realized in the first few months, he decided to enroll all of his store locations and is very satisfied. O&R's C&I Existing Program has served several large customers including a large pharmaceutical and large shopping mall. These successful relationships have been the driver in exceeding the C&I Program annual goal in 2013 and 2014. In addition, for the C&I Program over 50% of the total project participation is attributable to customers who have already participated in the program. This repeat participation is a direct result of the relationship that the O&R Green Team has developed with its customers as their energy efficiency expert.

Large Customer Engagement - O&R has maintained relationships with its Service Classification 9 and 22 customers (> 1000 KW peak demand) and since the inception of the EEPS Proceeding has begun to engage these customers in their energy efficiency planning and shopping efforts. It's C&I Existing Buildings Program utilizes onsite

meetings with facility managers and decision makers to provide customers with the resources and tools necessary to participate in its energy efficiency program and shopping for alternate suppliers. In addition, as a result of successful interactions with the SC9/22 customers, these on-site meetings have expanded to include customers with peak demands greater than 300 KW where utility experts address customer issues ranging from service reliability, tariff rates, energy efficiency and retail choice. These meetings have driven participation in the C&I program and provide the opportunity for valuable interaction to engage customers in meeting all their energy efficiency and shopping needs.

Mass Market Green Team EEPS Marketing Campaign - O&R has partnered with Con Edison to launch the Green Team marketing campaign to educate customers on the benefits of investing in energy efficiency and how the O&R Green Team can help. Radio spots, cablevision commercials, print advertising in newspapers, the ORU website, along with internet advertising highlight the benefits of investing in energy efficient technologies and drive customers to O&R's website to learn more about our direct install, rebate and recycling programs, and an on-line audit tool.

Hourly Data for Mandatory Hourly Priced (MHP) Customers - O&R offers a Customer Care (CC) tool for its MHP customers to access hourly usage data. Customers are given a login and password and download their usage using the software so that they can better manage their usage and shop for a competitive supply price.

On-Line Audit Tool O&R provides customers with an easy to use on-line audit tool that links historic customer billing data with actual local weather data to disaggregate customers' usage into easy to read end-use graphs. The resulting audit report highlights how their energy dollars are spent and provides no cost/low cost recommendations along with longer term cost-effective investments to lower their bills. O&R has begun to use the data obtained from the on-line surveys to develop targeted marketing lists to send email blasts that market specific programs that they may be eligible to participate in. For example, a targeted email blast was sent to customers that responded during the audit that they had a second refrigerator. The email blast highlighted \$50 rebate and the economic/environmental benefits of our refrigerator recycling program. While O&R does not have a mechanism for tracking reactions to email blasts, they report seeing an increase in calls to its toll-free hotline for a couple of days following the blast.

On-Line Shopping Tool - O&R provides customers with an easy to use on-line shopping tool that allows customers to shop for an alternate electric and gas supplier. Customers anonymously request offers from alternate suppliers who provide both fixed and variable pricing offers. Customers then follow up with the offer that best fits their needs and contact their selected alternate supplier to facilitate enrollment in retail choice.

Outreach Events - O&R attends home shows, fairs, school events and various community meetings to promote energy efficiency, provide customers with tools and resources to better manage their energy use whether shopping for an alternate supplier or seeking participation in O&R suite of programs. For example, O&R is a member of the Rockland Business Association, Rockland Economic Development Corporation, and the Orange County Partnership.

Concerns for Customer Privacy and Data Security

Data availability is a critical component in effective energy management of mass market, commercial and large industrial customers. Data, or the lack of data, is consistently identified as a barrier. The REV staff report asked –“What rules should govern access to customer data?” In June Staff requested the following from CED participants:

- Please describe the customer usage data you believe you need for specific services you expect to provide. For example, if you have aggregated historic usage data for all customers in a zip code, what products and services would you provide? Or, if you have customer specific monthly usage data, what products and services would you provide. Please identify those products and services by the customer type you would expect to serve.
- For each data type, please describe how the data would be used and protected.
- For each data type, please describe the platform or methodology you believe is appropriate for transferring or accessing the data.

MISSION::DATA

MISSION::DATA, a coalition of 20 technology companies delivering consumer-focused energy services and solutions, believes consumers should have convenient, electronic access to

the best available information about their own electricity use in order to support innovative new services, such as: —no-touch” energy audits; end use, device-specific recommendations to significantly reduce energy use; recommendations for and sizing of solar installations ; and, frictionless verification of efficiency or demand response curtailments. MISSION::DATA actively supports two priorities: (1) consumers’ access to their electricity usage and cost data through the implementation of the industry-led Green Button Connect standard, and (2) direct access to smart meter usage data in real-time through the Home/Business Area Network (HAN/BAN).

BlocPower

BlocPower is a third party financier of energy efficiency and clean energy projects in financially underserved communities. Its ability to provide energy services and the necessary financing associated with energy services is directly tied to its understanding of energy bill payment habits and the characteristics of its target customer. To expand its provision of services, it would need anonymous energy usage and energy bill payment data for commercial and multi-family customers in low & moderate income areas in New York. They would then use the data to enhance its credit model and to extend financing and energy services to more customers in financially underserved areas.

Similarly, a notice issued February 25, 2014 in Case 12-M-0476 asked the following questions related to data availability:

- What specific data might be available to assist ESCOs in developing innovative energy-related value-added services?
- Who currently owns or maintains that data, and what are the barriers to making that data available to ESCOs and other committee members? What are the costs and benefits of removing or reducing those barriers?
- How can this data be made generally available? Are there specific standards and protocols that should be adopted to ensure statewide consistency and ensure customer privacy?

The responses to this request were predictable. Utilities have the data and are responsible for securing it. ESCOs want the data but did not provide details on what types of services they would provide if they had the data.

ESCOs (Summary of responses from several ESCOs)

All usage data currently accessible to a customer should be accessible to the customer's ESCO, at no cost, with customer authorization. Anything less prevents an ESCO from using its market expertise to provide the highest quality service at the lowest cost possible, in both commodity and energy-related value-added services. Through the contractual relationship between a customer and his or her ESCO, the customer has given the ESCO the right to act both on their behalf and for their benefit. Providing ESCOs with access to all of a customer's usage data recognizes that the customer's ESCO may as well be the customer, for the incumbent utility's purposes, in the same way as any other type of agent acts in the place of the principal they serve. Any ESCO found to have misused the customer information, or to have otherwise violated a customer's trust in some manner, should be investigated, and if found to have committed wrongdoing, penalized.^{11 12}

There is no limit to the number and variety of products that may be developed by ESCOs if they are provided with access to the same customer usage data that is currently available directly to their customers. ESCOs in Texas have already begun to show the value of this data as they have been able to develop unique products tailored to individual customers, such as time-of-use rates, free nights and weekends, customer-specific fixed price agreements, and services related to smart appliances and smart thermostats, such as Nest. One ESCO identified the following additional services that could be provided by ESCOs with access to interval data: energy monitoring and management services; battery energy storage solutions for peak shaving; distributive generation and combined heat and power micro cogeneration solutions; demand response participation; microgrid solutions incorporating renewable energy products. Many of the products that competitive innovation brings about, including the specific terms of service between customers and their ESCOs regarding those products, will be considered trade secret and proprietary – it is not only difficult to speculate as to what specific innovations may occur in the future, but many service providers will be hesitant to spell out potential products and business models. Even so, customer usage data is being used in a number of ways already:

¹¹ According to Infinite Energy, this structure has been employed in Texas since its market opened. The Texas requirements for handling customer usage data are delineated in 16 Tex. Admin. Code §25.472.

¹² One ESCO pointed its experience with Smart Meter Texas is that a lag in availability of interval usage is still an issue there.

- Time-of-use and day-of-use plans, which often include free and discounted energy during specified times for residential customers, as well as off-peak pricing for commercial and industrial customers. These programs enable customers to save money by performing energy-intensive activities at different times, redistributing peak demand while keeping their individual energy costs down.
- Bundled protection and warranty plans, which combine energy supply service with appliance, heating, and air conditioning tune-ups and safety inspections. This enables customers to save money on their energy bills by ensuring their homes are as efficient as possible.
- Affiliate and perk programs, already popular in other markets, which pair the provision of energy with other products, benefits, services, and even charitable causes.
- Interval usage data along with location based information such as zip code would allow an ESCO to provide its customers with detailed energy usage reports which compare its usage to that of its neighbors.

Every kind of customer usage data is valuable for an ESCO in its efforts to provide its customers with the highest quality service at the lowest cost possible. All of this data can be used by an ESCO to determine optimal strategies for buying and selling energy. For example, information about the square footage of a customer's home or business, about a customer's heating, ventilation, and air conditioning system, or about a customer's time-of-use patterns helps an ESCO hedge more efficiently on a long-term basis. Currently, customers and their ESCOs are forced either to make do with generic profiles and assumptions, or to construct detailed profiles through an extensive set of questions and answers and an on-site inspection process. Neither of these options is time-and-cost-effective for mass market customers, and neither is as accurate as the customer usage data held by the utility. Access to this data reduces an ESCO's overall risk by allowing it to factor out a great deal of the cost of the bad decisions that can come with insufficient customer usage data. The reduction of risk that comes with this increase in specific, accurate customer usage data translates to lower prices for customers.

The events of the winter of 2013 - 2014 illustrated the value of ESCOs with access to customer usage data. Despite the record low temperatures brought on by the polar vortex, the customer usage data available to ESCOs in Texas and Georgia enabled them to help customers in those states avoid the severe and unnecessary price volatility that New York suffered. At the

time, the variable price of electricity in Texas ranged from 9¢ - 14¢ per kilowatt hour, while prices for natural gas in Georgia ranged from \$0.69 - \$1.17 per therm. But prices in New York climbed as high as 23¢ per kilowatt hour and \$1.22 per therm. This price differential represents the value that customer usage data can provide once ESCOs have access to it. Where ESCOs already had access, prices remained relatively stable during the polar vortex because ESCOs were able to hedge more efficiently, and to do so well in advance of the record cold.

All customer usage data could be protected by the same well-established state and federal standards that ensure the protection of the sensitive customer credit information that ESCOs and other retailers already use. ESCOs can use best practices for compliance with state and federal privacy laws, as derived from their experience in working with each of them on a routine basis, to protect customer usage data and ensure that the privacy rights of New York's customers are protected.

Customer data is traditionally sent by file transfer protocol (FTP) or electronic data interchange (EDI). To the extent customer usage data would be provided by utilities to ESCOs, current processes using FTP and EDI, when complemented by the occasional use of e-mail for especially large or otherwise unique customers, are appropriate for transferring data. This data would be most appropriately accessible through password-protected interfaces similar to those that customers already use to access information. Both methods involve appropriate encryption, nondisclosure agreements, and other protections, as evidenced by the current sharing of basic customer information (monthly usage, rates, payment information) between utilities and ESCOs.

Beyond technical considerations, the platform and methodology for transferring and accessing customer usage data should be designed so that all of a customer's usage data is accessible to the customer's ESCO with customer authorization.

New York Laws and Policy

The New York State Public Service Law (PSL §65(7)) states that “No gas corporation or electric corporation shall sell or offer for sale any list of names of its customers.” The Commission's Uniform Business Practices (UBP) prohibits the transfer of customer data to third parties without expressed customer consent. Under UBP Section 5: Changes in Service

Providers, an ESCO is required to obtain customer authorization to initiate service with an ESCO and for the release of information to an ESCO.

Conversely, ESCOs and other third parties have maintained that the provision only prohibits the transfer of lists for compensation and that the Commission could direct utilities to provide lists to third party suppliers at no cost obviating any violation with the PSL. The Commission has not directed or permitted utilities to share customer data, to committee members other than utility contractors, without expressed customer consent.

Practices in Other States

- Pennsylvania requires Electric Distribution Utilities to provide Eligible Customer Lists, at no cost, to certain suppliers of electricity and/or goods and services who are registered with the PA PUC. The standardized lists, which are updated and provided monthly, contain customer names and addresses (no telephone numbers) with rate and usage information.¹³ Customers may opt-out if they do not want to be on the lists. The suppliers may use the lists to solicit customers in compliance with PA PUC rules regarding advertising and marketing. Suppliers can only release information to third parties after providing notice to the customer with the opportunity to object.
- Texas PUC requires an electric utility to provide a customer's meter data to the customer, the customer's retail electric provider, and other customer-authorized entities that have read-only access.
 - Texas implemented Smart Meter Texas, a shared portal administered by a 3rd party, to allow individuals and authorized committee members, to access and monitor their electricity usage.
- Vermont's Public Service Board allowed Vermont's Energy Efficiency Utilities (EEU) access to customer data. EEUs are under contract with the Board and are obligated to follow specified confidentiality procedures.

¹³ As noted in the Joint Utilities initial comments in Case 12-M-0476 et al., Proceeding on Motion of the Commission to Assess Certain Aspects of the Residential and Small Non-residential Retail Energy Markets in New York State, Order Taking Actions to Improve the Residential and Small Non-residential Retail Access Markets, Notice Seeking Comments (issued February 25, 2014), the release of customers' telephone numbers is addressed in the federal Telephone Consumer Protection Act. The Act prohibits the release of customer cell and home telephone numbers for telephone solicitations unless there is expressed written customer consent. According to the Joint Utilities, the collection of such numbers is essential for customer communications during outages, emergencies and other circumstances with immediate contact needs. Sharing the telephone numbers with ESCOs would raise liability and penalty issues.

- California passed legislation which prohibits utilities from providing customer usage data to third parties without the consent of the customer, with limited exceptions. Those exceptions are when the data is used ~~for~~ system, grid or operational needs, or [in] the implementation of demand response, energy management, or energy efficiency programs,” or ~~as~~ required or permitted under state or federal law or by an order of the” CPUC.
- Colorado adopted privacy rules which balance two interests: (1) protecting the privacy interests of customers; and (2) developing a mechanism where customer-specific data could be provided to local governments, third parties and commercial interests. The rules affirm that, among other things, utilities can share data with contracted agents without first obtaining customer consent.

Access by Customers to Their Own Data

As a result of a federal government challenge to utilities, the ~~–Green Button”~~ initiative was established in January 2012 to provide consumers with simple online access to their energy usage information. Through the ~~–Green Button,”~~¹⁴ a customer can securely download his or her energy usage information in a standardized format and upload it to a third party application.¹⁵ This streamlined access makes it simpler for consumers to engage with third parties offering energy-related value-added services; and helps them understand and take action to manage their energy usage more effectively. In addition, with the voluntary adoption of an industry standard by utilities and other energy-related companies, the Green Button has enabled the development of software applications and other innovative products and services. At least two New York State distribution utilities have agreed to implement the ~~–Green Button.”~~

Similarly some of the distribution utilities have programs that provide customer data to ESCOs at the customer’s request.

- O&R’s eBids shopping tool is modeled after the lending tree platform.
Customers request bids for their electric and gas supply and marketers respond to

¹⁴ <http://energy.gov/data/green-button>

¹⁵ The ~~–Green Button”~~ data standard is based on the Energy Services Provider Interface (ESPI) data standard set by the North American Energy Standards Board (NAESB) in 2011. The standard provides for a common XML format for energy usage data and a data exchange protocol to permit the transmission of information from a utility to a third party with expressed customer consent.

requests within two business days. Marketers receive rate code and usage data so that they can make informed pricing offers. Customers remain anonymous until they elect to release their contact information to the marketer or call directly to sign up. The application allows customers to compare variable priced and fixed priced products to help customers select the offer that best meets their needs. Approximately 3000 customers have requested bids during the first six months of 2014.

- Central Hudson's Market Match is an online service which assists residential and commercial customers who are seeking to purchase gas or electric supply from an ESCO. Customers enter specific information on the Market Match website. Central Hudson shares that information and details of the customer's usage and billing history with qualified ESCOs through a secure website. The marketers who wish to make an offer to serve the customer's account will contact the customer directly to discuss the available offers. Central Hudson only stores 90 days of data on Market Match usage. For the last 90 days 10 residential and 151 non-residential customers have utilized this service.¹⁶

Third Party Access to Customer-specific Data without Customer Authorization

In the absence of real-time access to customer data, the National Energy Marketers Association (NEM) has proposed the implementation of demand response program to increase residential and small commercial customer participation and facilitate additional ESCO offerings. The Retail Demand Response Load Profile proposal would develop load profiles from current usage data which is maintained by the utilities. The ESCO would select the numbers of customers it would need to commit to one or more retail DR load profiles to meet a predetermined level of DR which the customer would agree not to override

Three DR load profiles could be employed: voluntary (non-technology which would involve communications by the ESCO to consumers (texts, phone calls, e-mails) to advise when to adjust thermostats the day prior to an anticipated peak event; voluntary (technology-enabled) which would engage the ESCO and the consumer via a smart thermostat or other technology

¹⁶ <https://inet.cenhud.com/CustomerServicePortal/MarketMatch/MarketMatch.aspx>

with the consumer consenting to the ESCO control to achieve DR savings, subject to a customer override; and, mandatory (technology-enabled) which would enable the ESCO to program a customer's smart thermostat or technology to reach a predetermined level of DR and the customer would agree not to override it.

Community Choice Aggregation

The April 24, 2014 REV Staff Report and Proposal acknowledged that aggregation of customers can increase participation levels by decreasing transaction costs, and increasing opportunities for financing. The REV Staff Report and Proposal also acknowledged that ESCOs are expected to play an active role in aggregating customers. Finally, the REV report recommended that community-based DER projects should be considered.

Community choice aggregation (CCA) is an energy procurement model that enables local governments to pool, or aggregate, the electric and/or gas load of their residents, businesses and institutions in order to purchase electricity and/or gas, on their behalf. CCA was first utilized in the late 1990s in Massachusetts and Ohio where approximately 2.2 million customers are currently being served by CCAs. Many states passed CCA laws as part of electric restructuring legislation. States that have passed CCA laws include California (2002), Illinois (2009), Massachusetts (1997), New Jersey (2003), Ohio (1999), and Rhode Island (1997). There are many reasons that a community may choose to develop a CCA, including the option to purchase more green power and reduce greenhouse gas (GHG) emissions, reduce electricity cost, and procure power from more local sources.

CCA programs are generally initiated by local law and/or referendum. They may be opt-in or opt-out for residents and local businesses, though opt-out programs have been more successful because participation rates are much higher. The most successful CCA programs have an opt-out period before service is started but also generally allow customers to leave the CCA at any time without penalty. In many CCA programs, the only role of the municipality is to negotiate energy prices on behalf of members; distribution utilities and ESCOs continue to distribute electricity and gas, bill customers, and perform customer service functions, consistent with New York's retail access model. However, CCA arrangements can also allow municipalities to take a more active role in the energy market. For example, municipalities may

build municipal-owned generation, support local distributed generation, or promote energy efficiency measures. CCA programs also often allow residents to choose an all-renewable electricity option.

CCA has potential to reduce GHG emissions by increasing the use of renewable energy sources. In May 2010, the Marin Energy Authority (MEA) launched Marin Clean Energy (MCE), the first CCA program to operate in California. At full capacity, MCE is expected to serve 80,000 businesses and stands to reduce Marin County's GHG emissions by 175,000 tons annually by providing a minimum 25% renewable power in the electricity mix they provide to their residential and commercial customers. A 100% renewable option is also available to MEA customers. This compares to just 14% renewable power currently provided by Pacific Gas and Electric (PG&E), the incumbent utility in northern California.

Energy aggregation has some history in New York. The Commission's 2004 Statement of Policy on Further Steps toward Competition in Retail Energy Markets described aggregation as an attractive method to increase the market power of energy consumers and directed Staff to encourage and assist aggregation efforts.¹⁷ There is no requirement that aggregators register with the Department of Public Service and, as such, we are not aware of many active aggregation programs. The Municipal Electric and Gas Alliance (MEGA), a non-profit local development corporation founded in 2000, aggregates the municipal electricity and gas purchases of 29 counties and a number of towns, villages, cities, school districts, and other municipal organizations. MEGA also accepts membership from any individual, business, or non-profit organization within its service area, though it does not actively seek out non-municipal members. MEGA states that it has over one thousand individual participants and asserts that —participants have saved more than \$4.0 million since the program's inception in 1998; over \$3.7 million in electricity alone between April '05 and April '07.” As the representative of municipalities, MEGA conforms to state bidding and procurement requirements. Like many CCA programs, MEGA offers a renewable energy option to all participants.

Another example is the Public Assistance Cooperative for Energy (PACE) program in Western New York. Aggregation of low income gas customers, whose utility bills are paid by their county, was implemented in NFG's service territory many years ago and is in effect today.

¹⁷ Case 00-M-0504, Competitive Markets, Statement of Policy on Further Steps Toward Competition in Retail Energy Markets (issued August 25, 2004).

In this program, the counties aggregate the load of county facilities and direct vouchered customers and issue an RFP. Because the counties are the customer of record and are directly responsible for payment of bills, the participants are not asked to make a choice of provider. This program is also reported to be saving money for participants.

The Commission has promulgated a set of Uniform Business Practices (UBP) which governs the relationships between customers, ESCOs, and utilities.¹⁸ The UBP would not apply directly to municipalities undertaking CCA,¹⁹ but the restrictions that they create would impact the ability of ESCOs and utilities to work with CCA programs. For example, the UBP defines and forbids “slamming” which is defined as “[a] change of a customer to another energy provider without the customer’s authorization”.²⁰ The UBP also establish detailed processes for the transition of a customer to an ESCO.²¹ In an opt-out CCA, customers would be switched to an ESCO without having expressly authorized the switch; ESCOs may worry that would constitute slamming. The UBP also contain provisions on the transfer of customer information and requires express customer consent. Municipalities undertaking CCA programs will need data on the customers in their jurisdiction in order to negotiate with ESCOs, provide proper notifications, and implement agreements. The UBP rules do not allow transfers of data from distribution utilities to municipalities, or any other third parties, without the customer’s consent. UBP rules on transfer of customers and customer information would need to be modified to accommodate the CCA process.

Key Findings

1. Currently the vast majority of residential and small commercial customers lack the products, technology, and incentives to actively and fully participate in energy markets and take control of their monthly bills.
2. A major barrier to customer engagement is a simple lack of awareness, knowledge, and understanding on the part of the customer. While informing customers of their options and the availability of products and services has typically been the responsibility of the providers of those products, various committee members assert that customer outreach

¹⁸ Case 98-M-1343, In the Matter of Retail Access Business Rules, *Uniform Business Practices* (amended June 15, 2012).

¹⁹ The UBP will not directly apply to municipalities because they do not apply to aggregators, only to ESCOs. *Uniform Business Practices* at 6.

²⁰ Id. at 30.

²¹ Id at 23–31.

and education should be the job of all market participants, including utilities, ESCOs, and the Department of Public Service.

3. Some committee members state that energy and bill savings are not a priority for customers. Others contend that while bill savings are always a priority, it is necessary to understand and consider other customer expectations, preferences, and priorities as well. Efforts to dig deeper into customer preferences and expectations are confounded by a multi-segmented diverse population of customers with myriad goals and values. Even if the DSPP and third parties are able to offer customers products to help the customer manage their energy use, customers' willingness to allow outside control of their energy use is currently unknown.
4. Other committee members are concerned that customers are not purchasing existing energy efficiency and distributed generation assets and products. Customers may be reluctant to invest because they are uninformed or unaware of the available options and don't consider the potential long-run cost savings. Customers may also be uncomfortable with owning and operating the assets and the potential privacy issues regarding their equipment and data, or otherwise are discouraged by the upfront costs of the technologies. Even sophisticated developers that understand the benefits of acquiring DER and have the means to install the necessary technology complain that there is a lack of available expertise to help customers evaluate, design, and install technology, leaving customers on their own to design and implement projects. The process is further complicated by the lengthy siting and approval processes for some DER.
5. Many committee members concur that the current billing and payment process for third parties to charge customers through use of utility bills is overly restrictive. Some committee members complain that billing is difficult because the utility tariffs are themselves complicated. A common concern is that the commonly used "rate-ready" utility-consolidated billing system is inadequate because it limits the number and type of products that third committee members can offer to customers. A "bill ready" utility-consolidated billing system would accommodate a wider range of products. In contrast, ESCO-consolidated billing could accommodate virtually any product, including expanded on-bill financing options for products other than those currently offered by NYSERDA.
6. CEC members also suggest that a major barrier to ESCOs being able to offer electricity supply service, with or without energy-related value added services, is the lack of transparency in utility electricity supply pricing. Another complaint is that deferral and reconciliation of forecast market prices in later months further complicates the ability of ESCOs to compete with utility supply on price. Finally, the committee members note that the supply pricing methods vary from utility to utility, and that there is no central location where consumers can obtain data regarding the "all in" post-adjustment and surcharge prices for all utilities in the state.
7. There are a number of barriers which impede the ability of ESCOs to successfully compete for residential and small commercial customers. First, participants assert that some of the rules for retail access are potentially different in each utility service territory due to the fact that such rules are litigated in rate cases, and that competition among ESCOs normally operating in various service territories would be simpler if the retail

access rules were standardized across the state. Second, committee members assert that ESCOs are not currently held to minimum qualifications or standards for products they offer, and some companies apparently offer bad deals to unwary customers. They argue that requiring that ESCOs qualify and offer products and services that are not available under utility default service would increase the value of third party supply and decrease customer complaints about abusive business practices. Third, with no clear definition of roles and no communication between third parties and utilities, essential services like customer outreach and education get passed over because no single entity wants to take responsibility. Finally, participants note that the Commission has not yet established a definition of an “energy-related value-added service,” leading to regulatory uncertainty.

8. Many participants highlight the absence of sufficient data regarding customer electricity usage patterns due to New York’s lack of installed AMI. CEC members comment that the rollout of AMI and the data it generates is necessary for ESCOs and other vendors to develop and market energy-related value-added services to customers, and to facilitate broad customer adoption of DER. Some committee members also comment that additional data, such as ICAP tags and past historic usage is also required.
9. Some comments received state that relying on customers to know their utility account number is a barrier for ESCOs to acquire customers because most customers do not know their account numbers off-hand, increasing the time between the initial ESCO contact and the final contract with the customer. Others note that while additional access to customer data may be necessary for more and better energy-related value-added services to become available on the market, customer privacy and data must also be protected.
10. Most of the comments related to demand response are complaints about the current NYISO-controlled demand response programs. Since most utilities, notably excluding Con Edison, do not offer their own demand response programs, customers interested in participating in demand response must participate through the NYISO. This is identified as a particular barrier to participation by large customers outside of Con Edison’s service territory. CEC members note that most demand response programs are focused on reliability and that there are more opportunities for demand response outside of bulk market operations. Some committee members comment that not only are the demand response programs themselves flawed, but the permitting and environmental regulations for generators used to supply demand response are onerous, complex, and that the rules promulgated by various regulatory authorities are not properly aligned. A final barrier is that demand response programs should be designed to accommodate both customers who purchase and install advanced visibility and control technology to monitor and change their energy use, and those customers that wish to participate without the use of such technology.
11. Many of the comments regarding barriers to installation of distributed generation have to do with the Standby Rates which most large DG-owning customers are charged. When a customer installs a DG unit whose nameplate generation capacity is larger than 15% of the customer’s peak demand, such customer is subject to standby rates. CEC members state that this is a barrier to customers installing larger DG units. CEC members further

complain that the contract demand charge based on the sum of all peak demands for each building under the Campus Standby tariff is another barrier to adoption.

12. Several other issues raised are in regard to distributed generation. First, CEC participants assert that the Net Metering rules favor customers taking full service from the utility versus from an ESCO due to the ESCO's inability to receive and issue net generation credits for the supply-related portion of the net metered customer's bill. Second, committee members posit that being labeled as an "Electric corporation" for selling excess generated energy to other customers is a barrier to purchasing and installing DG. Third, some committee members claim that there is confusion over the definition of efficiency in regard to qualifying for various exemptions as a high efficiency generating unit. Fourth, committee members claim that a long and costly interconnection process acts as a barrier to greater penetration of DG. Fifth, committee members note that there is a lack of uniform codes and regulations for solar panels across the state. Finally, committee members complain that the Ancillary Services and Demand Response that DG can provide are currently under-valued, or not valued at all, in many service territories.
13. Split incentives between landlord and renter constitutes a major barrier to customer engagement for customers in non-owner occupied buildings. In buildings where residents are metered individually and billed by the utility, the renter has an incentive to install EE or DG measures to help control their energy bills, but also has a disincentive to do so because they may incur all of the costs but not gain all of the benefits of any such actions if they move away. On the other hand, since landlords do not pay the energy bills, there is no incentive for them to install energy-efficient fixtures or technologies at their own cost. In buildings that are "master metered" but tenants are unmetered, the opposite split incentives exist. In this circumstance tenants do not pay for the electricity they consume and have little incentive to reduce or shift usage to off-peak times. There are approximately 400,000 un-metered customers in New York City alone. More needs to be done to ensure that all customers are receiving price signals. We should coordinate with the various Public Housing Authorities across the state to discuss implementation of submetering. Similarly, incentives for installing energy efficiency should consider including provisions for metering or submetering of residents.
14. There are also several barriers related to current utility practices. First, committee members complain that utility tariffs are complex and unclear, which complicates cost-benefit analyses performed for customers to decide whether to go forward with energy-related projects. Second, committee members note that the current customer service quality mechanisms do not properly incentivize utilities to engage with customers concerning energy usage and management. Third, committee members posit that the revenue decoupling mechanism (RDM) applicable to electric utilities in New York reduces any incentive for or against implementing system efficiency measures, since the RDM guarantees the utilities a set amount of revenue regardless of sales. Finally, committee members note that the current practice of levying surcharges, such as the system benefits charge and the renewable portfolio standard, on an energy-only basis without regard to capacity provides a perverse disincentive for customers to engage in peak-shifting and demand response activities.
15. There are various barriers arising from currently existing incentive programs offered through NYSERDA and other State and Federal agencies. CEC participants comment

that long-term incentive programs for engaging in energy efficiency and demand response should be established to go alongside the current practice which is focused on one-time rebate programs. CEC members note that many of the NYSERDA incentive programs are complicated by various regulatory requirements which make participating more difficult for customers. CEC members also posit that the economics of some desired technologies are undesirable without additional financial incentives and suggested that additional funds need to be made available to help incentivize customers to purchase and install EE and DG devices and products.

16. New York City presents several unique barriers to DG penetration. CEC members cite a lack of space and other siting barriers as a major concern. These issues are compounded for renters who do not own the building and may not be allowed to access their building's roof or install DG. Even if the space is available siting DG in New York City is even more difficult than elsewhere in the State due to additional pollution and noise attenuation control requirements. CEC members note that, especially in New York City, the cost of real estate dwarfs any price signals or potential financial gains from building DG.
17. There are a number of financial barriers which the customer must overcome when installing energy efficiency measures or DG. First, many customers are unsure of how long they will stay in their residence. Customers may not participate if the payback period for installing EE or DG equipment is greater than the length of time the customer is planning to remain in the residence. This concern is especially salient for renters. Second, buying into the new energy markets including advanced energy use control technology may be cost-prohibitive for low-income customers.
18. There are several barriers related to utility financial issues. CEC members state that in general utilities focus on transmission and distribution capital expenditure projects over more customer-oriented projects and expenditures. Utilities note that given additional resources they could process additional raw customer data into a form that is more useful and demonstrative. Finally, there is concern over fair and just cost allocation and recovery for costs related to new technologies, pilot programs, and other costs incurred to implement the changes to the utility industry envisioned in the REV proceeding.
19. A number of barriers are related to the minimal participation of customers in Time-of-Use (TOU) rates and pricing. CEC members note that on- and off-peak usage data needs to be communicated to any applicable electricity supplier for customers who are already on TOU rates, as usage that differs from the class average load pattern for non-TOU customers can impact the ESCO's settlement with the NYISO. CEC members further comment that ESCOs need the time-differentiated metering in order to offer time-based supply products to customers. Other committee members note that TOU rates, as they are currently designed, are not favorable to low-usage customers because of a relatively high monthly customer charge which must be overcome to accomplish bill savings. CEC members comment that TOU pricing currently only places usage into two periods, on-peak and off-peak, and that a higher degree of differentiation would give clearer price signals to customers to change their usage. Finally, CEC members complain that there is

a stigma against landlords offering non-traditional rate structures to their tenants due to the concern that such rates may be unfair to tenants.

20. Community choice aggregation is an energy supply model that allows local governments to aggregate the power needs of their residents to achieve local objectives including consumer rate savings, greenhouse gas reductions, and new revenues for local energy programs. In order to implement CCA, the Commission's Uniform Business Practices would need to be modified to allow the provision of customer data to a municipality and an ESCO and the enrollment of customers with an ESCO without customer authorization. CCA is a method of migrating large numbers of customers to an ESCO.
21. As a result of a federal government challenge to utilities, the "Green Button" initiative was established in January 2012 to provide consumers with simple online access to their energy usage information. Through the "Green Button," a customer can securely download his or her energy usage information in a standardized format and upload it to a third party application. This streamlined access makes it simpler for consumers to engage with third parties offering energy-related value-added services and to help them understand and take action to manage their energy usage more effectively. Several of the New York utilities have agreed to implement the Green Button, and the Commission should consider requiring all utilities to implement the "Green Button".
22. Similar to Green Button, some utilities currently have programs whereby a customer expresses interest in taking service from an ESCO and the utility provides customer information to interested ESCOs who compete for the customer's business. We may want to consider expanding this program to require the utility to provide customer information to providers of other products and services.
23. To facilitate the provision of energy and energy-related value-added services by ESCOs and other third party providers several states have allowed access to customer data. We may want to consider allowing access to data to approved third parties that provide energy-related value-added services.
24. The interplay between more traditional customer outreach and education methods (i.e., bill inserts, direct mailings, print and digital media, etc.) and more contemporary methods (i.e., social media, video tutorials, community-based marketing approaches, etc.) should be examined. Marketing could be tailored to the different needs and motivators of various customer groups. Marketing to younger vs. older and low- vs. high-income customers, for example, will need to reflect their differing values and views on energy use and technology. This is where community-based marketing could come into play. It could take place in schools, community centers, and senior citizen centers; and it needs to be interactive, widespread, and targeted to the specific audience.
25. We need to determine who bears responsibility for customer outreach and education. One option is for the New York State Department of Public Service to spearhead a broad, statewide, Madison Avenue-like marketing campaign with a unifying message while the utilities conduct more specific marketing campaigns tailored to the types of customers and geographies within their service territories. Another option is that utilities jointly develop a statewide campaign with a unifying message.

26. Incorporating behavioral psychology principals, such as Opower's Home Energy Report, have demonstrated that benchmarking a household's energy usage against that of their neighbors and peers is an effective strategy to engage customers.
27. Access to financing will help customers move from awareness of opportunities to execution and implementation. On-bill financing is currently available in NY for residential and small business/not-for-profit customers to finance energy efficiency projects and solar installations. The scope of on-bill financing could be expanded to allow for other products or services to be financed on the customer bill.
28. CEC participants report that it currently takes four months or more for customers to arrange for financing through the on-bill program. One utility is attempting to reduce that period by half by requiring that the certified contractors complete the paperwork rather than the customer. We may want to consider this for each of the utilities.
29. There is no limit to the number and variety of products that may be developed by ESCOs if they are provided with access to the same customer usage data that is currently available directly to their customers. For a customer with an interval meter the same level of access should be provided to the customer's ESCO, to the extent they take service from an ESCO.
30. Industry experts state that the lack of an optimized mobile solution is a missed opportunity to service customers. Consideration should be given to the creation of a mobile application and internet tool to assist customers in shopping for energy commodity and distributed resources.
31. Engagement models that include established community organizations (e.g., faith-based organizations, schools, employers, environmental groups, rotary clubs, chambers of commerce, etc.) have been successful in the solar industry and should be considered. Door-to-door, friend-to-friend marketing models have raised awareness in solar campaigns because peer pressure, competition, and previously established modes of communication bring issues into the public domain.
32. As an interim measure before a wide scale deployment of smart meters, NEM's retail DR load profile proposal should be considered.
33. Marketing campaigns should have clear end dates to motivate prospective customers to take action. Open-ended contract terms are not as effective.
34. Several successful marketing campaigns have included contests and games.
35. Several successful programs have included the use of focus groups, surveys, and other tools to test marketing terms and concepts.
36. Customers have limited opportunity to interact with their utility. All employees who play a role in a marketing campaign should be informed, committed, and enabled to make interactions a positive experience for customers.

Working Group 1
Customer Engagement Committee

Attachment 1

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VTOU-

Rates that are designed to reflect changes in a local distribution company's cost of providing service that change by season or time of day. There are two types of time of use rates: mandatory which is required for normally high use customers; and voluntary which is available for any customer who wants to participate in the program. (PSC Energy Glossery)

“The New York legislature passed legislation on net-metering in 1997, and expanded and amended it several times since 1997. (2002 S.B. 6592, 2008 S.B. 7171, 2008 S.B. 8415, 2008 S.B. 8481, and 2009 A.B. 2442)” The PSC has “approved rates for Time of Use of both residential and business customers by 2002. By 2003 the PSC had reviewed distributed generation and included net metering by 2009. Day-Ahead hourly pricing was approved prior to 2009 and demand side management was approved by 2004.”¹

“In July 2007, the PSC decided not to adopt PURPA (Public Utility Regulatory Policies Act) Standard 14 (“Time-Based Metering and Communications”) as enacted in EPACT (Energy Policy Act) 2005. The Commission determined that it already provided a time-based metering and communications standard comparable to PURPA. It found that although it had not adopted time-based rates for all of its customer classes, it had implemented both mandated and voluntary dynamic rates for various customer classes.”²

Utility Specific Time of Use Programs (as reported to Staff on 6/9/14):**Central Hudson:**

As of year-end 2013:

- There were 1,162 customers enrolled in our TOU program.
- This represents less than 1% of total customers.
- Percentage of load was less than 1% of total load

Central Hudson’s TOU rates were not developed with EV end use in mind; however in the Company’s electric rate case 09-E-0588, CH was directed to eliminate its residential TOU delivery rates. However, following discussions between the Company and PSC Staff, Central Hudson filed and the Commission approved retention of its time differentiated delivery rates giving recognition to the fact that elimination of the TOU rates may have been premature in light of the evolving EV market. Customers are billed on-peak and off-peak rates for the Energy

¹ "Smart Grid Information Clearinghouse (SGIC)." *Smart Grid Information Clearinghouse (SGIC)*. N.p., n.d. Tue. 17 June 2014

² *Demand Response and Smart Metering Policy Actions Since the Energy Policy Act of 2005: A Summary for State Officials*. Prepared by the U.S. Demand Response Coordinating Committee for The National Council on Electricity Policy, Fall 2008, pg 50.

Delivery charge, and on and off-peak rates for the Market Price Charge and Market Price Adjustment. Participants will receive an annual letter that compares total charges for their usage under the Time-of-Use and standard rates for each bill rendered.

Customers can choose from three time periods for their weekday, on-peak usage: 1) 8 a.m. to 8 p.m., 2) 9 a.m. to 9 p.m., or 3) 10 a.m. to 10 p.m. The on-peak and off-peak rates are the same for all three periods. All weekends and six major holidays per year (New Year’s Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas) are considered off-peak.

Billing Line Items	Time-of-Use Charges	Standard Residential Charges
Customer Charge	\$27.00	\$24.00
Energy Delivery charge, per kwh		4.963 cents
On-peak energy delivery charge	6.144 cents	n/a
Off-peak energy delivery charge	4.022 cents	n/a
Base MFC Administration Charge	0.078 cents	0.183 cents
MFCBase MFC Supply Charge	0.085 cents	0.203 cents
NYS Assessment	0.333 cents	0.333 cents
Market Price Charges		Market supply charges
On-peak market price charge	118 percent of standard charge	n/a
Off-peak market price charge	89 percent of standard charge	n/a

Con Edison:

- Residential VTOU – 1,920
- Based on historic data, the residential VTOU customers represented about 0.1% of total residential customers
- 0.7 percent of total residential load.

A new voluntary time-of-use rate (SC 1 Rate III) went into effect for Con Edison customers beginning on March 1, 2014. SC 1 Rate III was designed to encourage the shifting of residential energy use away from both supply and delivery peak periods. By offering attractive off-peak supply and delivery rates, particularly during the summer, it also encourages SC 1 customers who have a plug-in electric vehicle (“PEV”) to engage in vehicle-charging at their residence during those off-peak hours. A description of the peak, off-peak and super-peak periods is below, along with the delivery charges applicable to each period.

Peak	Off-Peak	Super-Peak*
8AM - 12Midnight	12Midnight - 8AM	2PM - 6PM

*The super-peak period will be in effect Monday through Friday only during the summer months (June 1- September 30). Super-peak pricing will apply only to a customer's supply charges.

	Peak	Off-Peak	Super-Peak*
June 1 — Sept 30	19.01 cents/kWh	1.34 cents/kWh	19.01 cents/kWh
All other months	7.04 cents/kWh	1.34 cents/kWh	N/A

A customer/basic-service charge of \$19.87 per month applies, along with any applicable delivery charges and adjustments as specified in general rule 26 of the Con Edison electric tariff. Since the above Super Peak applies only to supply pricing, the Super-Peak delivery price is the same as the Peak delivery price.

The Company also offers a VTOU rate (SC 1 Rate II), which has since been closed to new applicants. This rate was not specifically created with PEVs in mind. A description is as follows:

Summer

On peak: Monday through Friday, 10 AM to 10 PM, excluding Independence Day (July 4) and Labor Day (the first Monday in September)

Off peak: All other hours of the week

Non-Summer

On peak: Monday through Friday, 10 AM to 10 PM, excluding New Year's Day (January 1), Memorial Day (the last Monday in May), Thanksgiving Day (the fourth Thursday in November), and Christmas Day (December 25)

Off peak: All other hours of the week

Peak Off-Peak

June 1 — Sept 30 30.32 cents/kWh 1.16 cents/kWh

All other months 11.00 cents/kWh 1.16 cents/kWh

NYSEG/RG&E

At NYSEG:

- 135,074 customers participate in VTOU rates.
- This is approximately 15.3% of total customers.
- Through April, 2014, VTOU load accounts for approximately 15.7% of total load.

At RG&E:

- 5,090 customers participate in VTOU rates.
- This is approximately 1.4% of customers.
- Through April 2014, VTOU load accounts for approximately 37.1% of total Load.

NYSEG has two voluntary residential time-of-use service classes, SC No. 8 Residential – Day Night Service and SC No. 12 Residential with Time-of-Use Metering. SC No. 8 is for customers with monthly usage of

1,000 kWh or more and SC No. 12 is for customers with annual usage of 35,000 kWh or more.

NYSEG also has a voluntary non-residential time-of-use service class, SC No. 9 General Service – Day Night Service. This service class is for customers with monthly usage of 1,000 kWh or more.

RG&E has a voluntary residential time-of-use service class, SC No. 4 Residential Service – Time-of-Use Rate. This service class has two schedules, Schedule I is for customers with an annual usage of 24,750 kWh or less and Schedule II is for customers with annual usage greater than 24,750 kWh.

The voluntary time-of-use rates were not created with electric vehicle customers in mind. The rates were established many years ago and the focus was on demand side management, primarily to encourage customers to move their usage to off peak periods

RG&E Residential TOU SC No. 4 has two periods, on-peak and off-peak.

NYSEG day-night services, SC 8 residential and SC 9 non-residential have two periods, on-peak and offpeak.

NYSEG Residential TOU SC No. 12 has three periods, on-peak, mid-peak, and off-peak.

RG&E			
SC4 Sch I and Sch II Residential	All months	On-peak	Monday - Friday, 7:00 AM - 9:00 PM
		Off-peak	Monday - Friday, 9:00 PM - 7:00 AM, Sat and Sun all hours
NYSEG			
SC8 - Residential	All months	On-peak	7:00 AM - 11:30 PM
		Off-peak	11:30 PM - 7:00 AM
SC12 - Residential	Summer: June - August	On -Peak	Monday - Friday, Except Holidays: 10:00 AM - 6:00 PM
		Mid-Peak	Monday - Friday, Except Holidays: 7:00 AM - 10:00 AM and 6:00 PM - 11:30 PM; Sat, Sun and Holidays: 7:00 AM - 11:30 PM
		Off-peak	All days: 11:30 PM - 7:00 AM
	Winter: December - February	On-Peak	Monday - Friday, Except Holidays: 7:00 AM - 10:00 AM and 5:00 PM - 10:00 PM
		Mid-Peak	Monday - Friday, Except Holidays: 10:00 AM - 5:00 PM and 10:00 PM - 11:30 PM; Sat., Sun., and Holidays: 7:00 AM - 11:30 PM
		Off-peak	All Days: 11:30 PM - 7:00 AM
	Off-Season: March - May, September - November	Mid-Peak	All Days: 7:00 AM - 11:30 PM
		Off-peak	All Days: 11:30 PM - 7:00 AM
SC9 - General Service Non-residential	All months	On-peak	7:00 AM - 11:30 PM
		Off-peak	11:30 PM - 7:00 AM

The VTOU rate changes seasonally only for NYSEG SC 12 Residential TOU, see the chart above.

Orange and Rockland:

- At year-end 2013, there were approximately 3,700 customers on our residential VTOU rate
- 1.6% of total customers
- 2.0% of total load

O&R offers a residential voluntary TOU option under SC No. 19. SC No. 19 was not created with electric vehicle customers in mind. There are three periods in the summer and two periods in the winter. Below are those periods and the current delivery rates (as of June 1, 2014). In addition, the monthly Market Supply Charge contains a peak and off-peak pricing component.

Summer Periods (June – September)

Period I: 24.774 ¢/kWh: Monday – Friday (except holidays), 12:00pm – 7:00pm

Period II: 8.864 ¢/kWh: Monday – Friday (except holidays), 10:00am – 12:00 pm and 7:00pm – 9:00pm

Period IV: 1.595 ¢/kWh: All other times

Winter Periods (October – May)

Period III: 8.864 ¢/kWh: Monday – Friday (except holidays), 10:00am – 9:00pm

Period IV: 1.595 ¢/kWh: All other times

No.	Barrier	Party Providing Comment	Importance	Category
1	Utilities do not offer their own DR Programs	Customers, Other	High	Demand Response
2	Standby Rates are a barrier to DG	Customers	High	Distributed Generation
3	Presence of RDM reduces Utility incentives to work with other parties to increase system efficiency.	Customers	High	Incentives / Disincentives
4	Net Metering Rules do not allow an ESCO to receive/issue net-generation credits	ESCO	High	Distributed Generation
5	Need to establish long term programs in addition to one-time rebates	ESCO	High	Incentives / Disincentives
6	Need for Simple Billing and Payment Process	ESCO	High	Billing & Settlement
7	Minimal Time of Use Rate structures	ESCO, Utility, Other	High	TOU
8	Levying surcharges on an Energy-only basis sends a perverse price signal	Customers	High	Incentives / Disincentives
9	Lack of On-Bill Financing and ability to charge for non-commodity services and products	ESCO, Other	High	Billing & Settlement
10	Lack of data demonstrating customer expectations	Utility	High	Awareness / Knowledge
11	Lack of coordination between stakeholders	ESCO	High	Competition
12	Inadequate Customer Understanding/Knowledge	Customers, Utility	High	Awareness / Knowledge
13	Definition of "Energy-Related Value Added Service"	ESCO	High	Competition
14	Current service quality measures do not incent Utilities to use Customer Engagement	Utility	High	Incentives / Disincentives
15	Concerns for customer privacy and data security	Utility	High	Data & Privacy
16	All parties need to be vested in Customer Education	Utility	High	Awareness / Knowledge
17	Absence of Interval Use Data from lack of AMI, no access to real time data	ESCO, Utility, Other	High	Data & Privacy
18	Utility Capital Expenditures focused on T&D, not Customer-Oriented items	Utility	Low	Physical / Financial
19	Utilities unable to move quickly on new technology due to risk-averse regulators	Utility	High	Access / Availability
20	Over-Reliance on Rate-Ready Utility Consolidated Billing	ESCO	High	Billing & Settlement
21	Lack of Transparency in Utility Commodity Pricing	ESCO	High	Billing & Settlement
22	Lack of resources to turn raw data into useful information	Utility	Low	Physical / Financial
23	Definition of "Electric Corporation" impedes DG	Customers	Low	Distributed Generation

No.	Barrier	Party Providing Comment	Importance	Category
24	Access to Other Customer Data (ICAP tags, historic usage, meter numbers, etc.) AND ABILITY TO VALIDATE SETTLEMENT DATA REPORTED TO NYISO	ESCO	Low	Data & Privacy
25	Split incentives between Landlords and Renters	Other	High	Incentives / Disincentives
26	Lack of space or ability to control space in dense urban areas and when renting	Other	High	Physical / Financial
27	Inconsistent NYISO rules for DR participation	Customers	High	Demand Response
28	Energy Savings not a Priority for Customers	ESCO	High	Awareness / Knowledge
29	Complexity, Opacity, and Inflexibility of NYISO DR programs	Customers	High	Demand Response
30	Barriers to Large Customers participating in the Ancillary Services market	Customers	High	Demand Response
31	Residents in "Master Metered" buildings have little incentive to control their own usage	Other	High	Incentives / Disincentives
32	Some enabling technologies not fully developed	Utility	Low	Access / Availability
33	Not all energy consumers are Utility customers (e.g. master metered consumers)	Utility	Low	Incentives / Disincentives
34	Need "Quick Win" products with a short payback period	ESCO	Low	Incentives / Disincentives
35	Longer Payback Periods for lower-use customers	ESCO	Low	Incentives / Disincentives
36	"Master Metered" customers have little control over their neighbors' usage	Other	Low	Incentives / Disincentives
37	NYC - Creation of technology platform - the platform may provide a cost barrier particularly to low income customers which may prohibit participation.	Related		Physical / Financial
38	General lack of understanding of how buildings use and waste energy; need more system level M+V and data to target energy efficiency and conservation investments	Related		Awareness / Knowledge
39	No NYSERDA or market incentives for meters/points that are necessary to perform systems-level M+V	Related		Incentives / Disincentives
40	Electric tariffs in NYS are complex, which make cost-benefit analysis for ECMs difficult	Related		Incentives / Disincentives
41	Standby tariff and the 15% capacity restriction undermines large DG investment	Related		Distributed Generation

No.	Barrier	Party Providing Comment	Importance	Category
42	Confusion over "exempt DG based on 60% efficiency" introduces risk into cogen investment	Related		Distributed Generation
43	Campus tariff application of contract demand favors Con Ed over DG developer	Related		Distributed Generation
44	Private electric microgrids are more expensive than comparable Con Ed equipment b/c of electrical code compliance requirement	Related		Physical / Financial
45	DR aggregators have dearth of electrical, exhaust/intake location, sound attenuation design experience - developers have to figure it out themselves	Related		Awareness / Knowledge
46	Air emissions permitting for generators that will be used for DR is confusing to the point of incomprehensible. City, State and EPA guidance isn't aligned	Related		Demand Response
47	Installing generators for DR is expensive	Related		Demand Response
48	Con Ed has DR web pages with outdated info that come up in Google search - these pages should be taken offline altogether	Related	Low	Demand Response
49	The marketplace of mid-sized battery providers is nascent/non-existent	Related		Access / Availability
50	There is a dearth of PSC-approved submetering technology (and no direct way to access the approved list)	Related	Low	Awareness / Knowledge
51	Because the tariffs are complicated, accurately billing on various tariffs is difficult	Related		Billing & Settlement
52	All commercial meters should come equipped with pulse heads by default	Related		Demand Response
53	It is difficult to access TOU rates. And TOU rates for residential are not very favorable to the resident unless they are a major energy user	Related		TOU
54	TOU rates are not really TOU. They are general peak/off peak	Related		TOU
55	If an SC8 redistribution customer were to get a TOU rate, under Part 96 the owner can't pass along the TOU pricing if it exceeds SC1	Related		TOU

No.	Barrier	Party Providing Comment	Importance	Category
56	Political and public perception that landlords who submeter want to nickel and dime tenants. Landlords are therefore dissuaded from trying innovative things like TOU rates	Related		TOU
57	NYSERDA programs are complicated by regulatory requirements (truncated timelines, short lists of service providers, reporting protocols)	Related	Med	Incentives / Disincentives
58	The concept of free-ridership shouldn't exist; it discourages the adoption of best practices	Related		Incentives / Disincentives
59	Lack of knowledgeable workforce to support energy improvements (RCx, design engineering, DR, DG, submetering, etc)	Related		Awareness / Knowledge
60	Cost of real estate in NYC dwarfs energy price signals	Related		Incentives / Disincentives
61	Density of real estate in NYC makes locating combustion devices challenging, including cogen and generators for DR (expensive pollution controls or stacks reqd), limits surface for PV, impedes wind power and finding inexpensive space for thermal and battery storage	Related		Physical / Financial
62	Con Ed meters are not smart meters	Related	Low	Data & Privacy
63	Independent entity to manage competitive market transactions (ex. - enrollments, switching, seamless moves, "day-one" ESCO enrollments)		High	Competition
64	Uniform utility business rules across all territories, rather than on a utility-by-utility basis		High	Competition
65	"Reverse slamming" by utilities shortens customer tenure/dampens RTO and creates disincentive to invest in innovative products for customers		High	Competition
66	Qualifications/standards for ESCO eligibility		High	Competition
67	Uniform statewide PV codes		Med	Distributed Generation
68	Process reform: take regulation of competitive business out of regulated utility contested case process to help bring innovation to market faster		High	Competition
69	Utility account number required for enrollments		High	Data & Privacy

No.	Barrier	Party Providing Comment	Importance	Category
70	Barriers to fixed price term offers (ex. - POR collection of reasonable ETFs)		High	Billing & Settlement
71	Financing/capital constraints - Not enough access to capital to pay for energy efficiency or distributed generation that would otherwise be implemented	NYSERDA		Incentives / Disincentives
72	Aesthetic/comfort concerns - Issues around perceived impact on quality of life (e.g.: CFLs different color temperature changing the look of the home)	NYSERDA		Incentives / Disincentives
73	Total cost of ownership understanding - Lack of understanding or belief around economic rationale for energy efficiency/distributed generation upgrades (e.g.: doubt on LED payback)	NYSERDA		Awareness / Knowledge
75	Disruption to work - Concern around impact of installation process (upgrading assembly line causes lost production days, divert staff time)	NYSERDA		Incentives / Disincentives
76	Siting/install challenges - Lack of space or other physical constraints	NYSERDA		Physical / Financial
77	Length of control of asset concerns - Uncertainty around length of control over asset enhanced by energy efficiency/distributed generation (e.g.: believe in 5 year ROI of PV, but unsure if they will remain in house for 5 years)	NYSERDA		Physical / Financial
78	Unattractive economics- Fundamentally unappealing economic rationale (e.g.: installing residential fuel cell CHP with storage)	NYSERDA		Incentives / Disincentives
79	Availability of clean/efficient options - Lack of sufficient commercial availability of desired energy efficient/distributed generation product (e.g.: want to purchase LEDs, Home Depot does not carry enough product)	NYSERDA		Access / Availability
80	Competing with sister facilities - Industrial facilities or companies with like products compete with one another for business, employment, and sales (e.g.: Ford v GM)	NYSERDA		Competition
81	Fuel availability - Lack of easy access to required inputs to energy efficient/distributed generation technology (e.g.: wood pellets for biomass combustion)	NYSERDA		Access / Availability

No.	Barrier	Party Providing Comment	Importance	Category
82	Lack of awareness- No knowledge of energy efficient or distributed generation option (e.g.: uninformed about efficient windows)	NYSERDA		Awareness / Knowledge
83	Technology understanding/risk - Lack of comfort with a known technology (e.g.: concerned about how invasive demand response technology would be)	NYSERDA		Awareness / Knowledge
84	Siting/install challenges - permit process	NYSERDA	High	Awareness / Knowledge
85	Understanding of customer values and drivers of customer behavior	Staff		Awareness / Knowledge
86	Diverse customer populations	Staff		Awareness / Knowledge
87	Clear delimitation of roles and responsibilities of third parties, utilities and others	Staff		Competition
88	Customer concerns of health, safety and privacy	Staff		Awareness / Knowledge
88	Targeting a mass market customers by appropriate segmentation	Staff		Awareness / Knowledge
89	Adoption of new/advanced technology	Staff	High	Demand Response
90	Customer willingness to allow utility/third party more control of energy use	Staff	High	Data & Privacy
91	Low-Income Social Justice Issues	Staff	High	Physical / Financial
92	Fair allocation of implementation costs related to AMI, new technologies, pilot programs, etc. (e.g., partnerships with equipment providers, on-bill financing of equipment costs, rate base charges on all customers, etc.)	Staff		Physical / Financial
94	Interconnect cost and time	Aggregator		Distributed Generation
95	Direct access to real time meter data	Aggregator		Metering
96	DG grid services not fully valued	Aggregator		Distributed Generation

Attachment 4

Let's Solarize

Solarize ConnecticutSM Phase 1 Report

September, 2013



*Special acknowledgement to our town
leaders, volunteers, solar ambassadors
and solar installers for providing the
photos included in this report.*



Executive Summary

In the spring of 2012, the Clean Energy Finance and Investment Authority (CEFIA), in partnership with SmartPower and with the support of two private foundations, The John Merck Fund and the Putnam Family Foundation, launched the Solarize Connecticut program. Working closely with municipal leaders, CEFIA and SmartPower initiated campaigns in four pilot communities in Connecticut: Durham, Fairfield, Portland and Westport. The goal of this collaboration

was to advance the adoption of residential solar photovoltaic (PV) systems by lowering acquisition costs and making solar more affordable to residents using the Solarize model. The results of the Solarize campaigns in the four pilot communities speak for themselves. ***In every Solarize community, residential solar installations more than doubled during the 20 weeks of the program, compared to the previous seven years.*** In the town of Durham installed capacity more than quintupled. One of the most compelling reasons behind these results is that the average Solarize customer saved approximately \$7,500 on their system when compared to current market averages!

The Solarize Connecticut program consists of 1) tiered group buying discounts, resulting in a continuous drop in pricing as more customers sign up; 2) outreach provided by participating towns and volunteers; 3) one competitively-selected solar installer, using pre-approved equipment; and 4) an end date for the offer, motivating customers to take action.

The pilot ran for 20 weeks (although initially planned for 16 weeks, it was extended for an additional four weeks due to Superstorm Sandy). The Solarize Connecticut pilot achieved significant results, with each town more than doubling the amount of solar in its community over those 20 weeks when compared to solar installed over the previous seven years. Additional results include:

- More than 2.2 Megawatts (MW) of new solar PV capacity deployed across the four communities, close to triple what was installed in those towns during the preceding seven years;
- Approximately 280 signed contracts for solar, representing at least a doubling in the number of homeowners “going solar” in all towns, with Durham quintupling its solar ownership;
- Dramatically reduced costs for solar PV, with all towns achieving the lowest tier of pricing and cumulative savings of over \$2.2 million. The average Solarize customer saved \$7,500 off their system as compared to then current market rates;
- Compelling drops in customer acquisition costs, at less than \$90/kilowatt (kW) from a direct program spend perspective and \$135/kW “all-in!” costs –

1 “All-in” costs include direct program spend, estimated CEFIA staff time and incidental market costs reported by participating installers (e.g., postcards, mailing expenses, newspaper inserts, yard signs)



significantly less than both the industry average of \$670/kW (per U.S. Department of Energy analyses) and local installers' estimates at \$250-\$500/kW.

This report identifies the key components of Solarize Connecticut based on this pilot program and lessons learned.

Background



The Solarize model was first created in 2007 in Portland, Oregon, where one enthusiastic homeowner was able to gather other nearby homeowners together to aggregate purchases. The City of Portland and the Energy Trust of Oregon joined in to help support the outreach effort, and the result was a nearly tripling of the number of solar installations expected. This model was later refined with great success by the Massachusetts Clean Energy Center, which provided guidance to CEFIA and SmartPower in bringing the model to Connecticut.

The Solarize Connecticut model includes selecting communities from the Clean Energy Communities program and working with them to identify a competitively chosen solar installer that will provide all solar installations for that community. The installer was required to offer a 5-tiered pricing offer, so that the more customers sign up for Solarize, the more the price continues to drop. Outreach and education are provided by town volunteers

and solar ambassadors, with support from the installer, CEFIA and SmartPower. All contracts must be signed within the 20 weeks of the program in order to qualify for the discounts.

One of the reasons the Solarize model is so successful is that it addresses key barriers to residential solar deployment identified in consumer research:

- 1) **Cost.** Solarize offers a reduced initial price and a tiered pricing model in which the greater the participation, the more the price drops;
- 2) **Reliability.** As a municipal/state-sponsored program, it gives residents confidence to move forward with a pre-selected, pre-approved installer using pre-vetted equipment;
- 3) **Complexity.** Because the pricing and the installer for Solarize campaigns have been screened and competitively selected, the consumer is not overwhelmed with technical details and financial confusion. The Solarize Connecticut program further emphasizes the ease of decision making with our tagline: “Solar. Simple. Together.”;
- 4) **Inertia.** A clear program end date ensures that consumers are motivated to take action, shortening the decision making process.

The key ingredients leading to this success lie in the following formula:

- 1) **Community-sponsored program with municipal buy-in and support.** Town and local volunteers take responsibility for community outreach, giving residents confidence to move forward with the selected installer.
- 2) **Recruitment of local solar champions.** People who have solar are the most passionate and best spokespeople for solar, and the Solarize program created a great opportunity for them to reach out to friends and neighbors by designating them “Solar Ambassadors.”
- 3) **Below market pricing.** It is clear to residents that they are getting a once in a lifetime bargain. Return on investment is more aggressive and solar is accessible to more homeowners when installers can pass savings on to their customers.
- 4) **Visibility.** Lawn signs, banners, events, workshops, social media, and traditional media promote the program, ensuring no one fails to hear about the opportunity.
- 5) **End date.** The campaign end date ensures that prospective customers take action. The last week of the Solarize campaigns across the four pilot communities saw a 40% uptake in sign ups.

Town Leadership Matters

Research shows that town involvement matters to Solarize customers. Therefore having an active and engaged town leader makes a difference in the outcome of a Solarize community. Laura Francis, First Selectman from Durham, provided that kind of leadership during Phase 1. From attending bi-weekly calls, writing op-eds, conducting radio interviews, and being the local face of the program, Laura contributed to the enormous success of Solarize Durham.



“

Durham is very pleased to have been part of the successful pilot program offered by Solarize Connecticut. The model allowed us to reach the lowest price level available, saving residents money and helping the environment. The Solarize Connecticut program was a gratifying community-building experience.

Laura Francis,
First Selectman
Town of Durham

”

Project Overview

The Solarize model has three discreet activities for implementation: (1) Selection of the Solarize Communities, (2) Selection of the solar installer for each community and (3) Community education and outreach.

Selection of Communities

Invitations to participate in Solarize Connecticut were sent by CEFIA in the form of a Request for Information (RFI) to all Connecticut Clean Energy Communities, with towns asked to affirm their commitment to the program, identify a municipal representative and volunteer team, develop a marketing and outreach plan and provide information on the town's permitting practices for solar PV.

Ten communities responded to the RFI for Phase I of the pilot and were evaluated based on various criteria including past performance in CEFIA's Clean Energy Communities program, the number of existing solar systems in the community, geographic and demographic characteristics, and the overall quality of the proposal. The program partners ultimately selected four communities: Durham, Fairfield, Portland and Westport.

Selection of Installers

CEFIA issued a Request for Proposals (RFP) to all eligible installers in its Residential Solar Investment Program. Installers were requested to provide a description of their experience and capacity to handle a potentially high volume of installations, a program plan including marketing strategies, details on standard and alternative equipment, pricing for purchase, lease/power purchase agreement or both including pricing contingencies for alternative equipment or unusual circumstances (e.g., mechanical, structural, labor) and plans for sites that are not feasible for PV. With respect to pricing, Installers were required to submit a tiered structure with the following guidelines:

- Tier One contracted: 0-25 kW
- Tier Two contracted: 25-50kW
- Tier Three contracted: 50-150kW
- Tier Four contracted: 150-250kW
- Tier Five contracted: Greater than 250kW

Installers were selected by a town committee based on responses to the RFP as well as in-person interviews. Criteria used in that selection process included experience in Connecticut, customer satisfaction, attractive pricing, availability of financing options, quality of standard equipment and alternative options such as American-made modules, and willingness to meet the special requests of a community. A technical consultant

was provided by program administrators to guide towns in this process. The contracts with installers were between the installer and CEFIA.

The list of communities and their chosen installers for Phase 1 are:

Durham – BeFree Solar Portland – Real Goods Solar
Fairfield – Astrum Solar Westport – Encon Solar

Community Outreach Activities

Filling the pipeline with prospective customers is the primary responsibility of each Solarize community. SmartPower and CEFIA worked with towns individually to identify opportunities to raise visibility for the program, communicate with residents, engage local organizations and schools, and attract residents to Solarize workshops. Key events included a kickoff event, solar workshops at libraries, open houses hosted by Solar Ambassadors and early Solarize customers, and tabling at local festival, fairs, farmers markets, holiday events and Election Day polling locations. Media opportunities included press releases, op-ed pieces, letters to the editor, and local radio and television shows. In addition, town websites and town and personal Facebook pages were used to publicize the program and significant events.

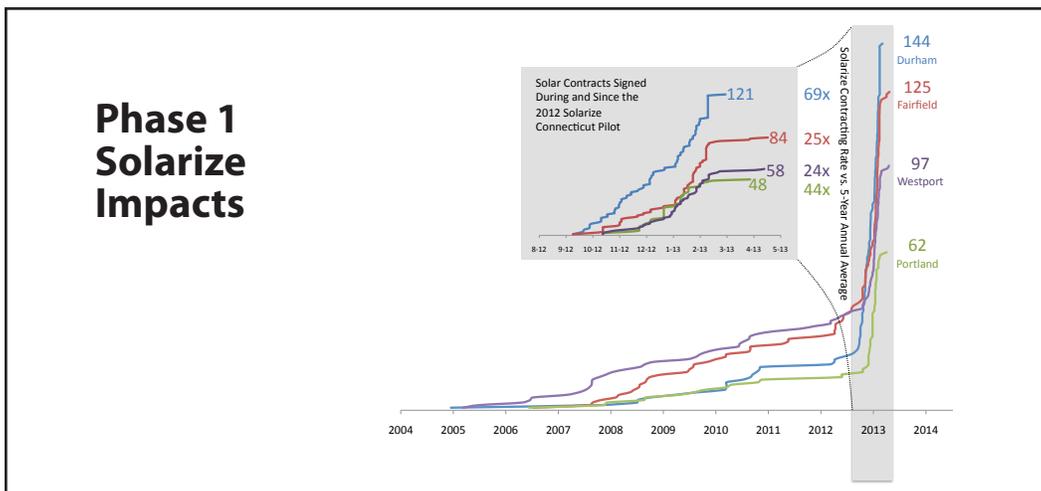
To support the local outreach activities, a Solarize Connecticut brand and campaign website ([www. Solarizect.com](http://www.Solarizect.com)), with customized home pages for each town were created. The website linked to solar installers, and provided updated activities and town events. Templated marketing materials were provided to help the towns and their chosen installer promote the program. Solar installers provided supplemental marketing activities in their communities, such as direct mail, additional flyers and yard signs. Testimonials from Solar Ambassadors were provided on the website and through social media.



The Solarize Portland kick-off event.

Solarize Connecticut Results

The results of the Solarize Connecticut Phase 1 Pilot Project were extremely impressive. While the total number of contracts exceeded expectations, the chart below illustrates how significant the Solarize approach was in increasing the rate of adoption. During the Solarize project towns achieved 24 to 65 times the number of signed contracts for solar PV compared with the rate over the prior 7 years. This level of participation resulted in all the towns reaching the lowest tiered pricing available (Tier 5), further driving down the costs for all residents, regardless of when during the 20-week period they signed a contract. Almost 1,500 people expressed interest in the Solarize Connecticut program and asked for their homes to be evaluated for solar. Approximately 20% of the people who made initial



inquiries about Solarize Connecticut signed contracts for solar during the program period.

One of the goals of the Solarize Connecticut project was to drive down the price of solar by reducing customer acquisition costs for solar installers so that the saving could be passed along to customers. When Solarize Connecticut started in August 2012 the average price of solar in Connecticut was \$5.08/watt. In early January 2013, the average price in Connecticut had dropped to \$4.80/watt.

Nevertheless, the average price for the Solarize projects was less than \$3.70/watt inclusive of adders. Solarize pricing resulting in cost reductions of between 20-30% for homeowners.



The Grovers, Solar Ambassadors in Portland CT

Even comparing Solarize customer costs against a \$5.00/watt average statewide cost of residential solar PV pre-Solarize, homeowners across the four towns would still have saved, on average, about \$7,500. These savings are in addition, of course, to a weighted average

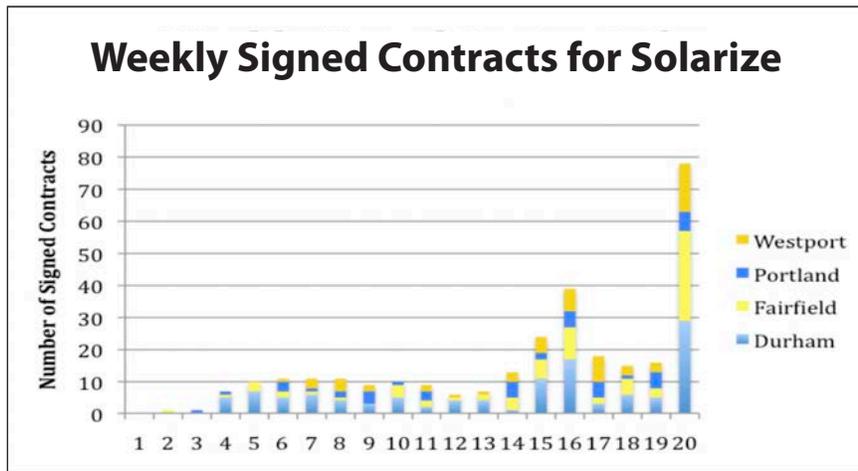
CEFIA incentive per Solarize home of about \$12,500 in ratepayer support. Overall, this pilot initiative saved homeowners across the four communities in excess of \$2 million.

Table 2. *Solarize Connecticut Savings*

Town	Average Customer Savings	Collective Savings (townwide)	Cumulative savings (across four towns)
Durham	\$8,779	\$1,018,364	\$2,214,938
Fairfield	\$5,508	\$402,084	
Portland	\$7,539	\$331,716	
Westport	\$9,074	\$462,774	

Looking at the savings realized in terms of payback time and the levelized cost of energy (“LCOE”)² gives further indication of Solarize’s positive impact. Across three towns, simple payback periods for a solar PV investment were cut almost in half, and for the fourth town (Fairfield), Solarize reduced the payback period by a third. Comparing against the entire market, Solarize cut the average payback period from nearly 11 years to about 6.5 years on average across all four towns.

The chart below shows week-by-week customer acquisition, and highlights the importance of a program end date.



Participant Feedback

Although Solarize Connecticut Phase 1 exceeded expectations with approximately 280 homeowners signing contracts to install solar, one goal of the program was to learn more about participants’ experiences in order to improve the effectiveness of the initiative. At the conclusion of the campaign, customers who signed contracts, as well as prospective

2 Relevant assumptions for payback and LCOE analyses include electricity pricing of \$0.17/kWh with no escalation, a 13% capacity factor for solar PV, a 25-year expected useful life of the system, and 15-year debt financing at 6.49% to pay for post-incentive installed costs

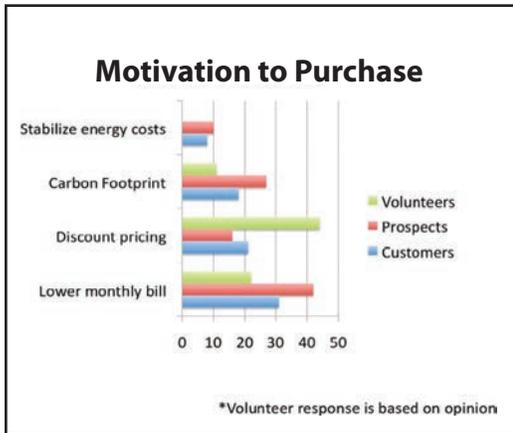


Customer Motivations Vary

Although many solar customers are motivated by the environmental benefits of solar, Solarize research shows that more and more customers are seeing the financial benefits of reducing monthly utility bills and stabilizing costs over time. Because most people already know the environmental benefits, Solarize Connecticut's marketing efforts focus on the savings aspects of going solar and the discounted pricing available through the program. As new financing products from CEFIA and installers have become available, homeowners can reap these savings for little or no money down.

“ I want to help get the word out while there is still time to take advantage of the special Solarize Fairfield pricing. The decision to go solar now was a no-brainer for us because the town did all the vetting. Installing solar panels was easy and affordable, and it is the right thing for our environment. ”

Wendy Lien
Solarize Fairfield's first customer



customers who had expressed interest but did not sign a contract, were surveyed using quantitative methods. Additional information was gained through quantitative surveys of volunteers and town leaders, and qualitative surveys of Solarize installers.

Summary of Findings

Generally, there was strong support for the Solarize model by all surveyed parties. The number of signed contracts attests to the support for this program. All those surveyed agreed that lowering monthly utility bills and the discount offered through Solarize were the most compelling reasons to sign a contract.

For those who did not sign a contract and were not disqualified because of shading or roof orientation issues, the high out-of-pocket costs still presented a barrier.

Newspaper articles, kick off Solarize workshops, and yard signs were the most effective way the program was communicated to both customers and prospects, along with hearing about the program from a **friend or solar customer**. Their town’s **support for the program** was also cited as an important element.

One of the most interesting findings was how significantly the Solarize model reduced the time required to make a decision regarding installing solar. Previous research indicated that the average decision time was approximately 1-2 years. Through the first phase of the

Solarize Helps Installers

The Solarize program provides qualified leads to installers, often in a quantity they must gear up for. Kick-off workshops can yield as many as 40 to 60 prospect names. This infusion of customers, along with bi-weekly calls with town volunteers, CEFIA, and SmartPower and weekly reporting on the status of site visits and signed contracts creates a level of accountability that improves installers’ internal systems and overall customer service.

As one installer reported, “Solarize made us a better company.” As another installer pointed out, “Being part of Solarize increases the prestige of our company.”

Solarize Connecticut pilot, almost 20% of customers who signed contracts had not considered solar before the program.

Conclusions and Early Lessons Learned

A number of lessons learned in the first phase of the Solarize Connecticut program have been incorporated into or influenced the second phase of the program. Some of those lessons include:

- Feed the pipeline: This is the most important objective of outreach, because only approximately 20% of those homeowners who express interest are going to qualify after site visits and/or sign a contract. As a result, the larger the turnout for Solarize workshops and follow up outreach, the more success the town will have.
- Identify a key point person for each community. This is the person who will drive activity and “own” the program locally.
- Media outreach should focus on local newspapers.
- Solar open houses should be strategically planned to include high profile and sales opportunities.
- Ensure yard signs and Solarize signage are highly visible.
- Emphasize that early sign ups will receive the same pricing as those who sign up at the end of the program..
- Town leadership and buy-in is important to the success of the program.
- Deadlines matter. Making sure residents know the end date of the program drives sign ups.

In conclusion, the Solarize model is an effective tool in driving down the cost of solar and significantly increasing residential adoption. Communities that demonstrate a commitment to solar, have a strong base of engaged residents, and have engaged leadership are more likely to achieve success with this model.

CEFIA and SmartPower are eager to work with additional Connecticut towns to expand Solarize Connecticut and help make Connecticut a national leader in solar power.

For more information contact:

Robert B. Wall
Associate Director, Outreach
CEFIA
bob.wall@ctcleanenergy.com

Toni Bouchard
Vice President
SmartPower
tbouchard@SmartPower.org

Attachment 5

SIMPLE ENERGY ALIGNS CONSUMER AND UTILITY INTERESTS

CASE STUDY: SAN DIEGO ENERGY CHALLENGE

In an effort to demonstrate value from smart grid implementations to residential customers, in 2012 San Diego Gas & Electric (SDG&E) partnered with Simple Energy to deliver the San Diego Energy Challenge to over 500,000 households. The stated goal was behavioral energy efficiency and peak load reduction results.

Simple Energy's online engagement platform delivered targeted messaging to participants, encouraged individual comparison and competition through gamification, and rewarded customers for energy savings. Customers also had the option to participate on behalf of a school, encouraging community-based collaboration and competition.

KEY FINDINGS AND RESULTS



6.5%

sustained energy conservation through behavioral energy efficiency



Ongoing dialogue

Engaged customers have an ongoing dialogue with their utility company that enables key business outcomes



>10%

peak load reduction on event days



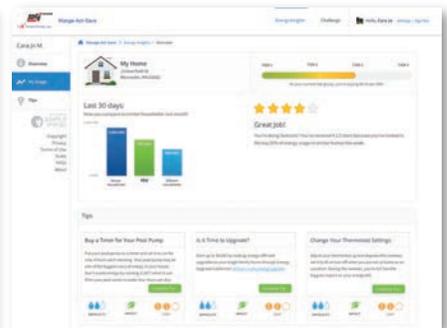
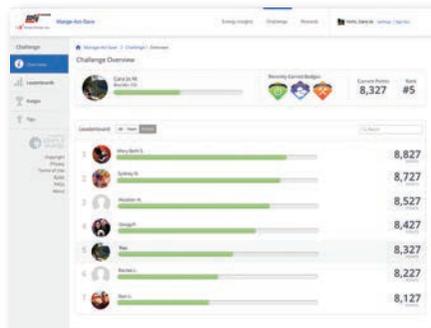
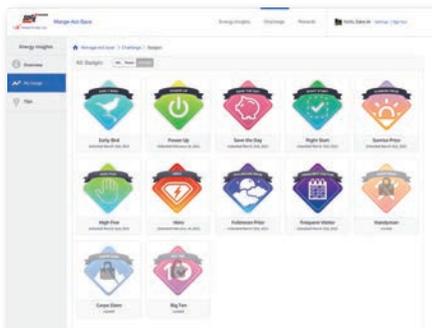
Virtual rewards

such as badges, status on a leaderboard, and social recognition are a low cost way to further incentivize desired actions from customers



20%

increase in complementary SDG&E program sign-ups



CONTACT US at sales@simpleenergy.com
or (303) 953-4735 for a live demo.

1215 Spruce St.
Suite 301
Boulder, CO 80302 USA



Attachment 6

Five Emerging Practices to Engage with Utility Customers

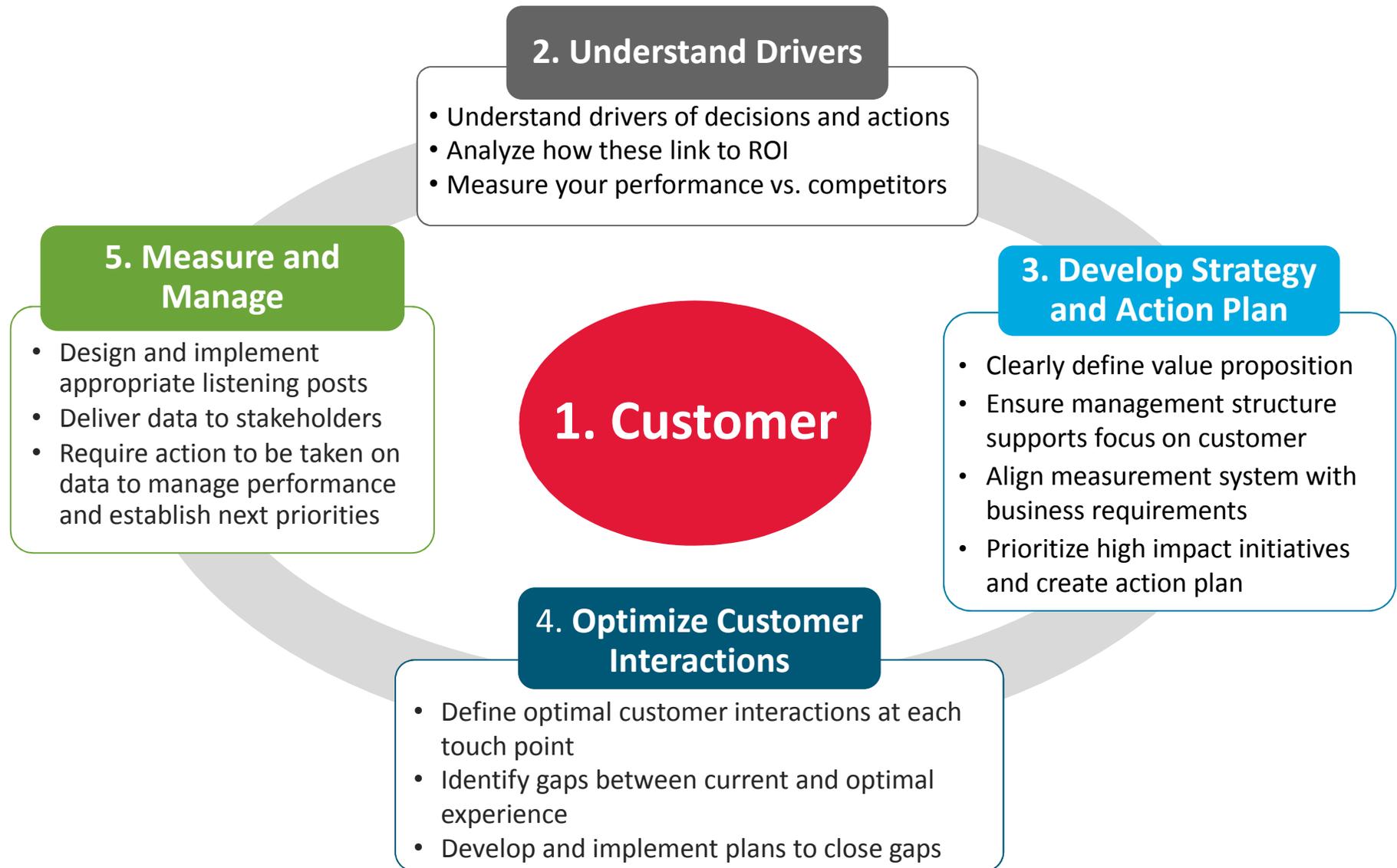


Insights from J.D. Power's Customer Engagement Research
May 7, 2014

Dennis Smith
Director, Energy Practice



5 Basic Principles Underline Top Performance





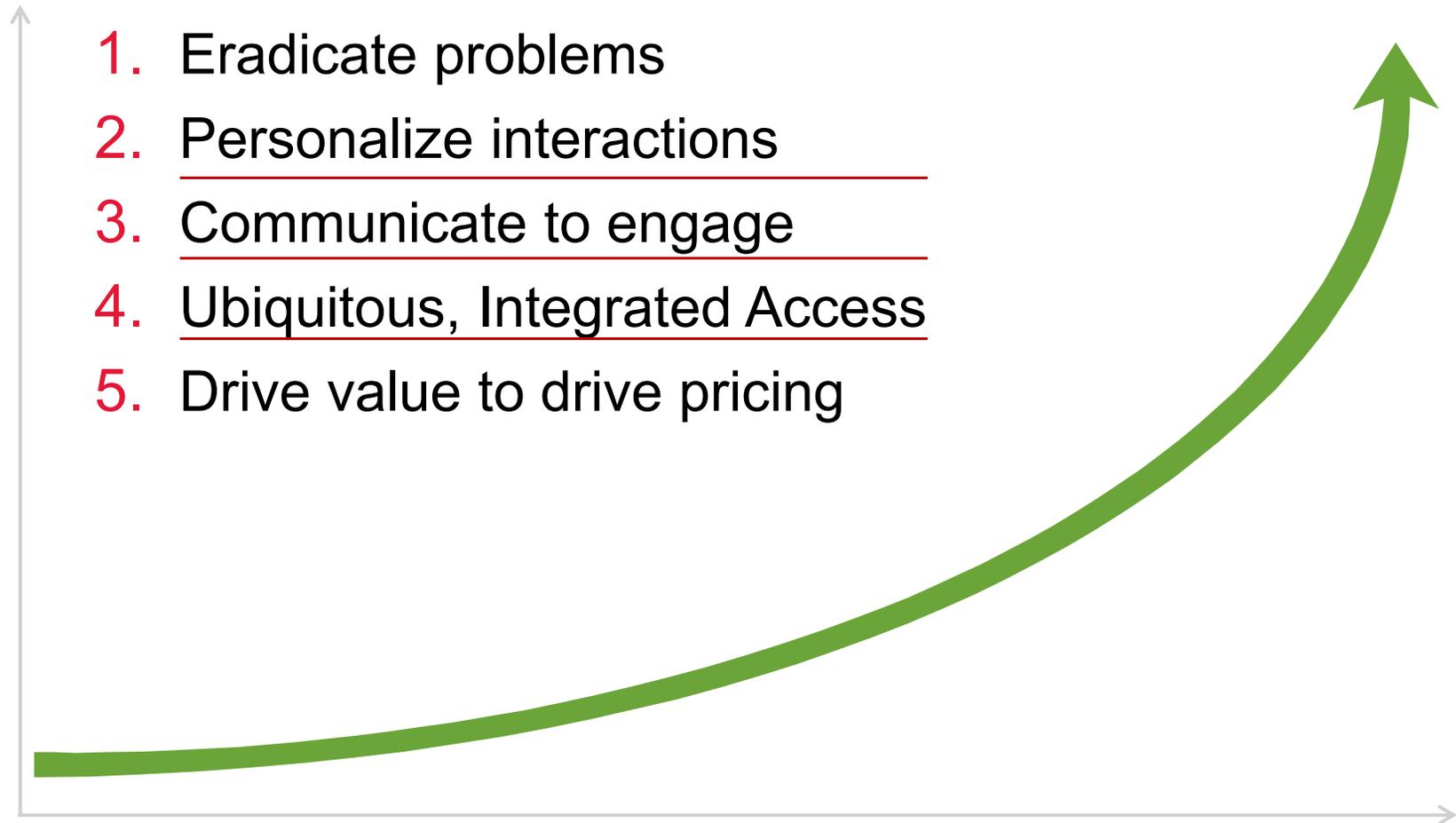
Presentation Sources

- *J.D. Power 2014 Utility Website Evaluation StudySM*
- *J.D. Power 2014 Consumer Engagement StudySM*
- *J.D. Power Customer Impact SeriesSM*
- *J.D. Power 2014 Social Media Benchmark StudySM*
- *Syndicated customer satisfaction studies*



Drivers of High Performance Brands

ROI





Five Emerging Customer Engagement Practices

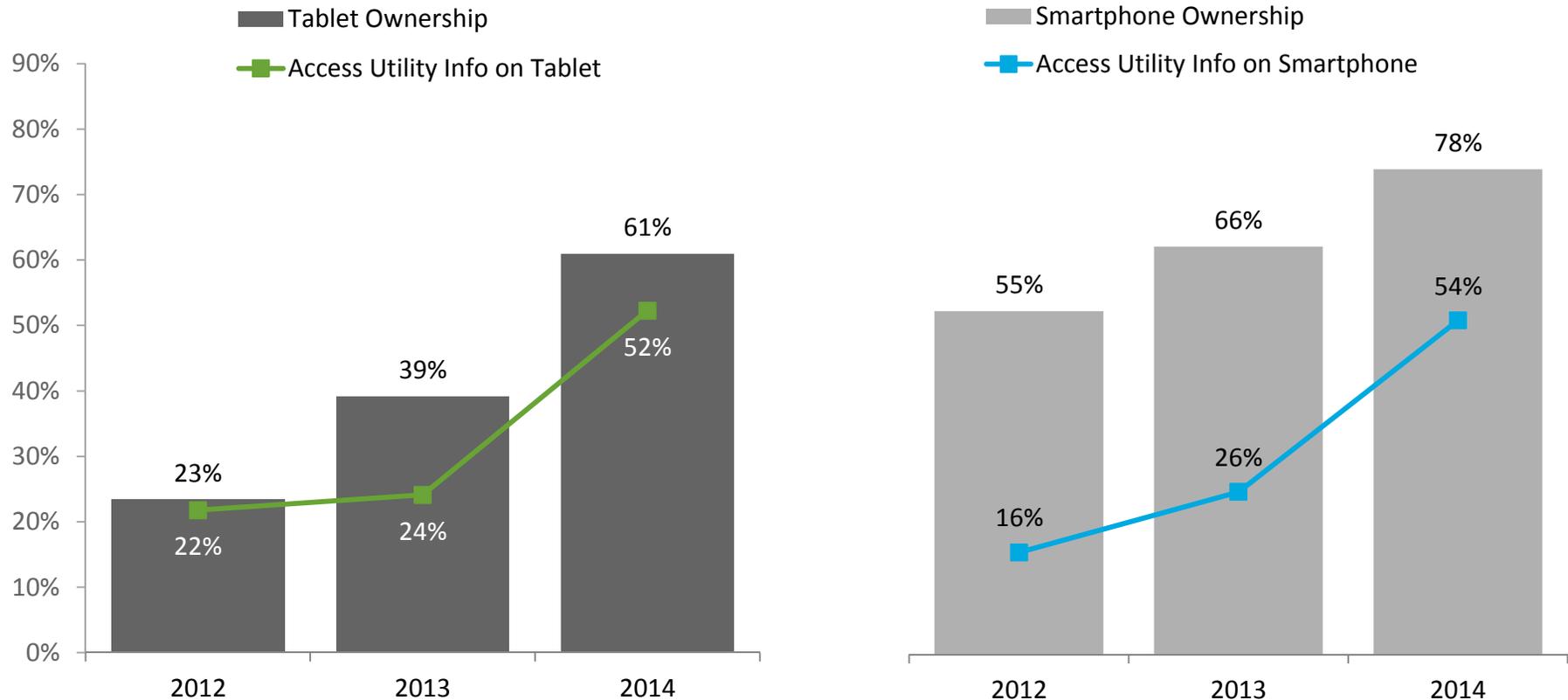


Five Emerging Customer Engagement Practices

1. Develop A Mobile Interface



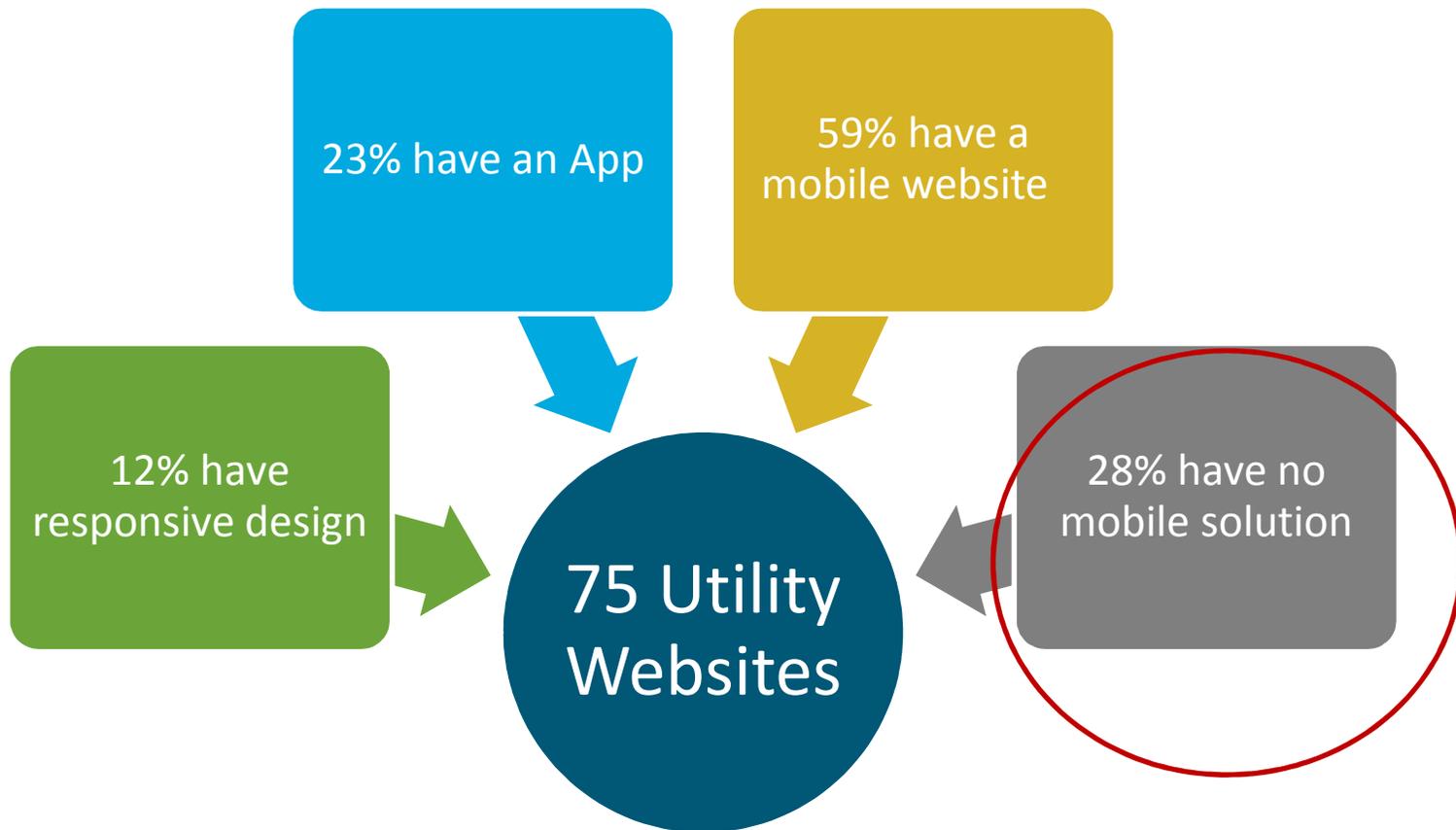
Smartphone and Tablet Ownership and Usage Rising



Percent of customers who own tablets and/or smartphones and had used their devices to interact with their utility online. Source: J.D. Power Utility Website Study



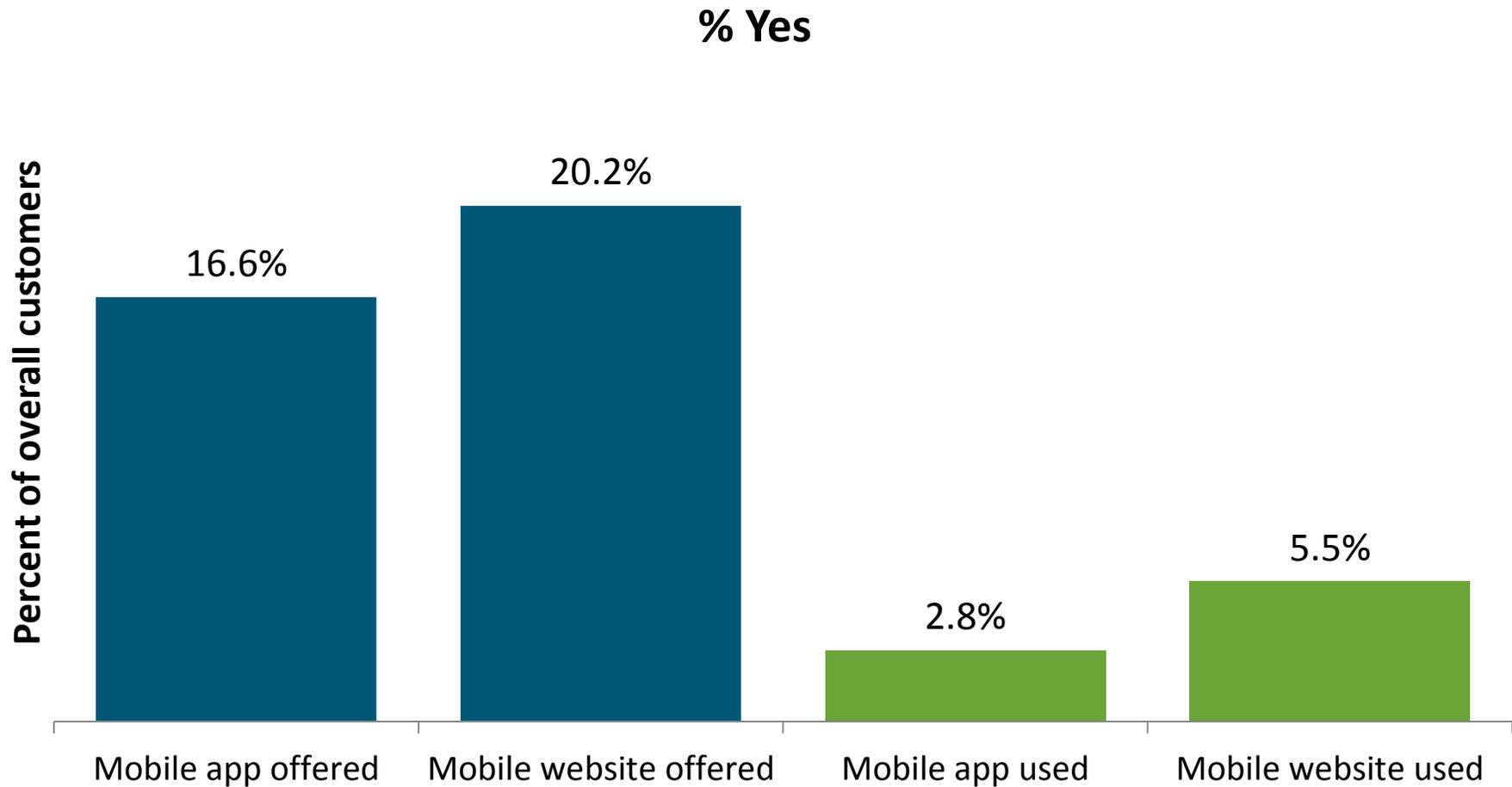
Many Utilities Still Have No Mobile Solution



With 54% of smartphone owners accessing utility information on the utility website, the lack of an optimized mobile solution is a missed opportunity to service customers.



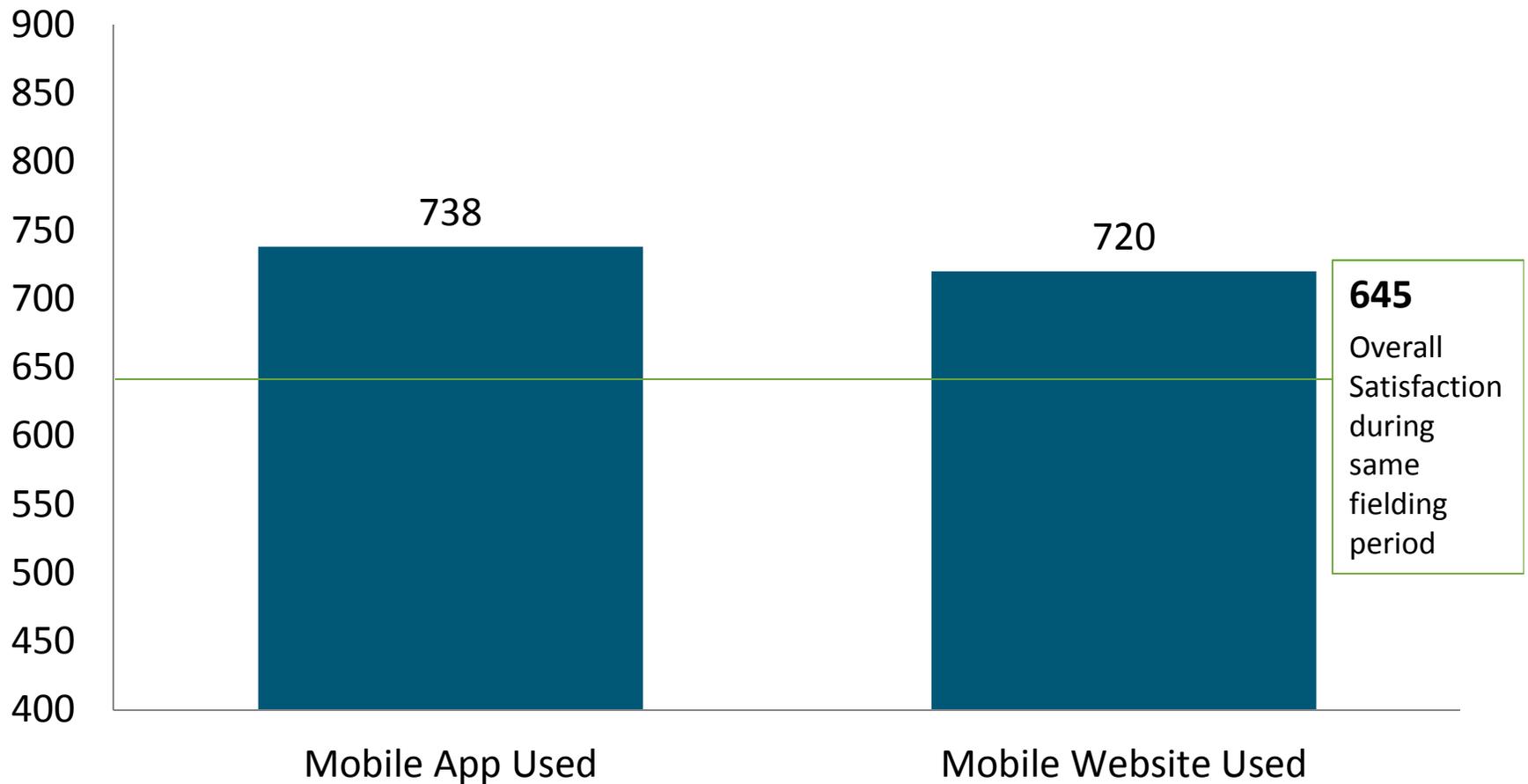
Customer Awareness and Usage Mobile Channels



Source: J.D. Power 2014 Electric Utility Residential Customer Satisfaction Study,SM fielding period October/November 2013



Overall Satisfaction Among Mobile Web Users



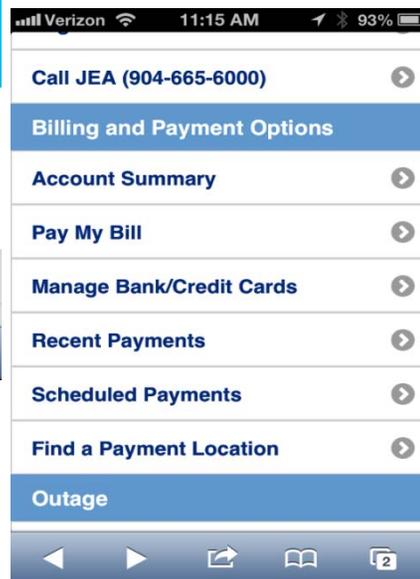
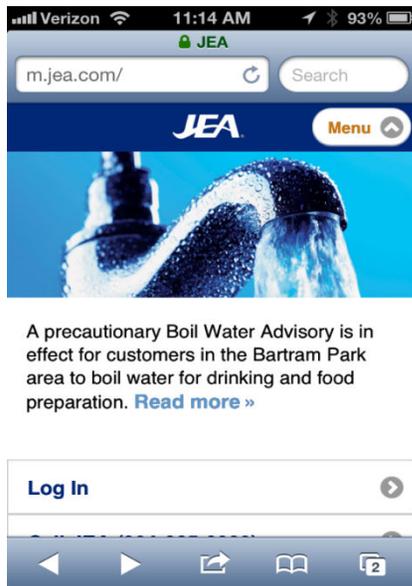
Source: J.D. Power 2014 Electric Utility Residential Customer Satisfaction Study,SM fielding period October/November 2013



Developing a Mobile Presence

- **Mobile Interface**
 - Allows users a friendly mobile interface to transact business with you
- **Apps vs. Mobile Web**
 - Which is best for a utility?
- **Responsive Design**
 - More utilities taking this route, but experts advise caution as you develop

Robust Mobile Sites Offer Ideal Service



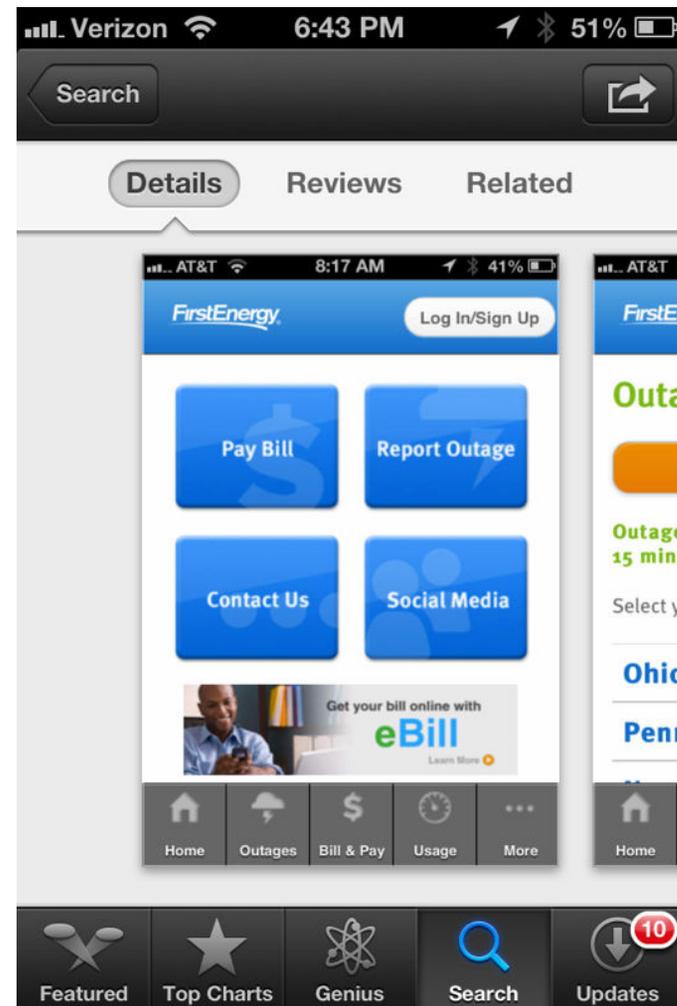
JEA's mobile website leads with an important customer notice and a full menu of service options. The order users see as they "swipe" to scroll the page is from the top left to the bottom right.



Apps Should Include Bill Pay and Account Features

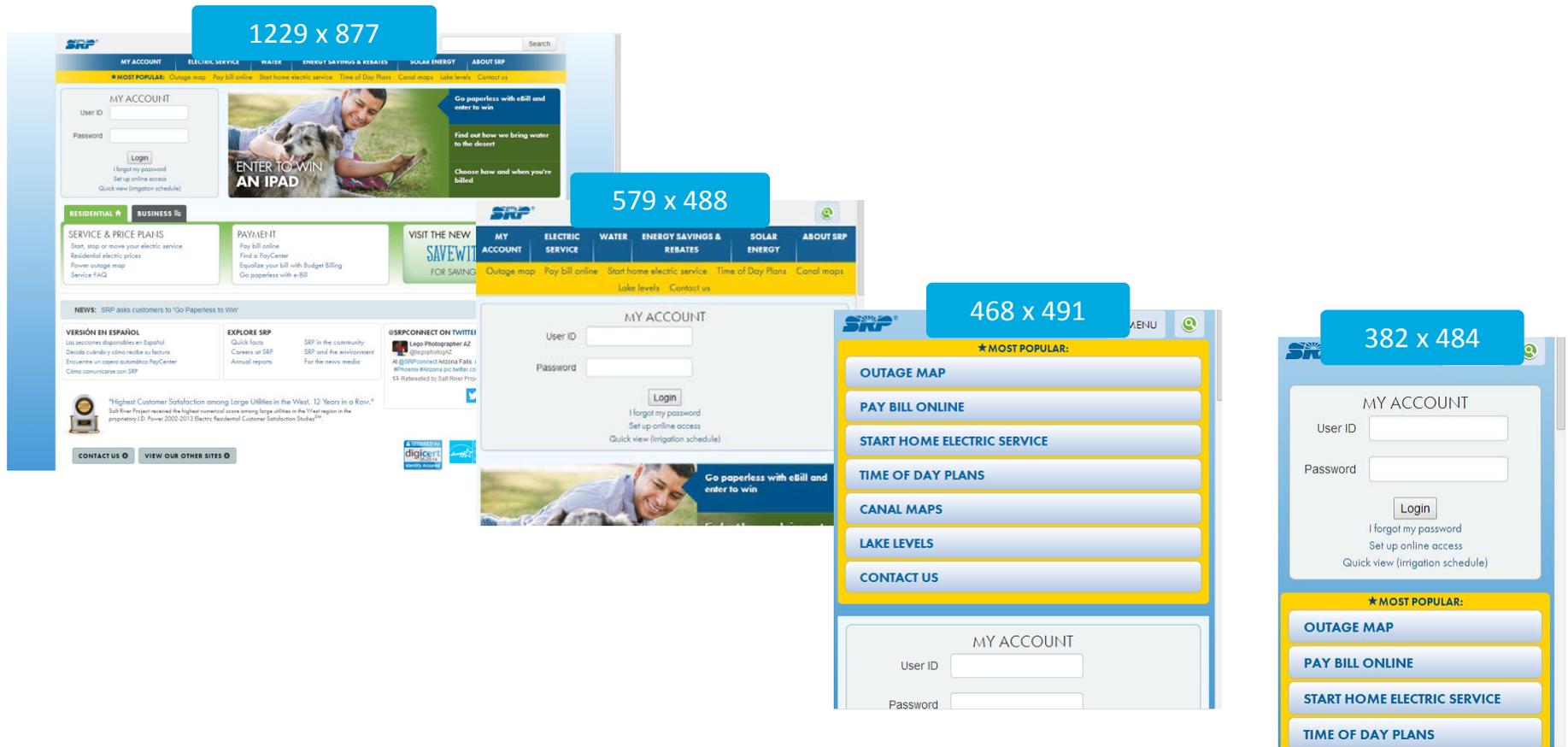
While most utility apps focus on outage, customers want account features.

The FirstEnergy app offers customers the opportunity to pay bills, get outage information and contact the utility, as well as access to FirstEnergy's social media channels.





Example of a utility responsive design website



One of the advantages to responsive design is a single website can handle multiple screen sizes.



Five Emerging Customer Engagement Practices

1. Develop A Mobile Interface



Five Emerging Customer Engagement Practices

1. **Develop A Mobile Interface**
2. **Reach Out Proactively**



Reach Out Proactively

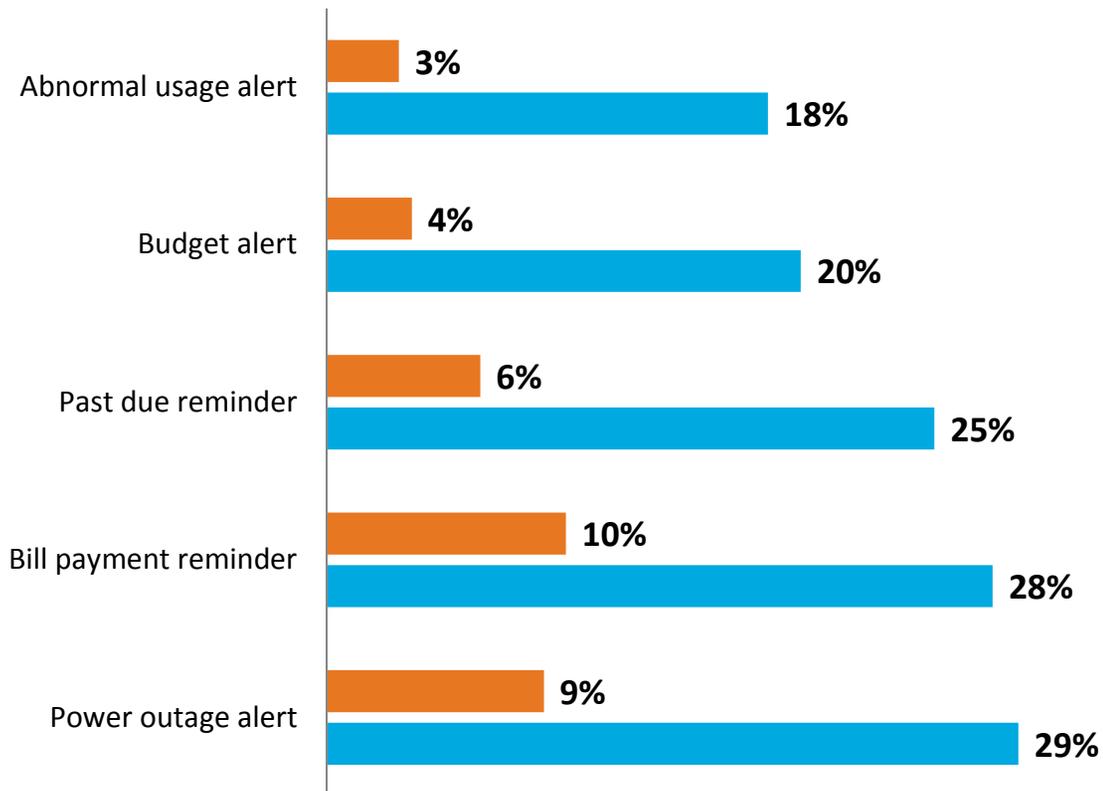
- **Various types of messaging works well with utilities**
 - Bill due/Payment reminders
 - Usage/Budget alerts
 - Outage notifications
 - Other types unique to the utility
- **One directional or two-way interaction**
- **Various channels**
 - Email
 - Text
 - Automated phone call
 - Preference sites or portals



Proactive Notifications—Customer Adoption & Awareness

Total Industry—U.S. Electric Utility Customers

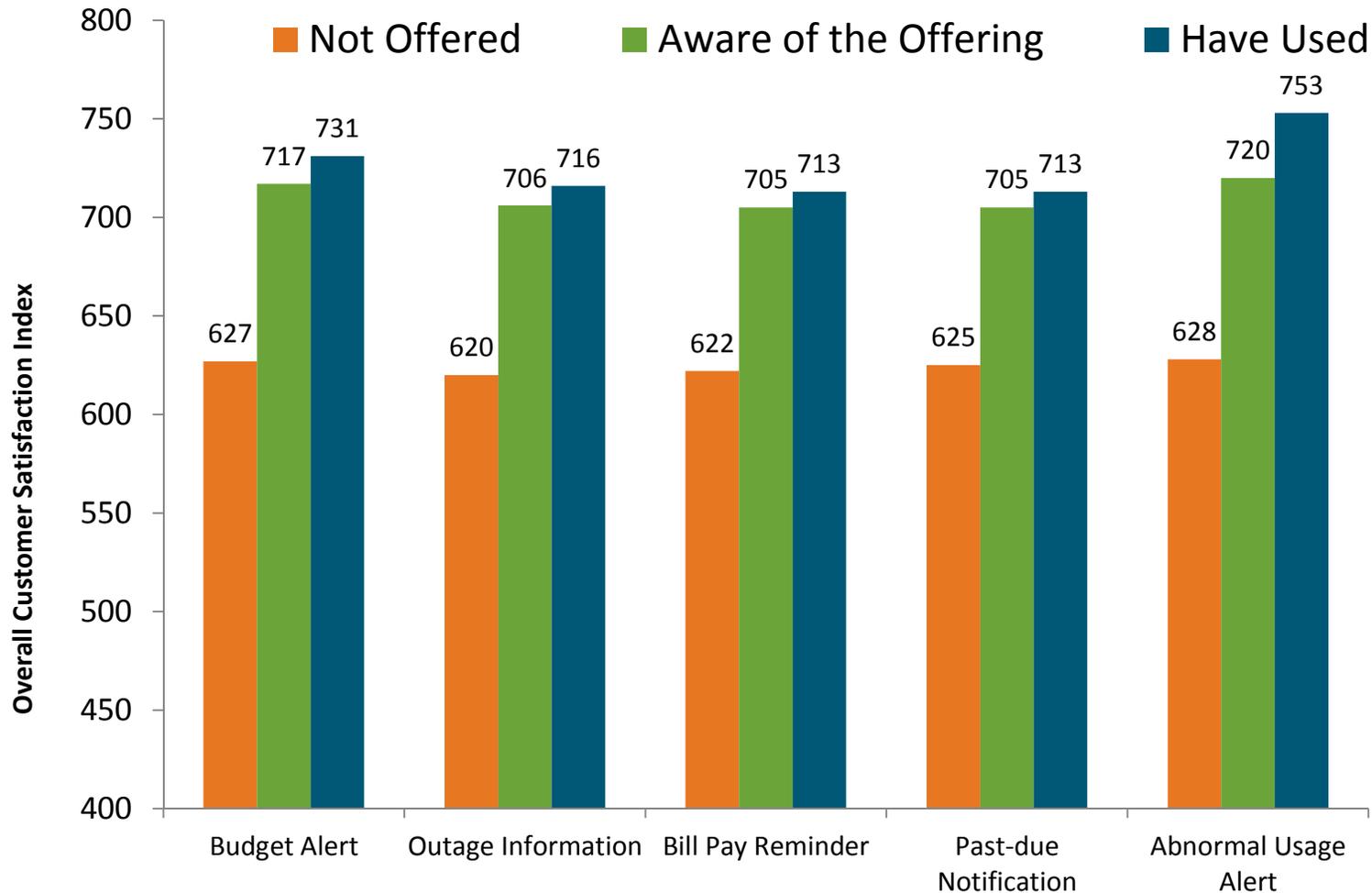
■ Have Used/Enrolled in ■ Aware of the Offering



Source: J.D. Power 2014 Electric Utility Residential Customer Satisfaction Study,SM Oct-Nov fielding period.



Overall Satisfaction is Higher with Customers Aware of and Using Proactive Alerts



Source: J.D. Power 2014 Electric Utility Residential Customer Satisfaction Study,SM Oct-Nov fielding period.
Published in *Customer Impact Report on Proactive Notifications and Alerts*



Proactive Communications Dramatically Improves Satisfaction During Prolonged Weather Outage Events

Power Quality & Reliability Index

	Weather Related Outages – Sources Used to Get Outage Info			
	Proactive Communication from Utility	Viewed Outage Map	Mobile App	Customer Contacted Utility
6 mins. to 30 mins.	783	764	717	703
More than 30 mins. to 1 hour	778	748	720	679
More than 1 hour to 2 hours	744	695	717	651
More than 2 hours to 3 hours	744	736	687	679
More than 3 hours to 4 hours	721	730	694	655
More than 4 hours to 10 hours	688	698	675	623
More than 10 hours to 1 day	660	659	667	604
More than 1 day	708	583	629	603

2013 Residential Utility Customer Satisfaction, Published in *Customer Impact Report on Storm Response and Outage Communications*



Billing Alerts Help Customers Manage Usage

Southern California Gas Company
A Sempra Energy utility

For Your Home ▾ For Your Business ▾ Safety ▾ Innovation ▾ Customer Service ▾

Help Center My Account Login

Search or Ask a question here

Home > Innovation > Advanced Meter > Bill Tracker Alerts

Bill Tracker Alerts

Manage your monthly gas usage

Introducing Bill Tracker Alerts, a weekly alert designed to help you manage your monthly gas bill. With Bill Tracker Alerts, residential and business customers can monitor gas costs throughout the billing cycle, and take steps to lower usage and avoid any surprises on their monthly gas bill.

Bill Tracker Alerts include:

- Bill-In-Date
- Projected next bill
- Last month's bill
- Last year, same month's bill
- Days elapsed in the current billing cycle
- Days remaining in the current billing cycle

No cost updates via email and/or text

Customers have the option of receiving weekly Bill Tracker Alerts via email and/or text

Advanced Meter

- Prepare for Installation
- Benefits of Advanced Meters
- FAQ

Bill Tracker Alerts

- Ways To Save for Residential Customers
- Business Customers
- TAP

Sign up for Bill Tracker Alerts

To receive weekly alerts via email and/or text message, visit [Bill Tracker Alerts Sign-up](#).

If you are a My Account customer, go to [My Account](#) and click on the "Manage My Account" tab.

For general questions call 1-800-427-2200

Change preferences or unsubscribe

To change your Bill Tracker Alerts preferences or unsubscribe, go to [My Account](#) and click on the "Manage My Account" tab.

If you are not yet a My Account customer, call 1-800-427-2200

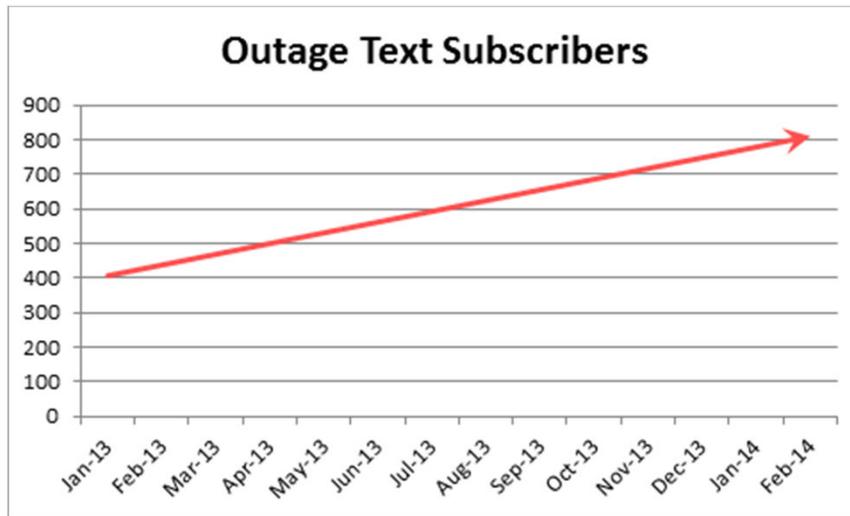
To unsubscribe to text alerts, reply "Stop" in the text message.

Bill Tracker Alerts allow Southern California Gas Co. customers an array of billing alerts of which they can take advantage.



Customers Will Enroll

Entergy Corp.



Courtesy: Entergy Corp.

Utilities with proactive notification programs have seen significant enrollments as the programs are launched and promoted.

PPL Electric Utilities Superstorm Sandy

	Outage Notification Message	Update to Job Message	Restoration Message	Total Messages
Total Messages	84,472	359,668	161,702	605,842
E-Mail	6,593	12,188	6,070	24,851
Voice	35,540	273,238	117,880	426,658
Text	42,339	74,242	37,752	154,333

Courtesy: PPL Corp.



Five Emerging Customer Engagement Practices

1. **Develop A Mobile Interface**
2. **Reach Out Proactively**

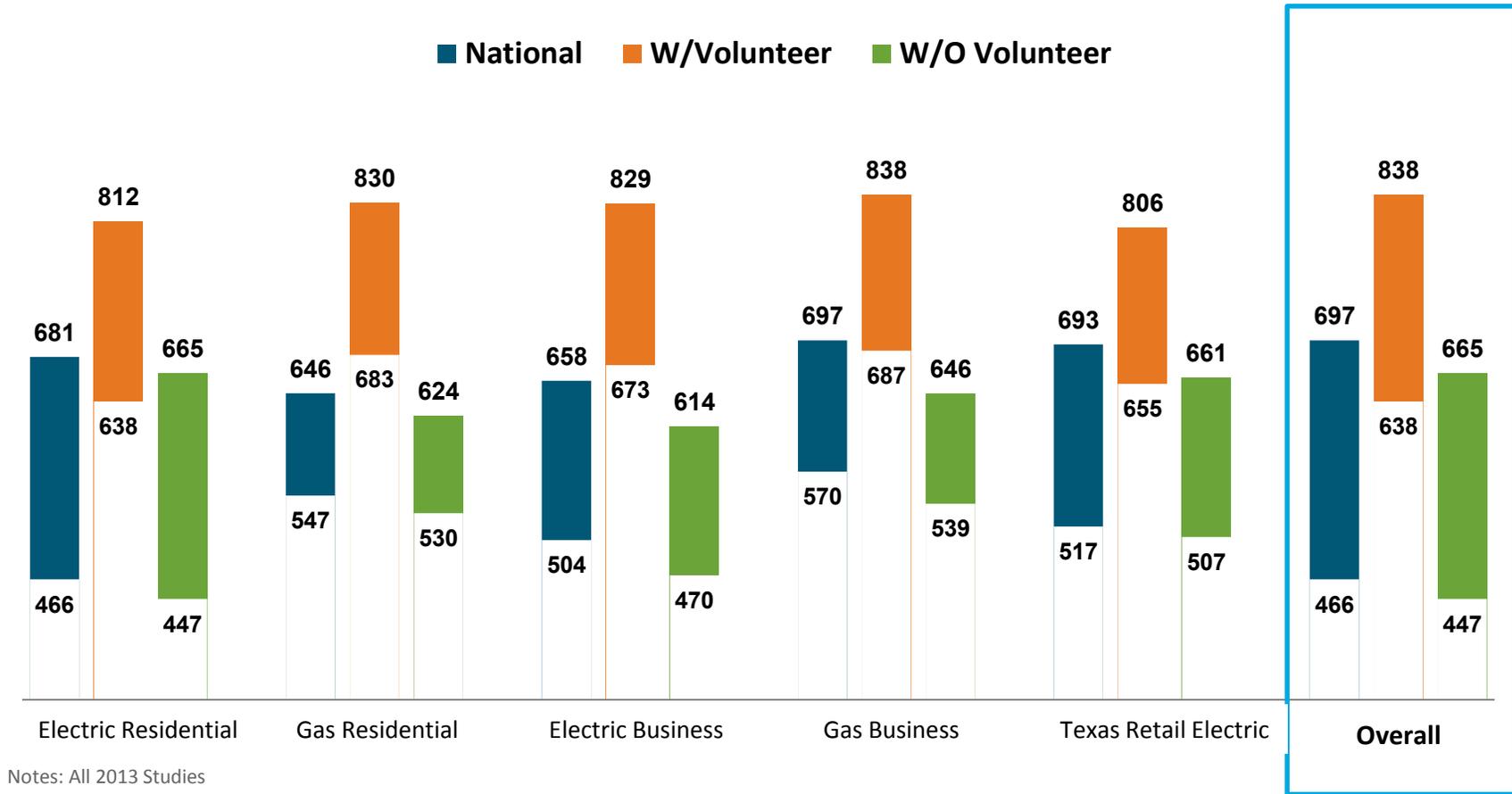


Five Emerging Customer Engagement Practices

- 1. Develop A Mobile Interface**
- 2. Reach Out Proactively**
- 3. Be A Good Corporate Citizen**



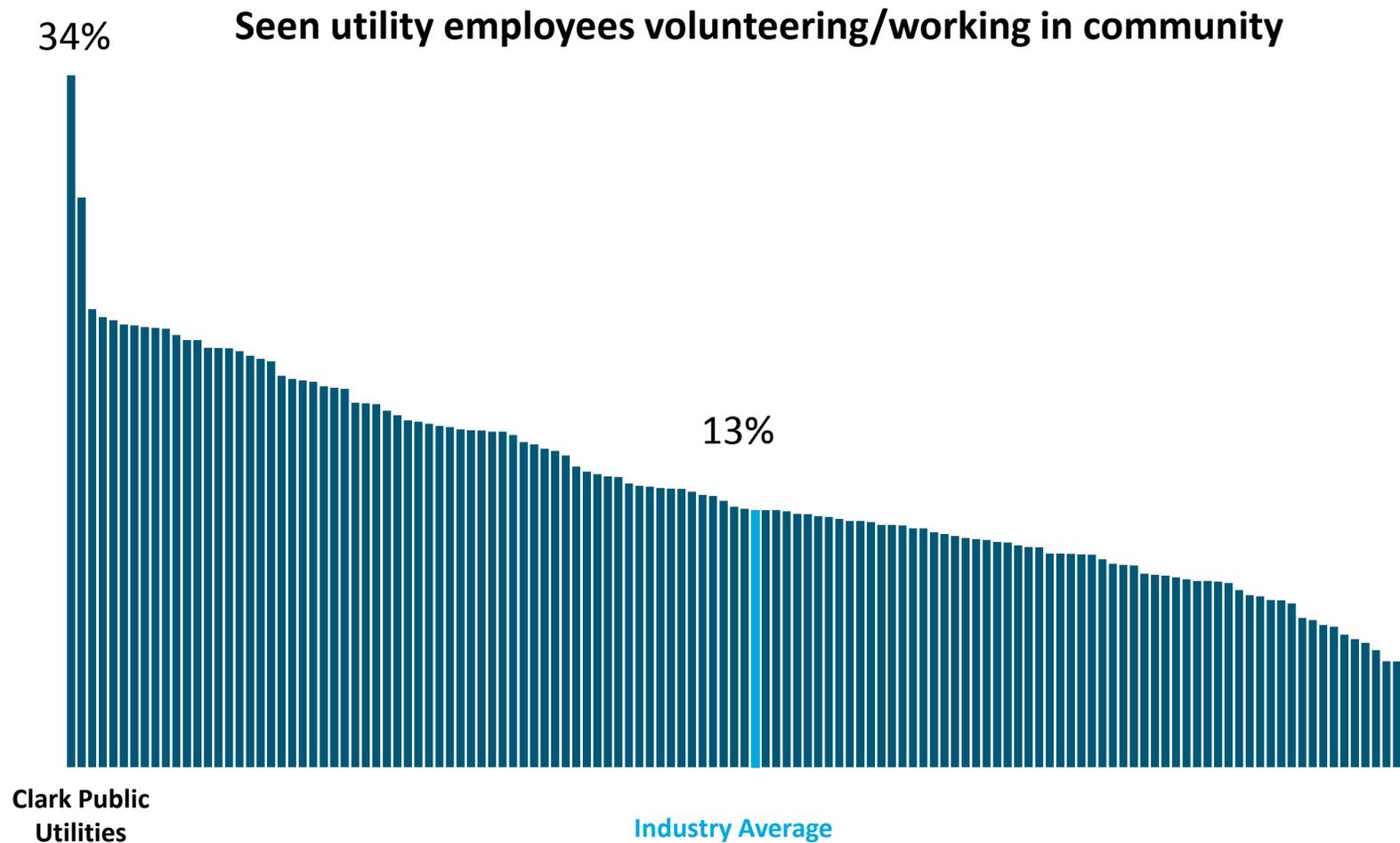
Impact of Volunteering Across All Energy Studies



Each study shows the effect of volunteer awareness on Corporate Citizenship is dramatic



Volunteer Awareness by Utility – Electric Residential





Community Events Allow for High Visibility



We're always here

- Home
- MyAccount
- Residential
- Business
- Payment Options
- Safety & Outages
- Environment
- Community
- Jobs
- About Us

Home & Garden Idea Fair

Clark County Fair

Community and resource links

Community room

▶ Home & Garden Idea Fair

- 2014 Show Guide
- Be an exhibitor
- Energy Smart Home
- Environmental activities
- Exhibitors
- Fair partners
- Farmer's Market
- Guest information
- Guest presentations
- Kids' stuff
- Landscape displays
- Plant sale

Homework help

SafeWatch



The 23rd annual Clark Public Utilities Home & Garden Idea Fair was held on **April 25, 26 and 27, 2014** at the Clark County Event Center, located at 17402 NE Delfel Road in Ridgefield, Washington, just nine miles north of the I-5 bridge at exit 9.

Hours for the 2014 show were:

- Friday, April 25: 9 a.m. to 6 p.m.
- Saturday, April 26: 9 a.m. to 6 p.m.
- Sunday, April 27: 10 a.m. to 5 p.m.

We are pleased to provide this outstanding event for our customer-owners as a way to

share important information about utility programs and services that benefit you. But even more, this show provides the perfect opportunity for local businesses and organizations to promote their home and garden related products and services to the communities they serve.

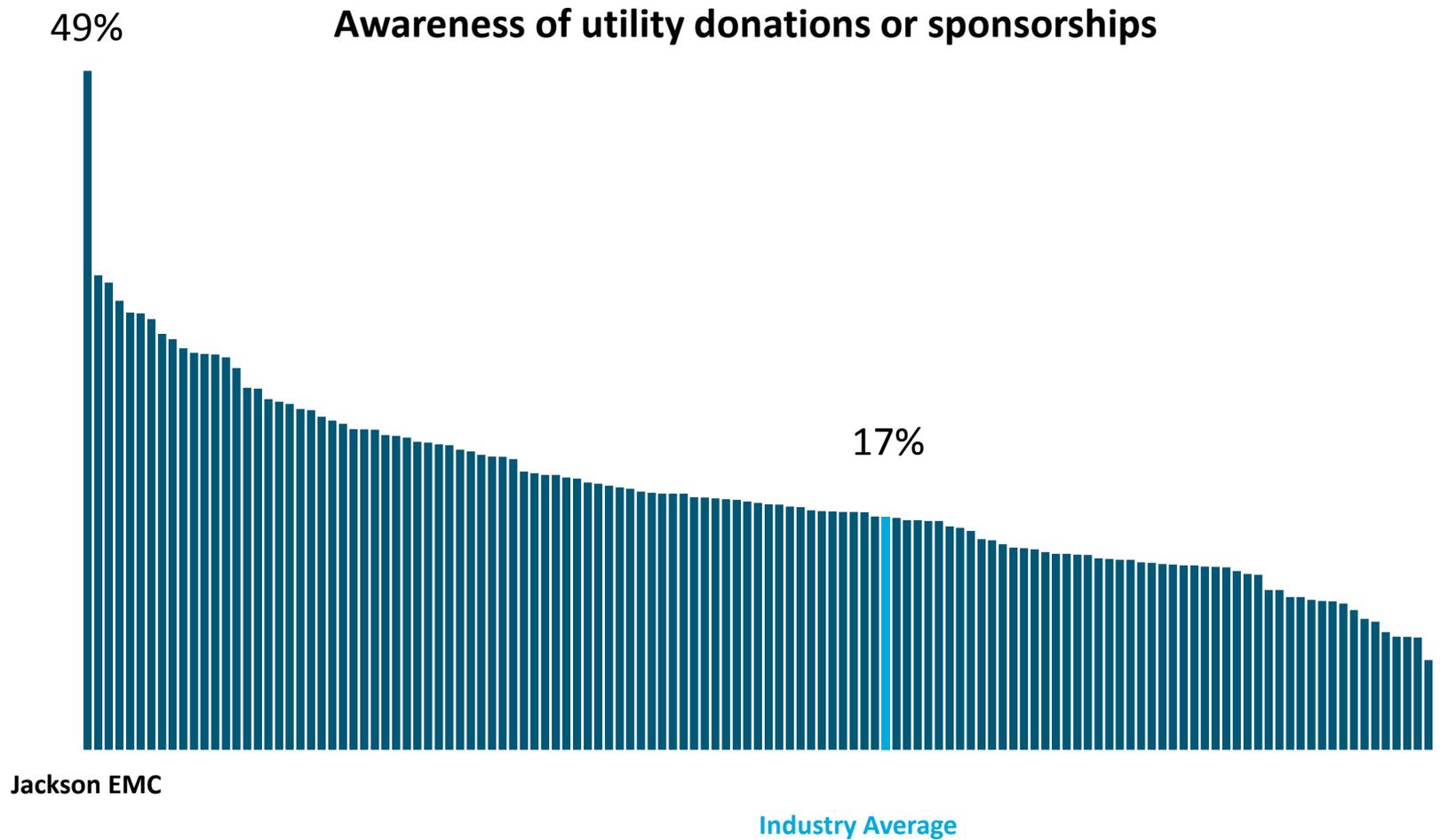
The fair features hundreds of ideas on how to make your home, yard and garden a more beautiful, energy-efficient and environmentally friendly place. Here's the [2014 Show Guide](#), available in local newspapers just before the event, to give you an idea of what you can look forward to when you join us at the Home & Garden Idea Fair.

It's a fun filled show, with activities for the entire family. Admission is FREE and venue parking is \$6. Attendees can save on parking by taking a free shuttle bus to the fairgrounds. There were two locations you could catch the shuttle: C-Tran's Fisher's



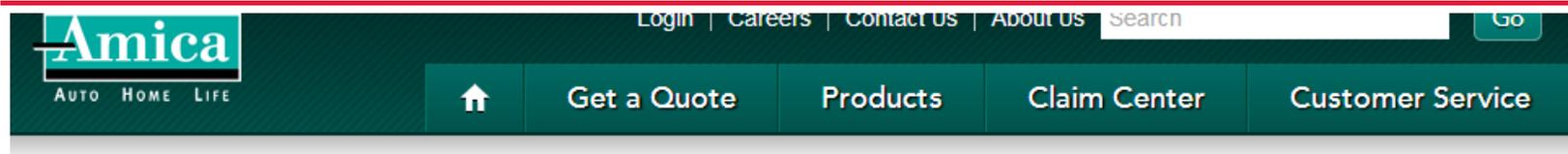


Donation Awareness by Utility – Electric Residential





It's Not Just Important to Utilities....



Home > About Us > In Your Community > Corporate Citizenship

In Your Community

Overview

Corporate Citizenship

Sponsorships

Charitable Grants

Back to About Us

Corporate Citizenship

Amica employees are avid volunteers and these activities are applauded and encouraged through a number of company programs.

Amica Citizenship Grants

The Citizenship Grant Program encourages and recognizes significant volunteer work on the part of employees. Recognition is provided through the awarding of financial support to qualified organizations in the names of employees who are actively involved in those organizations.

Amica Gives

Our employees are encouraged to volunteer at company-sponsored events. Just as our dedication to superior customer service sets us apart from other insurance companies, our commitment to community involvement enables us to truly understand the needs of our customers and neighbors.

Amica Volunteer Day Program

The Amica Volunteer Day Program encourages and supports employee volunteerism by providing employees with up to one day of paid time off each year to volunteer in the community.

Employee Participation



Our employees collect food, clothing, school supplies, toys and other items to help deserving families and

Amica recognizes how corporate citizenship is important to its standing as a leader in its industry.

Source: www.amica.com



Five Emerging Customer Engagement Practices

- 1. Develop A Mobile Interface**
- 2. Reach Out Proactively**
- 3. Be A Good Corporate Citizen**



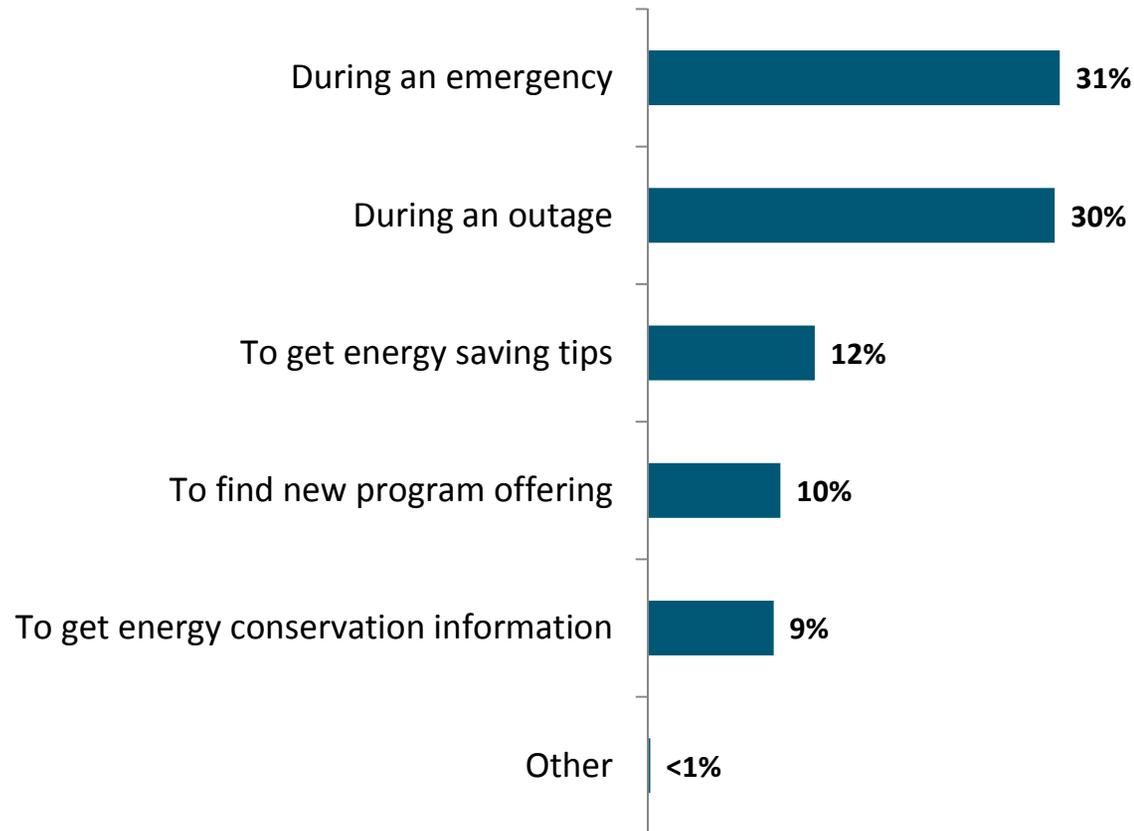
Five Emerging Customer Engagement Practices

- 1. Develop A Mobile Interface**
- 2. Reach Out Proactively**
- 3. Be A Good Corporate Citizen**
- 4. Leverage Social Media**



Social Media Use by Utility Customers

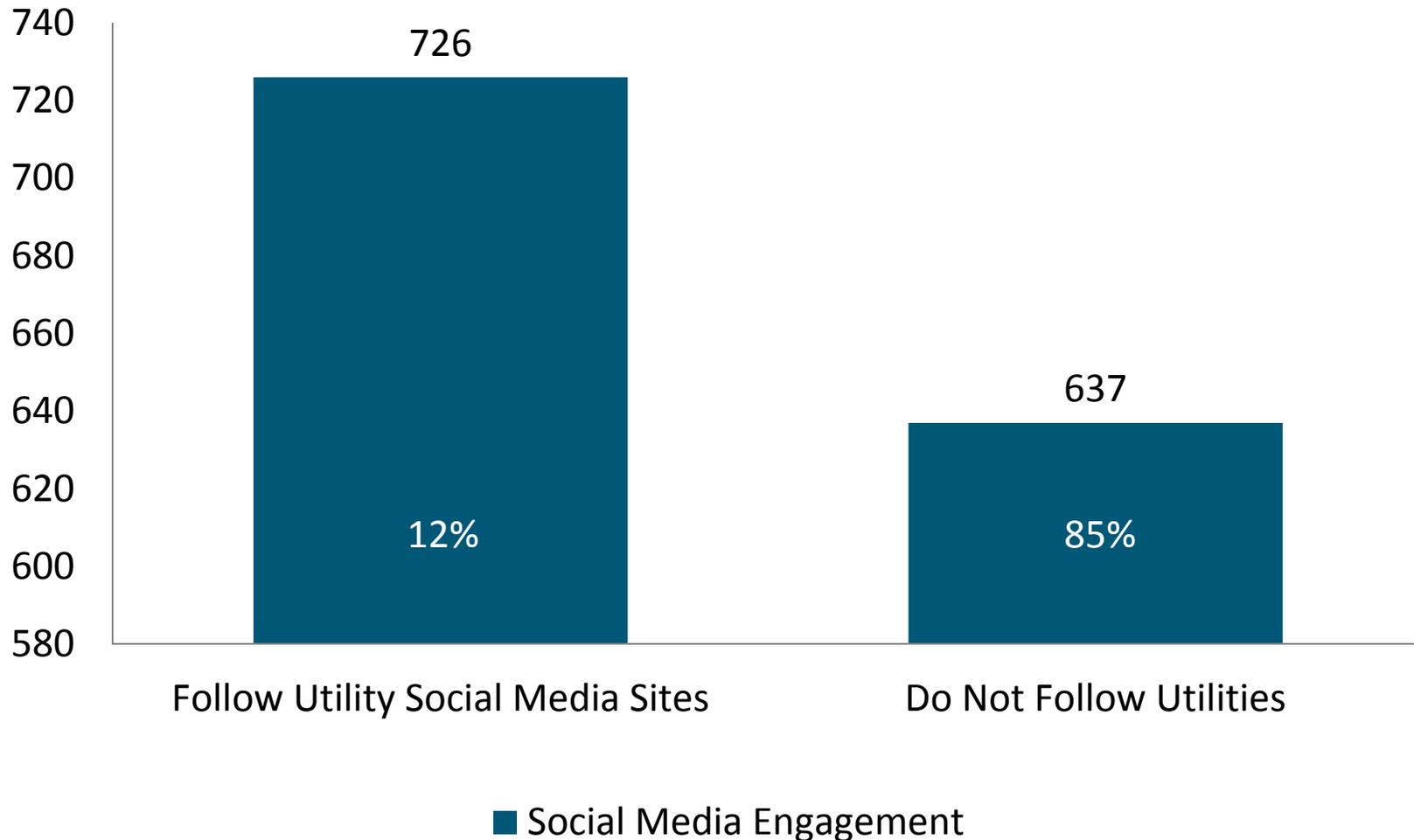
Used Social Media to Get Information...



Source: *J.D. Power 2014 Electric Utility Residential Customer Satisfaction Study*,SM July-Aug fielding period



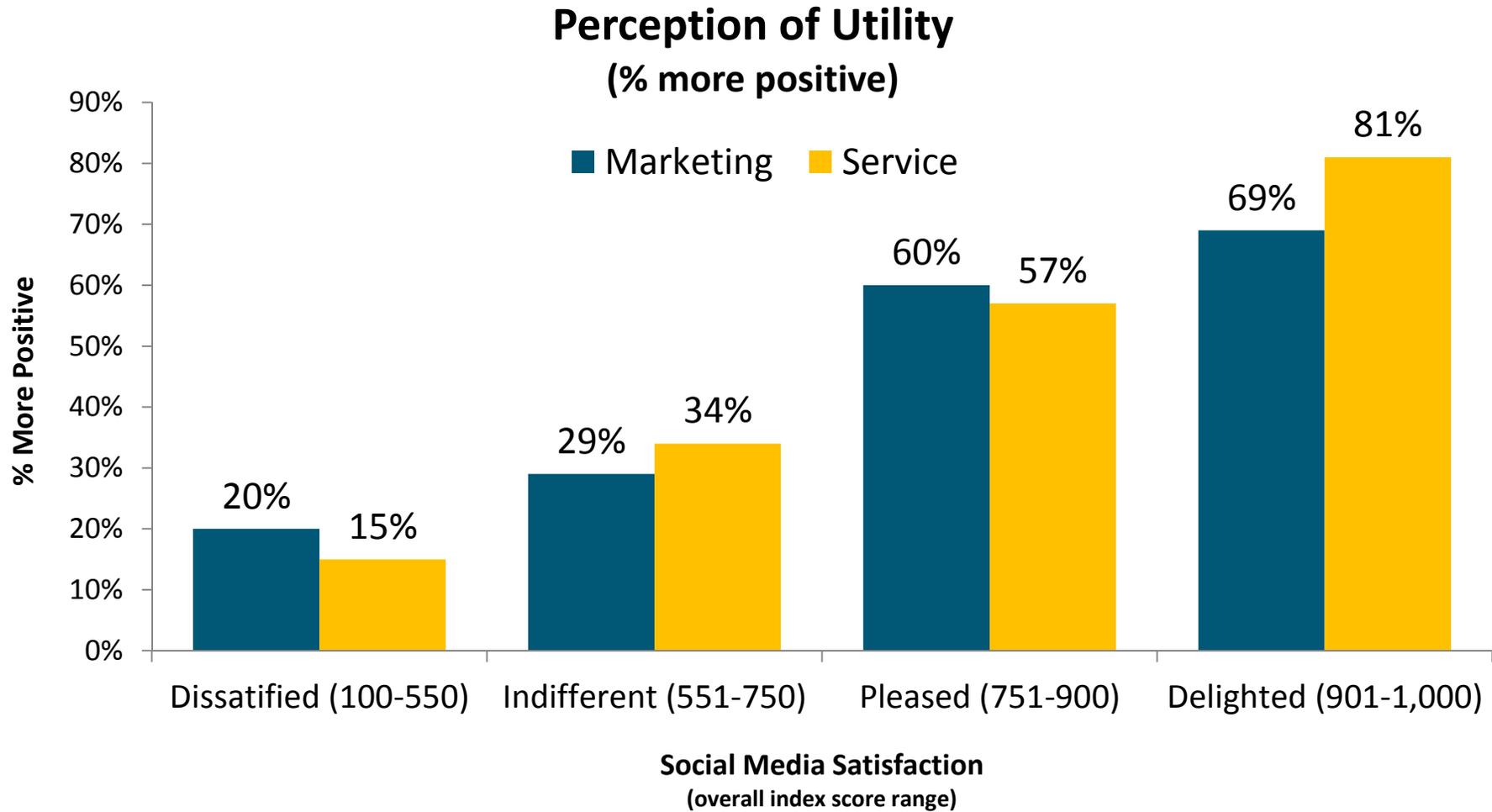
Overall Customer Satisfaction Among Social Media Followers



Source: J.D. Power 2014 Electric Utility Residential Customer Satisfaction Study,SM July-Aug fielding period

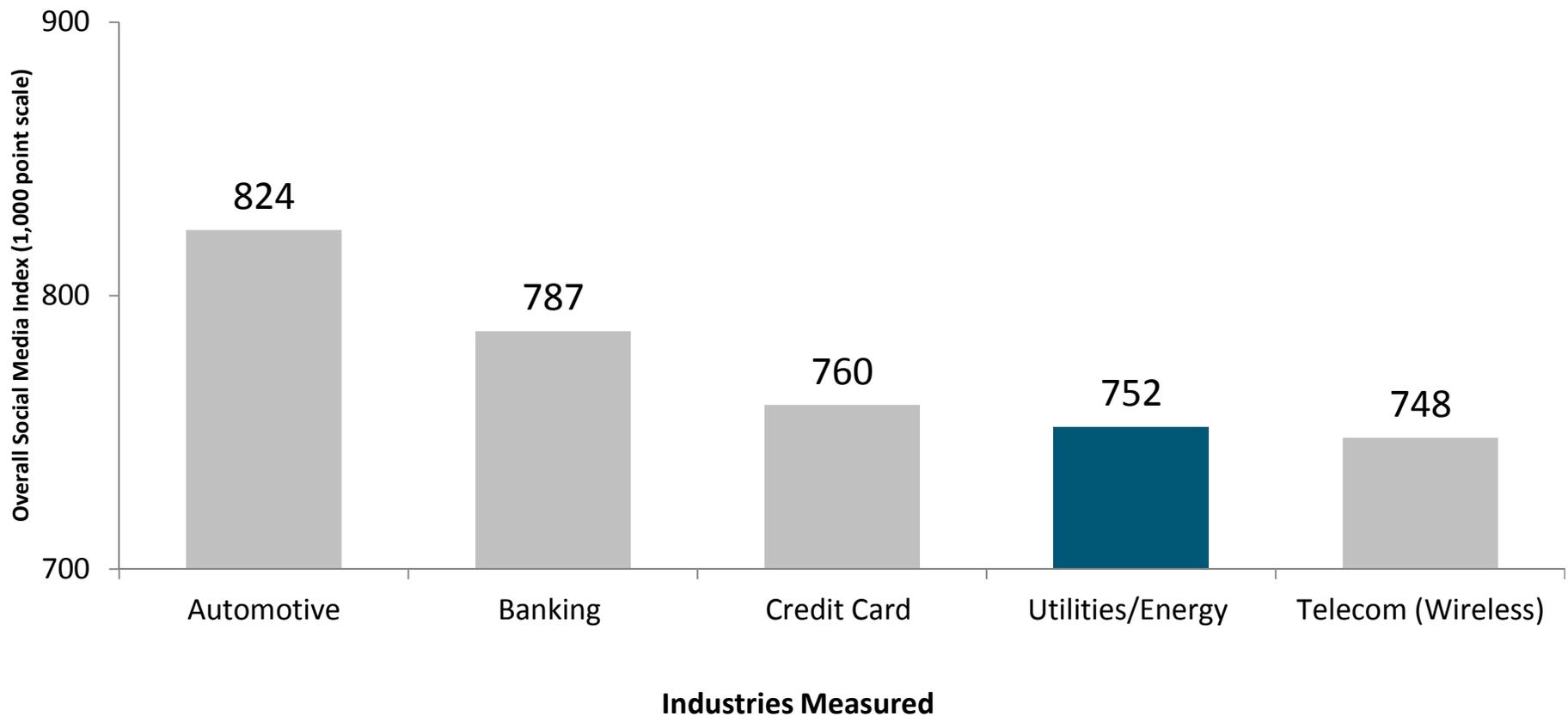


High Satisfaction with Social Media Improves Perception of Utility Overall





Industry Differences in Satisfaction with Social Media Interactions



As seen in other JD Power studies, high involvement industries (e.g. automotive, banking) garner the highest levels of satisfaction while telecom and utility have the lowest scores.



Use Social Sites to Involve Customers

THE JOURNEY TO A BETTER BILL

ComEd powering lives
An Exelon Company

Introducing your new ComEd Residential Bill

Thanks to you, our billing statement is better.
Easier to read, easier to understand.

ComEd used its Facebook page to get customer feedback on a new bill redesign.

Facebook Provides a Good Channel for Community Service Promotion



 Southern California Edison ... Timeline Recent

 Southern California Edison (SCE)
6 hours ago

Our crews from the Covina Service Center adopted 120 foster kids and delivered toys to children from Specialized Foster Care in Rancho Cucamonga and McKinley Children's Center in San Dimas.



 Avista Utilities Timeline Recent

 Avista Utilities shared a link.
Yesterday

We will donate \$1 to Toys for Tots for every festive holiday sweater created at www.avistaholiday.com. Please share with your family and friends to help reach the goal of 10,000 sweaters created.



Avista Festive Sweater Generator
www.avistaholiday.com

Make your own festive sweater and turn it into a donation for Toys for Tots. For every sweater made, Avista Utilities will make a donation on ur behalf. Make your own festive sweater at: avistaholiday.com

A number of utilities use Facebook to promote their community efforts and connect with customers. Above, Southern California Edison shows its employees donating toys to children in need at Christmas. At right, Avista Utilities promotes a Toys for Tots campaign with fun community involvement.



Five Emerging Customer Engagement Practices

- 1. Develop A Mobile Interface**
- 2. Reach Out Proactively**
- 3. Be A Good Corporate Citizen**
- 4. Leverage Social Media**

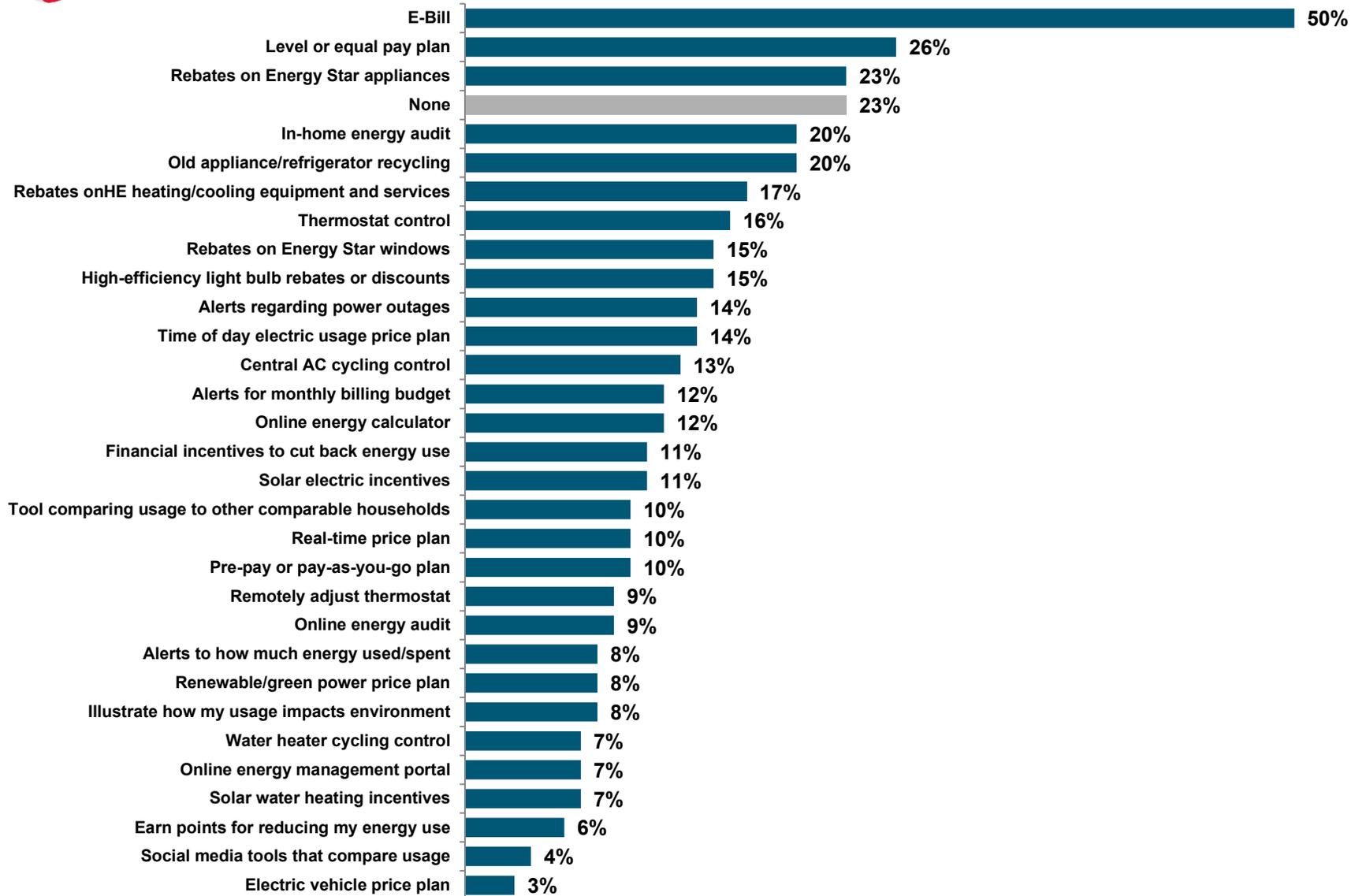


Five Emerging Customer Engagement Practices

- 1. Develop A Mobile Interface**
- 2. Reach Out Proactively**
- 3. Be A Good Corporate Citizen**
- 4. Leverage Social Media**
- 5. Engage Customers Through Programs and Services**

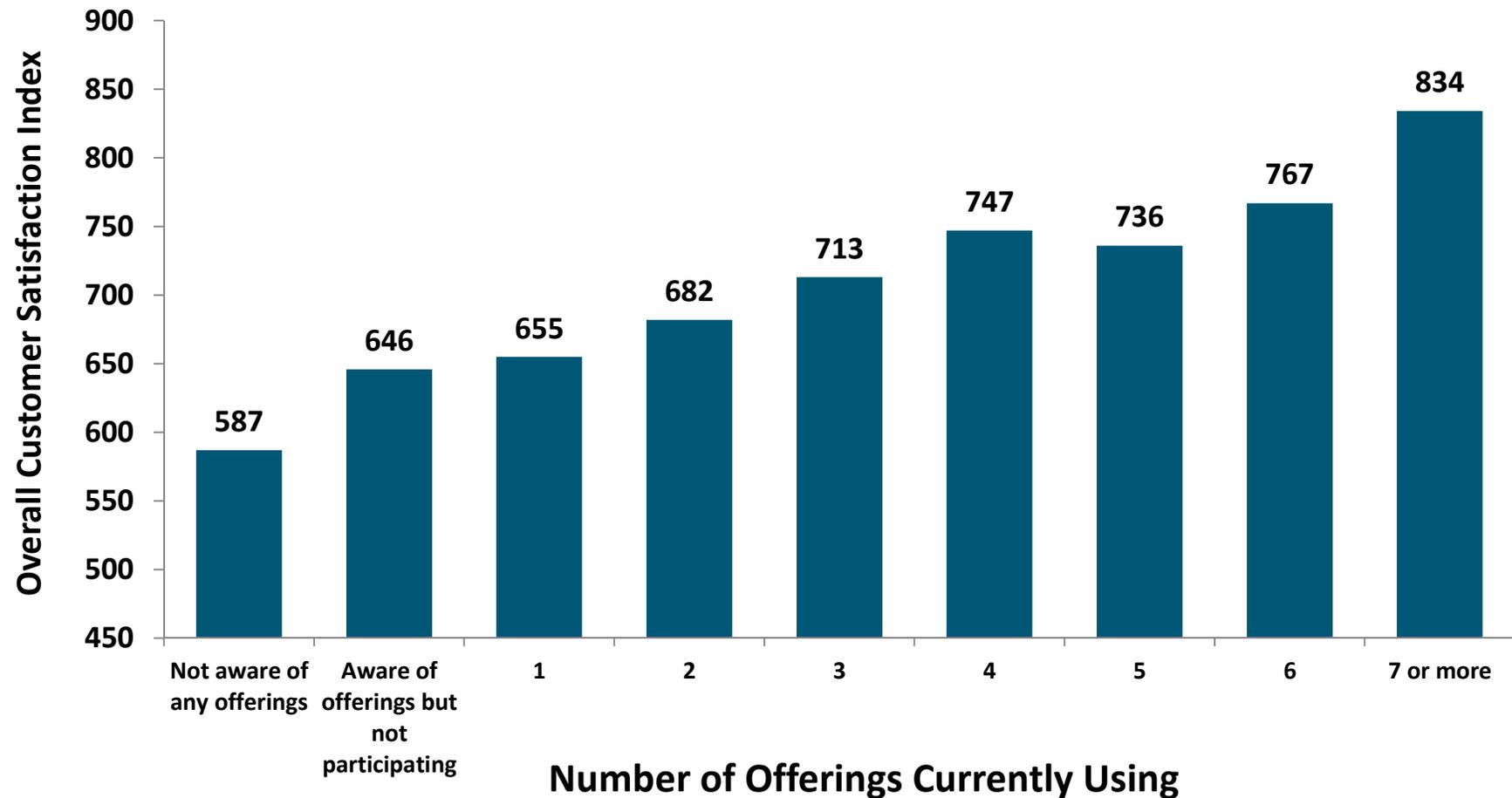


Awareness of Products and Services





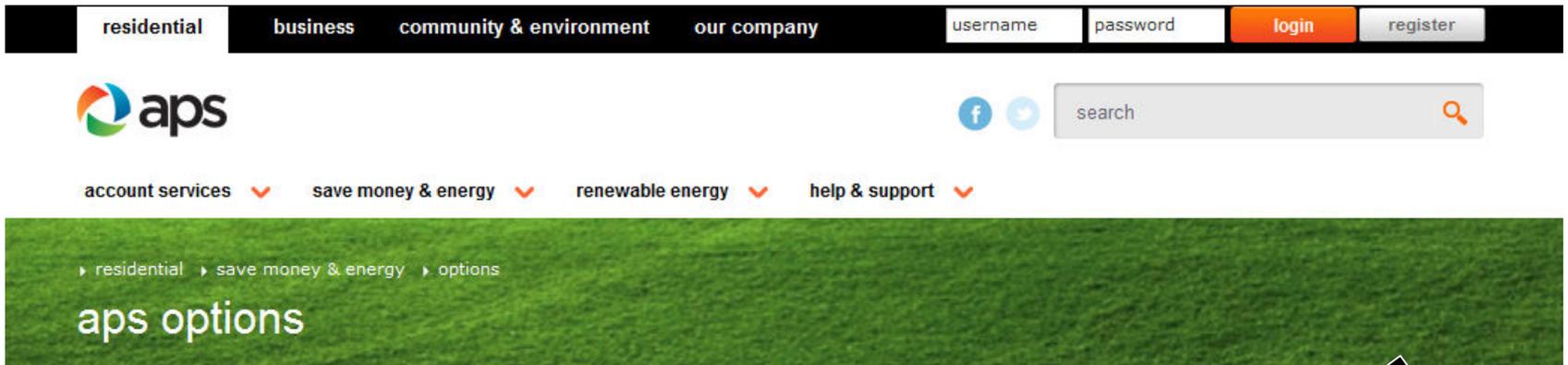
Overall Satisfaction Climbs as Program Participation Increases



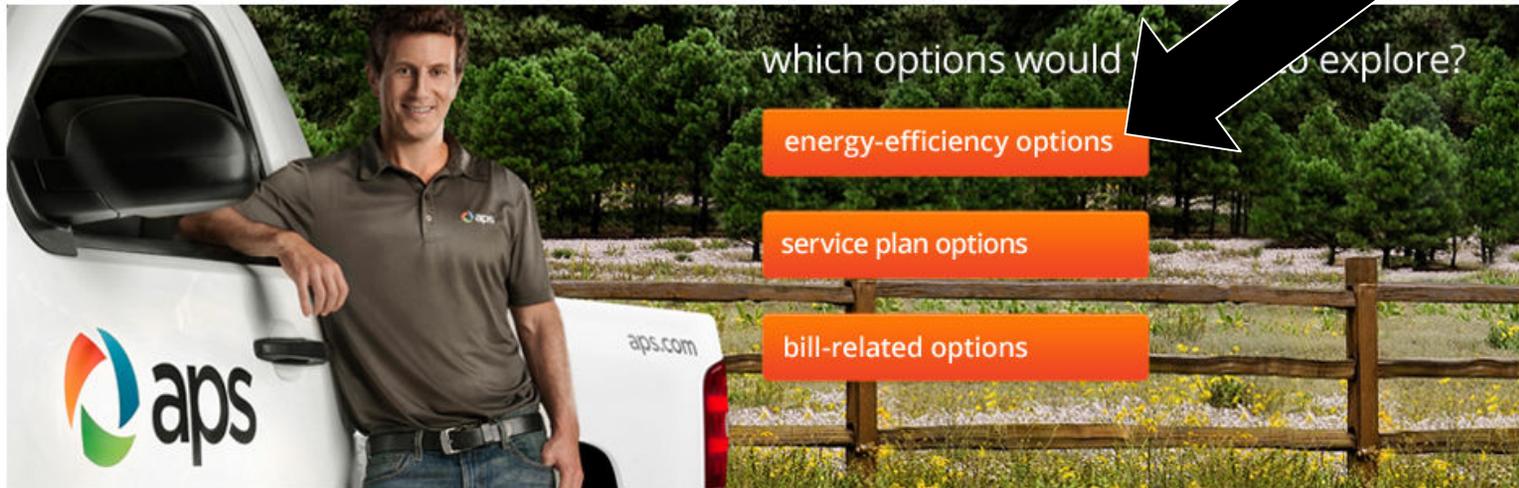
Out of 30 potential offerings



Give Customers Choice in How They Do Business



you've got options



[explore sus opciones en español](#)

featured options



Give Customers Choice in How They Do Business

The screenshot shows the top navigation bar of the APS website. It includes a dark grey bar with menu items: residential, business, community & environment, and our company. To the right are input fields for 'username' and 'password', and buttons for 'login' and 'register'. Below this is the APS logo, social media icons for Facebook and Twitter, and a search bar. A secondary navigation bar contains links for 'account services', 'save money & energy', 'renewable energy', and 'help & support', each with a dropdown arrow. Below this is a green banner with breadcrumb navigation: 'residential > save money & energy > options' and the main heading 'aps options'.

energy-efficiency options

The screenshot shows a webpage for energy-efficiency options. The background is a photograph of a man in a grey polo shirt talking to a man and a woman in a blue plaid shirt and a green dress. The text 'which options would you like to explore?' is overlaid on the image. Three orange buttons are stacked vertically: 'general energy-saving tips', 'rebate program information', and 'helpful online tools'. A 'back' button is at the bottom left.

[explore sus opciones en español](#)

featured options



Five Emerging Customer Engagement Practices

- 1. Develop A Mobile Interface**
- 2. Reach Out Proactively**
- 3. Be A Good Corporate Citizen**
- 4. Leverage Social Media**
- 5. Engage Customers Through Programs and Services**



Recap and Summary

- **Engagement leads to higher satisfaction**
- **Engagement isn't easy**—it takes continual and consistent communications of the right message at the right time using the right channel
- **Customers expect utilities to be where they are** – so use the emerging channels and devices to help get more customers engaged
- **Keep the customer at the center**
 - Understand the drivers that lead to a better customer experience
 - Ensure your organization understands the systems and processes necessary to align business strategy and customer expectations and needs



Current and Upcoming Releases

Available Now:

- *2014 Utility Web Evaluation Study*
- *2014 Social Media Benchmark Study*
- Customer Impact Report: Storm Response and Outage Communications
- Customer Impact Report: Corporate Citizenship and Community Involvement
- Customer Impact Report: Proactive Communications and Alerts

Coming Soon:

- *2014 Consumer Engagement Study – May 22nd*
- Customer Impact Report on Key and Managed Account Service – June
- Customer Impact Report on Bill Presentation & Design – July



J.D. Power Online Store

- Shop for reports at: <https://store.idpower.com/>



Customer Impact Report:
Mobile Customer Interaction 2014

J.D. POWER
MCGRAW HILL FINANCIAL \$1,500.00

Customer Impact Report:
Mobile Customer
Interaction 2014



Customer Impact Report:
Storm Response and Outage
Restoration Communications

J.D. POWER
MCGRAW HILL FINANCIAL \$2,000.00

Customer Impact Report:
Storm Response and
Outage Restoration
Communications



Customer Impact Report:
Corporate Citizenship and
Community Involvement

J.D. POWER
MCGRAW HILL FINANCIAL \$1,500.00

Customer Impact Report:
Corporate Citizenship and
Community Involvement



Customer Impact Report:
Communicating Safety
to Customers

J.D. POWER
MCGRAW HILL FINANCIAL \$1,500.00

Customer Impact Report:
Communicating Safety to
Customers



Briefing Report:
2013 Gas Utility Residential
Customer Satisfaction Study

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Utility Residential
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Customer Impact Report:
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Attachment 7

The Five Universal Truths about Utility Customers

What research across 12 countries says about what customers expect from their utility companies



Introduction

What do utility customers care about most? Does it vary from one country or one continent to another?

These are among the most common questions we get from utilities around the world. And for good reason—when we talk to utilities about the power of customer engagement, they want to know if what we’ve done at 90 utilities in six countries will also work for their customers, in their country and in their language.

To answer these questions and to understand how to deliver effective engagement tools to customers around the world, Opower sponsored a global research study to understand what’s on the mind of the utility customers, and to assess how customer needs and wants vary from one region to the next.

This paper presents the paramount finding of this multi-year study—namely, that there is striking similarity in the desires and expectations of utility customers across the globe. This underlying similarity can be distilled into a set of insights that we’ve termed the “Five Universal Truths”—five things that we’ve found to be almost universally true for utility customers, irrespective of geography, culture, regulatory environment, or usage profile.

As utility executives navigate a changing industry environment and strategically evaluate how to best engage their customers in the coming years, the Five Universal Truths offers a valuable tool to help guide their thinking. Beyond this white paper, readers can learn more at www.fiveuniversaltruths.com and through our related webinars and data-driven blog posts.

We surveyed energy customers worldwide...

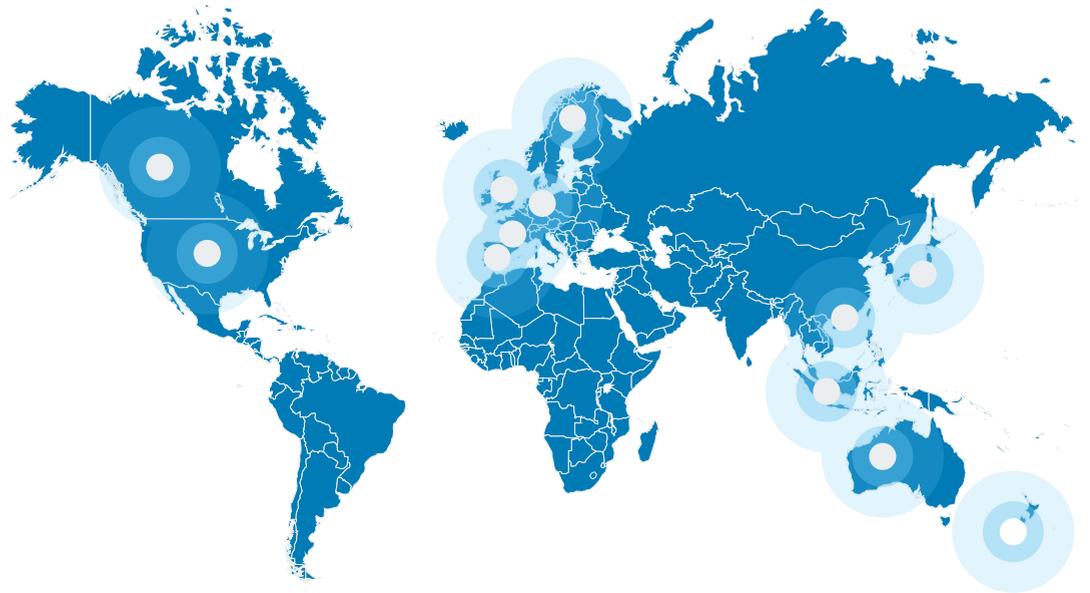


FIGURE 1: GLOBAL RESEARCH

Opower's customer insight team conducted quantitative and qualitative research around the world to explore utility customer expectations.

Methodology

Our findings are based on quantitative and qualitative research around the world. We used a comparative framework for the quantitative research to uncover similarities and differences across markets. Using online panel surveys in 12 countries, we covered a range of topics relating to energy service expectations, satisfaction levels, and attitudes. The margin of error in each country is +/-2%. We used qualitative research to dive deeply into each local market and contextualise the quantitative findings through customer interviews and focus groups in eight countries. Respondents in both quantitative and qualitative studies were representative of national populations in terms of age, income, education, and location.

The Five Universal Truths that span the globe

- 1 Utilities are not meeting customer expectations.**
There is a large gap between expectations and what's delivered.
- 2 Everyone wants lower bills.**
Customers are looking for ways to save.
- 3 People look to their utilities first for energy information.**
While customers don't like their utilities, they look to them for guidance on how to save.
- 4 Customers value personalised energy insights.**
Customers want advice via their choice of channel.
- 5 Everyone wants to know how they measure up.**
Customers everywhere have a strong gut reaction to hearing how they compare to others.

FIGURE 2: THE FIVE UNIVERSAL TRUTHS

Notwithstanding important regional differences, the Five Universal Truths about utility customers hold across the globe—the fundamentals are the same everywhere.

PERFORMANCE GAP

We asked utility customers two types of questions: how important is a given customer service to you, and is your utility performing well in this area? The difference between these two measures can be defined as the “utility performance gap”.

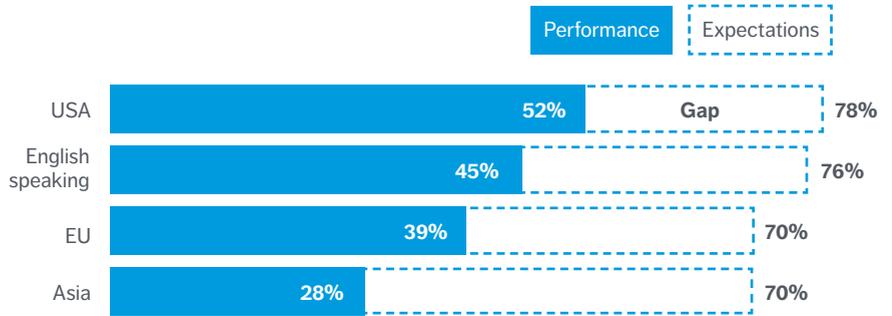
Truth 1: Utilities are not meeting customer expectations

All around the world we heard one thing loud and clear: customers expect more from their utilities. The typical customer experience is largely transaction-oriented: a customer signs up for service, pays bills, deals with outages, and eventually terminates service. Such an experience can be neutral at best, and frustrating at worst.

Our research has found that there is a pervasive gap between customer expectations and utility performance, regardless of geography, culture, regulation, energy prices, and other factors. In Asia, where the utility customer relationship is weakest, only 28% of customers feel that their utilities are performing well. In the United States, where customers are most satisfied, only half of customers believe their utilities are performing well. Although utility customers in America are more satisfied than those elsewhere, American utilities are still in the lower quartile for customer satisfaction among consumer industries in the United States.

Figure 3 shows that while the size of the performance gap varies by region, there are unmet customer expectations around the world.

Customer expectations vs. utility performance on services



English speaking refers to the United Kingdom, Australia, New Zealand, and Canada

FIGURE 3: UTILITIES ARE FALLING SHORT

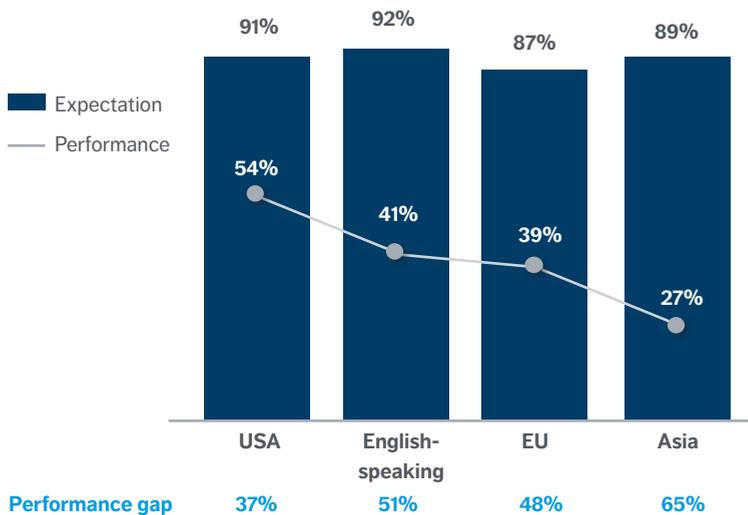
Customers expect more from their utilities. When it comes to cost, personalised information, and outreach—utilities fall short of customer demands.

Truth 2: Everyone wants lower bills

The desire for lower energy bills is universal, irrespective of the prevailing cost of electricity, average bill spend, culture, and income level. In the UK, for example, energy bills have become the biggest financial concern for consumers, according to the Nielsen Global Survey of Consumer Confidence¹.

The performance gap on cost is higher than that on any other service category. Around the world, around 90% of customers view the cost of energy as a top-priority issue, but only 20% to 50% of customers are satisfied with what their utilities are charging².

Customer expectations vs. utility performance on cost



English speaking refers to the United Kingdom, Australia, New Zealand, and Canada

FIGURE 4: COST IS A KEY AREA OF DISSATISFACTION

The utility performance gap is high across regions, and higher than that for any other utility service category.

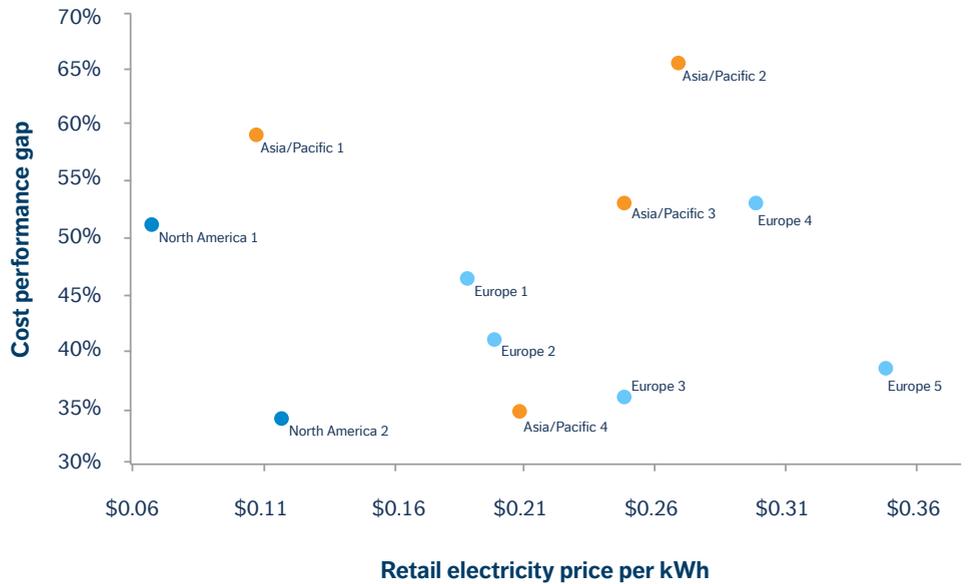
1. uSwitch, 2013, <http://www.uswitch.com/gas-electricity/news/2013/05/14/energy-bills-become-consumers-biggest-concern/>

2. We used a composite metric to account for multiple aspects of what customers pay, including price, value, and rates

Our analysis shows no clear relationship between cost and customer perception of cost.

However, our research uncovered a surprising fact: actual energy costs are not predictive of customer satisfaction with those costs. This is a counter-intuitive finding: one would expect that customers in countries facing high retail electricity costs would be more dissatisfied with cost than customers in countries with low costs. But in fact, our analysis shows no clear relationship between cost and customer perception of cost. We see that even in countries exhibiting quite low electricity costs (by international standards), customers are prone to voice high levels of dissatisfaction regarding cost.

The relationship between cost and satisfaction with cost is weak



Source: CIA World Factbook; EIA; Opower

FIGURE 5: COST OF ENERGY VS. SATISFACTION WITH COST

While one would assume that high energy costs would equate to high dissatisfaction with costs, there is no clear relationship.

The weak relationship between cost and satisfaction with cost is surprising, and leads to an interesting corollary: factors other than actual pounds and pence strongly influence customers' perception of cost. What it really comes down to is, whether customers feel they are getting good value from their utility and trust its intentions; if so, then they are more likely to be satisfied with the prices they pay.

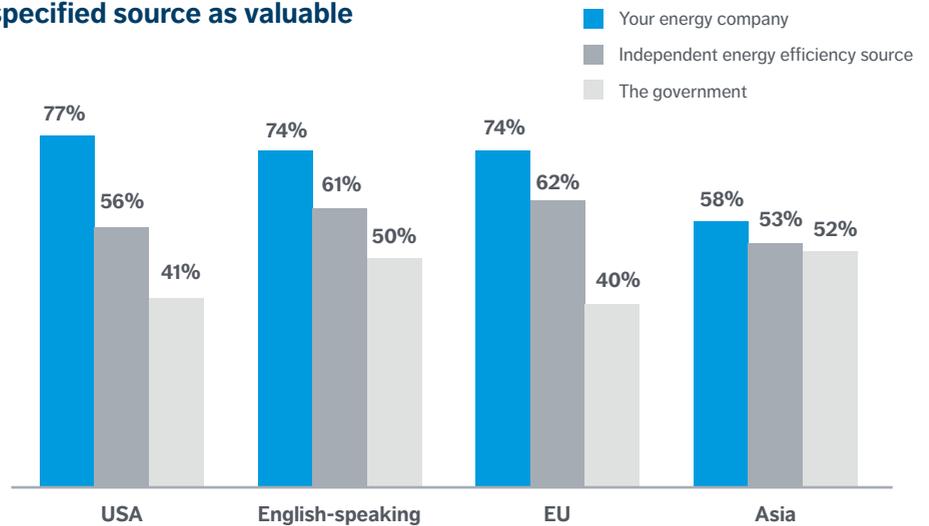
What are these non-cost factors that influence perception of cost? We found that the quality of personalised information provided by one's utility, the utility's outreach via convenient communication channels, and the perceived relationship with the utility all strongly impact customers' perception of cost.

Truth 3: People look to utilities for energy information

Yet another counter-intuitive truth: despite low customer satisfaction with utility services, customers trust their utility—more than any other source—to provide energy information.

In our survey, we asked customers to choose whom they would look to for information on how to manage their use: a government body, an independent energy efficiency source, or their utility. Customers overwhelmingly chose their utility as their preferred source of energy information.

Percentage selecting information from the specified source as valuable



English speaking refers to the United Kingdom, Australia, New Zealand, and Canada

FIGURE 6: CUSTOMERS ARE LOOKING TO UTILITIES FOR ENERGY INFO

While customers may not be satisfied with their utilities, they look to them—as opposed to government entities and third parties—for advice on how to manage their energy use.

This phenomenon was also uncovered by Pike Research in a recent study wherein they asked customers who they were inclined to purchase energy management services from (e.g. in-home displays, home energy management systems, etc.) The results mirrored our own: customers overwhelmingly chose their utilities³.

In some ways this finding is not as surprising as it may initially seem—while you may not love your cable provider, when looking for a lower plan or a breakdown of charges, the cable company’s website is likely the first stop. Similarly, your utility is the natural choice for advice on how to save money on your next energy bill.

1. Pike Research, Home Energy Management, 2012

Companies consumers would consider for energy management service

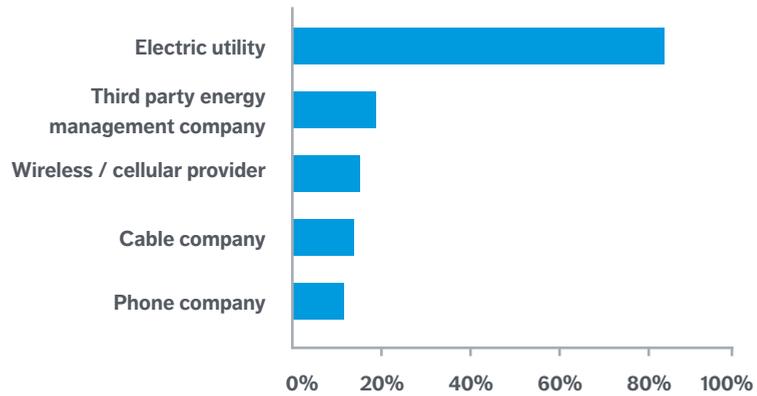


FIGURE 7: CUSTOMERS ARE LOOKING TO UTILITIES FOR ENERGY MANAGEMENT

Pike Research confirms that when it comes to home energy management, utilities are the natural choice for consumers.

Truth 4: Customers value personalised energy insights

Utilities, especially those with smart meters, manage large amounts of data on customers' energy consumption. Their first impulse is often to play this data back to customers via a web portal. But we wanted to dig a bit more deeply into exactly what customers were looking for.

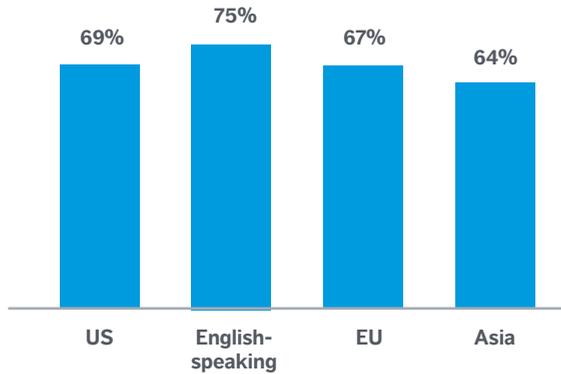
We asked customers to evaluate a number of types of information about energy use. Consistently, they rated personalised, insight-based options as highly valuable, and much more valuable than any other type of information. This reveals that customers want their utilities to do the hard work of analysing the data to give them simple, targeted and actionable takeaways.

However, there is an interesting twist to this truth: while the majority of customers around the world want more personalised information, typically fewer than 5% of them take the initiative to look for that information on a utility's web site or mobile application. In other words, customers want personalised information, but only if there are low or no barriers to access it.

CUSTOMERS WANT

- » Progress updates on how much energy they saved compared to the last billing period
- » Explanation of how their energy use compares to that of utility customers
- » Advice on how to save energy as the weather changes
- » Personalised recommendations from the utility on how to reduce home energy use

Percentage selecting personalised information as a valuable service



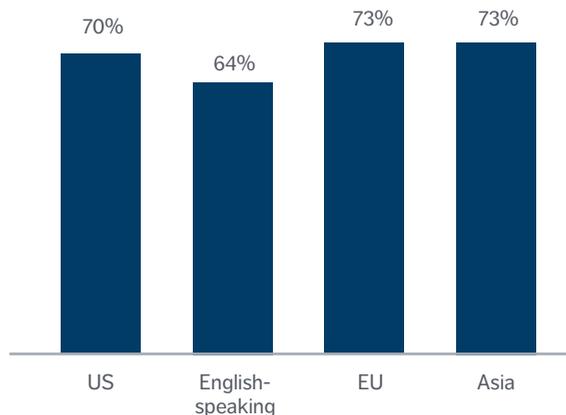
English speaking refers to the United Kingdom, Australia, New Zealand, and Canada

FIGURE 8: CUSTOMERS HAVE COME TO EXPECT MEANINGFUL INFORMATION

People in all countries are looking for personalised energy insights such as progress updates and personalised recommendations.

Service providers in other industries have encountered the phenomenon of the demanding but lazy customer. In response, companies as diverse as retail banks and mobile phone providers have developed robust, multi-channel communication strategies that span postal mail, email, SMS alerts, mobile applications, call centers, physical locations, and of course online tools. Giving customers the information they want, via the channel of their choice, has become the norm in many consumer industries. However, very few utilities offer this level of outreach or customer choice.

Percentage of customers that requested communications through three or more channels



English speaking refers to the United Kingdom, Australia, New Zealand, and Canada

Percentage of customers that would like outreach via the following channels

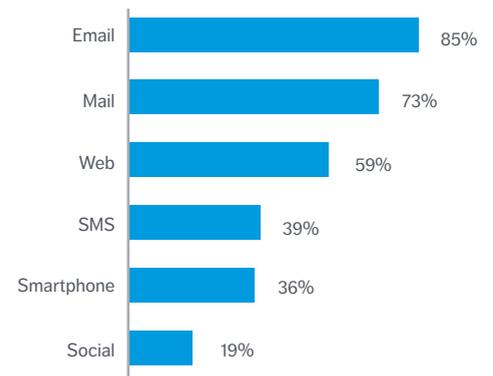


FIGURE 9: CUSTOMERS EXPECT INFORMATION VIA MULTIPLE CHANNELS

Customers around the world want options in how they interact with utilities. Email, mail and web are the most important channels.

OTHER APPLICATIONS OF NORMATIVE COMPARISONS

Other industries and social interest groups have begun to harness the power of normative comparisons—this year, electoral campaign strategists in the United States compared voters’ turnout record to that of their neighbours in order to motivate more people to vote.



Specific to the utility industry, Opower’s research shows that the majority of customers around the world would like to have access to information via at least three channel options.

While all customers want options, the actual channels preferred vary substantially by country. In most cases, email is at the top of the list, followed by mail and then web. We should note, however, that mobile is on the rise and can be expected to become a dominant channel in the coming years.

Truth 5: Everyone wants to know how they measure up

While many utilities are interested in building stronger relationships with their customers, it’s hard. Energy isn’t always the most gripping of topics. But in our research, we’ve found that people around the world have strong and consistent reactions to learning how their energy use compares to that of others. This is a breakthrough for utilities that have historically found capturing customers’ attention borderline impossible.

A landmark behavioural science experiment conducted by Professor Robert Cialdini in 2003 found that the most effective technique for getting people to save energy is telling them how they compare to others. Contrary to the conventional wisdom at the time, this so-called “normative messaging” was much more effective than financial savings messages or messages about helping the environment¹.



FIGURE 10: THE POWER OF BEHAVIOURAL SCIENCE

Cialdini and his colleagues uncovered the power of social norms in motivating consumers to save energy.

In running one of the largest continuing behavioural field experiments in the world (involving more than 20 million homes across three continents), Opower has confirmed the power of normative comparisons in shaping consumer behaviour. When we omit neighbour comparisons from our communications, energy savings fall considerably.

1. Robert Cialdini. *Understanding and motivating energy conservation via social norms*. 2004. Hewlett Foundation

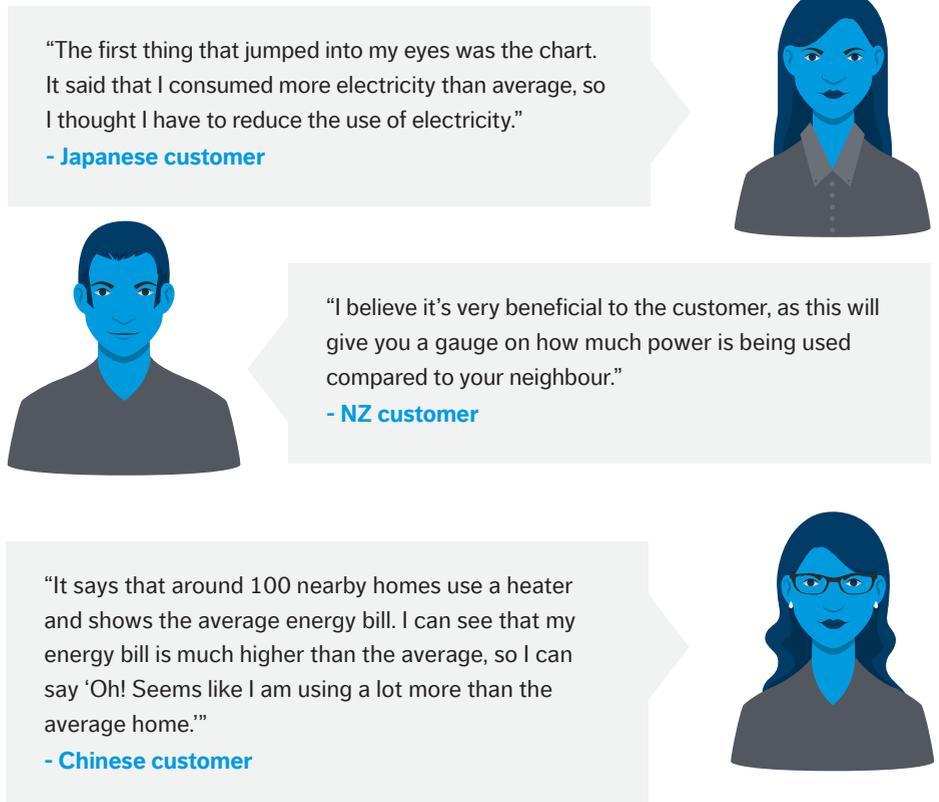


FIGURE 11: EVERYONE RESPONDS TO HEARING HOW THEY COMPARE TO OTHERS

When you tell people how their behaviour compares to that of others, it captures everyone’s attention—a phenomenon that is deeply rooted in human nature.

Local flavour

While the Five Truths are universal, regional nuance matters. How so? Take a tangible example. All people are wired to crave the fat, salt, and sugar in McDonald’s food—it’s a basic survival instinct. But McDonald’s takes what is universally resonant and adapts this winning combination to local food cultures, coming up with the McBaguette in France and the McFeast in South Africa.

In the energy context, while almost everyone wants personalised energy tools from their utilities, cultural nuances must be factored in. Things as small as different smiley face icons to reward customers for saving, and as large as different communication channels, are key to successfully bridging the utility performance gap in different geographies. For example, in Japan there is a long history of public service announcements with clear slogans and calls to action—for utility customer engagement efforts to work well there, customer communications will need to adopt a relevant localised framework.

A short word from Opower

Around the world, there is a large gap between what customers expect and what utilities are delivering. As utilities seek to build more valuable customer relationships, they will benefit from understanding these gaps and narrowing them—through delivering a higher level of customer service and deploying innovative programmes to help customers manage their bills. Leading utilities around the world are partnering with Opower to deploy comprehensive customer engagement solutions and have been making huge strides.

For more information, please visit www.fiveuniversaltruths.com or contact us at fivetruths@opower.com

UTILITY SPOTLIGHT

Innovative utilities around the world are already closing the performance gap in order to build a more loyal and profitable customer base.



Mercury Energy in New Zealand offers the Good Energy Monitor (GEM), a set of tools that puts customers in control by providing a clear picture of how much energy they're using and what it's costing. As Mercury explains: "You wouldn't buy petrol without knowing what your bill would be. Why should your power be any different?"



In October 2013, E.ON UK launched their cutting-edge Saving Energy Toolkit to all residential customers so customers can see how their energy use stacks up and learn how to reduce their bills.

For more information, please visit
www.fiveuniversaltruths.com

or email us at: fivetruths@opower.com

Attachment 8



Case Study:

Customer Engagement at Central Maine Power

Central Maine Power (CMP) is a wholly owned subsidiary of Iberdrola USA, a global energy company with 31,000 employees and operating in 40 countries. CMP delivers more than 9 billion kilowatt-hours of electricity to 600,000 customers. J.D. Power, the authority on rating customer satisfaction, has ranked CMP #1 in customer satisfaction seven times between 2008 and 2013.

CMP's core values include optimizing investments to achieve operational efficiencies and delivering best-in-class customer service. So when CMP rolled out the Advanced Metering Infrastructure (AMI) project, it made customer engagement, empowerment and satisfaction a vital part of its strategy.

At the core of CMP's engagement strategy is Energy Manager. This online service empowers customers to monitor their electricity consumption and corresponding costs at any time, from anywhere. It does this by leveraging the AMI system to collect hourly electricity usage (rather than monthly) and presenting that to the user in near real-time. In addition to Energy Manager, this data is presented in a number of ways, including:

- A Price Comparison Report that compares costs from standard and time of use (TOU) pricing programs and suggests the most cost effective programs, based on historical usage.
- The option to download data in the Green Button format, an industry-led effort based on a common technical standard.
- A service-layer product called Power House that engages 7th and 8th grade students in math and science curriculum using their family's household electricity usage data.

CMP's focus on customer satisfaction and Iberdrola's commitment to innovation and sustainability established a strong foundation for the AMI and Energy Manager projects.

When CMP deployed AMI, its intent was not just to meet operational efficiency mandates but also to better engage customers. As a result, the company developed strategies to connect with customers leading up to and following the deployment.

Prior to installing smart meters, CMP implemented a repeatable and measurable engagement and outreach strategy. This process involved understanding and addressing specific customer concerns about data privacy, home security, and perceived health effects, as well as establishing a flexible, responsive and customer-focused command center to quickly address any concerns.

After smart meters were installed, CMP rolled out Energy Manager, the core of its engagement efforts. CMP's online tool enables customers to monitor their electricity consumption at any time and use the information available to inform their electricity usage choices. In particular, Energy Manager provides customers with:

- Their electricity consumption by year, month, day and hour
- Comparisons to similar households
- Energy actions and tips that can be used to better manage use

Once launched, CMP was approached by the Gulf of Maine Research Institute (GMRI), a non-profit organization in the state that works with students to better understand the environment and enhance Science, Technology, Engineering and Math (STEM) based learning. GMRI wanted to access hourly interval data to use in a pilot program with 7th and 8th grade students. GMRI was able to access that data through an Application Programming Interface (API) and present it in a format that would capture the interest of middle school students in the context of their studies. Additional information on Power House - including an overview of the solution and its impact – can be found in the document titled “Power House Overview” in the "Attachments and URL Links" section.

Finally, CMP examined the nature of requests customers were making for information, such as understanding TOU rates and requests for hourly data. CMP responded to customer needs with options on the CMP website to “Download My Data” in a Green Button format and to conduct a price comparison before enrolling in a TOU program.

CMP chose Tendril to provide the open software platform that serves as the basis of Energy Manager, as well as its open APIs to develop these other innovative applications.

Potential Impact

- Based on the considerable enrollment in Energy Manager and interest in related products, CMP sees the potential for a large percentage of its customers to become better engaged.

Consumer Benefit

- In July 2013, CMP had 5,000 customers enrolled to access the Energy Manager web portal. In less than a year that number grew to 24,000 with as many as 175 customers enrolling daily.
- Since December 2013, CMP has seen more than 7,000 visits to its “Download My Data” page where Green Button data is accessed.
- Since the end of January 2014, CMP has seen more than 1,500 visits to the Price Comparison report, with nearly 500 downloads of the report.
- GMRI has engaged hundreds of students in the Power House project.

Potential for Replication

- In an effort to provide self-service channels for customers to conduct business, CMP will continue to synthesize data from its customer service department, satisfaction surveys and focus groups to develop value-add services that empower users. A future example of such an application is a bill alert system that uses smart meter data to let customers know when their electricity costs and consumption have reached a particular level.
- Power House represents an important model for engaging the next generation of energy users. It is also an important tool for improving students’ capacity for advanced reasoning and problem solving and can be easily replicated by other utilities.

Level of Innovation

- The CMP tagline for promoting services that provide customers with access to data is “Know Your Own Power.” With the growing selection of vehicles available to enjoy the benefit of smart meters, CMP has engaged and empowered its customers to make informed choices about their electricity usage.

Attachment 9



POLICY AND PLANNING DIVISION

Customers as Grid Participants: A Fundamentally New Role for Customers

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May 15, 2013



This White Paper was prepared by the staff of the Policy & Planning Division (PPD) of the California Public Utilities Commission (CPUC). PPD consists of a small group of policy analysts charged with identifying and analyzing utility industry issues, internal and external procedures, and interagency relationships that would not ordinarily be addressed by the Commission's industry divisions in their course of operations. PPD provides Commissioners, the Executive Director, and the Management Team with independent analysis and advice focusing on Commission practices, procedures, issues, and policies. PPD's main mission is to provide proactive leadership on emerging policy issues of broad importance to the Commission and support sound, long-term policy development through independent research and analysis in concert with other divisions and agencies. This paper does not necessarily represent the views of the Commission, its Commissioners, or the State of California.

I. EXECUTIVE SUMMARY

The emission reduction goals called for in The Global Warming Solutions Act of 2006 (AB32) are challenging. The electricity sector's role in reaching those goals is paramount, as the state indicates that it is the largest potential source of viable emissions reductions. The California Public Utilities Commission (CPUC), along with its sister agencies under the leadership from the Governor and the legislature, have laid out a number of policy initiatives and programs to reduce greenhouse gases. These strategies include increasing the deployment of renewable powered distributed generation, promulgating electric cars, deploying smart meters, increasing the penetration of both commercial and residential energy efficiency and defining the market for Zero Net Energy homes.

Each of the above strategies is dependent on customer action. Customer participation, more than the actions of the utilities or of the regulators, is critical to meet California's greenhouse gas emission goals in a cost-effective manner.

Regardless of the underlying motivation, the customer's participation is critical to achieve these emissions reductions goals. Customer participation is the key; they have become an integral part of the power supply chain and of the grid itself. This is a paradigm shift from the historical view of utility consumers as merely ratepayers and passive recipients of electricity services to active participants in the power grid. In fact, this energy future represents a fundamental change in the relationship between the utility and the customer, increasing the onus on both to become partners.

Customer engagement is crucial to successful navigation of the paradigm shift. Getting customers engaged should be one of the primary goals of the utilities and the regulators. Engagement with the utilities and the third party service providers will expose customers to opportunities and tools to help them manage their energy usage for their optimal comfort and finances. To help understand the current level of engagement, this paper reviews three recent studies on customer segmentation that are relevant to the energy space.

Two primary actions that the utilities and regulators should consider are:

- Prioritize customer engagement through program designs and service offerings using analysis of customer needs and motivations.
- Expand the service offerings of the utility to include services that will facilitate and automate the customers' energy management opportunities.

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DISCLAIMER

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II. INTRODUCTION

In 2006, California passed historic legislation (AB32)¹ to curb the emission of carbon dioxide and other greenhouse gases (GHG) in the state and bring total GHG emission levels back to 1990 levels by 2020. This goal represents a decrease in GHG emissions of approximately 25%.

Meeting the AB32 Climate Solutions Act emission reduction goals will require a number of monumental changes for the electricity sector. In addition to aggressively increasing both the energy efficiency and customer-generated renewables goals, it will also require the updating or “smartening” of the grid infrastructure and communications, as well as the electrification of the transportation sector which includes transitioning people to electric cars. To put these goals in context, it is useful to understand just how much more aggressive the program goals are in a post-AB32 California, including the goals incorporated by the California Air Resources Board (CARB) Scoping Plan and those required through legislation, executive order, or agency goals:

Energy Efficiency: Prior to AB32, the goal was to offset 50% of new demand through energy efficiency, thereby slowing the demand growth and avoiding the need for new power plants. Post AB32, the targets are much more aggressive. For example, The California Energy Efficiency Strategic Plan² (EESP) calls for 100% of existing homes to reduce their load by a minimum of 40% by 2020 (and 25% to reduce their energy by 70%), and for all new homes to be Zero Net Energy (ZNE), or produce as much renewable energy on-site as they need to meet their demand.

Customer-Scale Renewables: Prior to AB32, The California Solar Initiative (CSI) called for the installation of 3,000 MW of new solar. Post AB32, an additional 4,000 MW³ will be needed to meet the “Big Bold” Goal in the EESP that every new home should be built to be a ZNE building by 2020.

Electric Cars: Prior to AB32, CARB had called for 15.4% of new car sales to be Zero Emission Vehicles (ZEV) by 2025. Car makers will now be required to find a way to entice car buyers to ramp up from a total of 7,500 ZEVs sold per year currently to more than 250,000 by 2025.

While increasing building codes and appliance standards will assist in the process of transforming the markets to achieve these goals, the success of each of these policy and infrastructure changes are heavily reliant on the customer’s participation. Customers will be expected to adopt new technologies and behaviors. Even with though there will be many policy levers, the success of the AB32 goals will still be reliant on a significant number of customers buying highly efficient products and using them in an efficient way, such as buying electric cars and charging them at off-peak hours and buying smart-grid integrated appliances that are run mainly at off peak hours when the market sends an optimal price signal. Customers are not only the key to our energy efficiency goals, but also to our renewable, smart grid, and transportation electrification goals. This elevation of the customer role is a paradigm shift from

¹ AB32 is the California Climate Solutions Act.

² The California Energy Efficiency Strategic Plan is available at www.CaliforniaEnergyEfficiency.com. It is currently being updated and some goal results may change.

³ Figure from a recent HescongMahone/E3 report on Zero Net Energy Roadmap released December 2012.

the historical view of utility consumers as merely ratepayers and passive recipients of electricity services to active participants in the power grid. In fact, this energy future represents a fundamental change in the relationship between the utility and the customer, increasing the onus on both to become partners.

Many experts in the smart grid community have acknowledged this paradigm shift and are actively seeking ways to better understand how to navigate this new challenge. In a recent report by J.D. Power, they stated: “The US electric utility industry faces multiple challenges in enlisting their energy customers as smart grid participants. The industry’s goal is to enable customer involvement in optimizing when, where, and how much electricity they consume, generate and store. Fundamentally, this requires a new definition of customers’ role in the power supply chain, predicated on encouraging smart energy behaviors unfamiliar to many of them.”⁴ Not all market transformation will come directly from customer actions. In fact, much of it will come from improved building codes and appliance standards and other policy interventions. Still other efficiency improvements will come from technologies that have yet to be invented. Nevertheless, as an “integral part of the grid,” the customer’s actions and decisions will have a more direct impact on grid function.

The following are just some of challenges facing the residential customer base as a result of new policy initiatives:

Zero Net Energy (ZNE) homes could be required by code – California’s Energy Efficiency Strategic Plan⁵ calls for all new homes to produce as much onsite renewable energy as they use by 2020. If enacted, this code-enforced requirement will likely cost customers more upfront for a new home, while offering reduced utility bills over its lifetime. To maximize the benefits, customers should also learn how to “operate” their home so that the amount of energy they use is equal to the amount of energy they produce in order to achieve a net zero goal and to pay back the investment they have made in a reasonable timeframe.

Demand Response is needed to shave peak demand– In order to reduce peak demand, utilities and regulators are urging customers to think about what impact their personal energy usage has on the grid, by offering customers an incentive payment to participate in programs that use less power at peak times and to consider giving up a small amount of comfort and control in return for financial benefits.

Rate structures are changing – In an effort to encourage energy efficiency and curb peak power demand, California is considering moving to an electricity rate structure based on the time of day a customer uses electricity.⁶ In fact, all three IOUs already offer time of use rates to customers who have a smart meter installed. These rate structures encourage customers to evaluate not just *how much* energy they use, but *when* they use it.

⁴ JD Power “2011 Smart Energy Consumer Behavioral Segmentation Study”, page1.

⁵ California’s Energy Efficiency Strategic Plan, issued in September 2008 by the California Public Utilities Commission, sets out a roadmap for energy efficiency in California through 2020. For more info to go to www.CaliforniaEnergyEfficiency.com.

⁶ Time of use rates change depending on the time of day.

Data is becoming abundant – Between the internet, the smart meter, in-home devices, and even smart phone apps, the amount of energy usage and production data available to customers is significant. Likewise, there are significant possibilities for leveraging the data via the third party market to enhance energy management services to customers.

Utility programs offer whole-house oriented options – Some new utility programs are designed to make people think about the energy performance of their whole house, not just about the appliances or “widgets” in the house. This approach relies on the customer to be willing to be more educated on the inner-workings of their home’s systems and to invest in the upgrading of those systems.

Choices for sources of electricity are increasing – The utility is not the only provider of electricity anymore. Whether it is purchasing or leasing a solar system in order to produce their own power or joining a Community Choice Aggregator ⁷ (CCA) in order to support the CCA’s individual goals of green or local power, customers have more choices of where to get their power. Each choice, however, has both costs and benefits that must be researched and weighed carefully by the customer.

Electric vehicles are becoming a viable choice – A host of new car options offer customers the ability to eliminate their fuel costs by purchasing a new type of car. With the new car will also come the purchase a new type of fuel, a new place to fuel (including their homes), and a new time to fuel -- nighttime.

Each of these customer challenges is a result of policy initiatives designed to encourage the customer to rethink their relationship with energy usage and their utility. The customer is encouraged to adopt new behaviors and invest in new technologies from new thermostats and refrigerators to new solar photovoltaic (PV) systems and electric cars. The question is: Is it a realistic expectation for California to assume that customers will be ready to embrace the paradigm-shifting new role facing them? Will they embrace the opportunity to be more knowledgeable, engaged, and disciplined than ever before and will they find the means and have the desire to invest in new technologies on the scale that is required?

This question prompts another question: What does a customer ready to embrace a paradigm change act like? Much of the discussion around customer participation in the grid currently centers on the concept of customers becoming “smart customers” and/or taking on the role of “energy managers” in their own homes. Each “smart customer” or “home energy manager” would know what energy is being used when and by what; he would know what investments to make to use less energy or incur less cost; he would have an automated control system that allows optimal operation of the home systems and appliances; and he would have the information to consider producing his own on-site energy.

⁷ Community Choice Aggregation is a system (neither a company nor an organization) adopted into law in California which allows cities and counties to aggregate the buying power of individual customers within a defined jurisdiction in order to secure alternative energy supply contracts.

This notion of an “energy manager” in every home may seem an extreme notion, and to some an unrealistic goal. But in reality, these are the questions that households are already being asked and for which programs are already being developed. All a “smart customer” would need to do, in theory, is participate in programs that already exist or will in the near future, many of which will help automate the energy manager’s job.

To answer the question of how ready California customers are to embrace the new paradigm, we looked at a number of recent studies on current customer behaviors, attitudes and participation in utility programs. The studies, which also grouped like-minded customers into customer segments, revealed which customer segments are currently participating in utility programs, as well as the motivations and barriers to their participation based on the personality of those segments. Understanding the current behaviors and attitudes of various customer segments will allow us to better understand who our customers are and what is driving their decisions in order to extrapolate how they will react to future programs and outreach and how likely they are to embrace their new role.

III. CUSTOMER SEGMENTATION

The utilities and the energy community at large are conducting and refining their customer research efforts through the development of customer segments in order to better understand exactly what customers’ attitudes and behaviors are when it comes to customer-oriented programs. For our research, we used both utility data and research conducted by the industry.

a. Overview of Segmentation

Customer segmentation is the effort of assembling customers into distinct groups with similar characteristics, behaviors, or attitudes. It is an analytical tool that has been in use for decades by many different industries to market specific products to specific customer groups. The utilities began using segmentation methods in the 1980s to more effectively market their energy efficiency programs. Recently, the utilities have gravitated from demographic classifications, which groups customers according to their similar race, gender, or age to “lifestyle” segmentation, which focuses more on grouping customers based on similarities in their decision-making frameworks. This segmentation approach provides richer information not only on *what* a customer did, but more importantly, *why*.

Much has been written about the effectiveness of customer segmentation. As Loren Lutzenhiser wrote in his CIEE paper, *Behavioral Assumptions Underlying California Residential Sector Energy Efficiency Programs*, “What detailed lifestyle customer segmentation might do best is to help to combat the tendency of planners to think in the abstract model of rational, context-less decision making.”⁸ In other words, the customer segment information can help planners create products and services that are based on actual customer preferences and behaviors. Yet, Lutzenhiser points out that while there is value in conducting and utilizing these studies, “customer segmentation results may often be more artistic than scientific.”⁹ Indeed, in looking at the results for any of the segments created, it is clear that

⁸ *ibid*

⁹ *Behavioral Assumptions Underlying California Residential Sector Energy Efficiency Programs*, page 53.

no segment represents an entirely homogenous group, but rather a group of people who act similarly and the majority of whom share some significant traits.

Nevertheless, a close examination of these customer segments provides significant context to the discussion of how to best match up the energy efficiency, renewable and smart grid programs in California with the needs and desires of the customer base primarily because they help personalize the customers. In fact, while customer segmentation was created as a tool to help with marketing outreach, an overlooked opportunity of customer segmentation is designing and evaluating successful program offerings, products and services, not just slogans to market them (i.e. Customer segmentation data and analysis can result in better forecasts of technology adoption by early adopters, and a better understanding of the relevant price points for products/services).

b. Segmentation Studies

Over the past several years, there have been numerous efforts to segment utility customers. Below we provide an overview of three recent efforts. The first is a study by Opinion Dynamics, a market research and evaluation company in Oakland, CA, that looks at California customers as a whole. The second is from J.D. Power, a global marketing information services company that looks at both the California and the national utility sector customer bases, and the third is a Pacific Gas & Electric (PG&E) study that looks only at its own customer base. All three studies are focused on utility programs and do not consider other types of programs. The J.D. Power and the Opinion Dynamics study are both survey based studies, and so while they cannot be used for evaluation purposes, they are a good indicator of the customer's behaviors and attitudes. The PG&E study is based on actual customer participation, not on surveys.

i. Opinion Dynamics

In April 2009, Opinion Dynamics presented its report¹⁰ on a statewide ethnographic study and segmentation project conducted as an extension of their evaluation work on the Statewide Marketing, Education and Outreach (SWME&O) programs. This work was conducted to support future SWME&O programs and is being used for Energy Upgrade California.

The main focus of this study was on energy efficiency utility programs. In addition to behavioral energy-usage traits and attitudes, the customers were divided into segments based on demographic information on age, household size, geographic location, race, education and any other characteristics that researchers could find that overlapped within the customer groups.

Opinion Dynamics found five distinct segments or personalities, each of which demonstrated significant opportunities and challenges to adopting energy efficient behaviors based on their attitudes, knowledge or financial limitations. Below are the five segments and descriptions of their personalities and challenges:

1. **Leading Achiever (20%)** - homeowners that skew older as well as racially whiter than any other group. This group is affluent, highly educated, resource-minded, and indexes high on energy-

¹⁰ Opinion Dynamics Final Segmentation Report_121009

related altruism. While they also index high on energy efficient purchases, they do not index high on energy conservation, thinking they are already doing all they can.

2. **Practical Spender (18%)** - homeowners who are likely to be older, ethnically diverse, lower income, and high school educated. While they index the highest on energy efficiency purchases and have a high energy bill, they are primarily motivated by convenience and comfort and do not conserve energy nor feel an obligation to.
3. **Striving Believer (24%)** - highly educated, young, urban renters with middle incomes who would like to reduce their energy usage, but are very busy and, as renters, do not feel they are empowered to take action.
4. **Thrifty Conserver (21%)** - low-income renters who skew towards either end of the age spectrum, with low concern for conserving resources and an unwillingness to give up comfort, who feel their actions will have little to no impact anyway, but are interested in saving money.
5. **Disconnected (17%)** – young, ethnically diverse, low income, high-school educated renters, with limited income to spend on energy efficiency, and for whom energy efficient products appear to be substandard.

Opinion Dynamics conducted an extensive survey of their respondents not only in terms of their beliefs and attitudes, but also in terms of their behaviors and their level of engagement with their utility. “Engagement” is a broad term which can be used to describe a customer’s participation level in utility programs such as rebates or bill assistance programs. However, it can also be used to describe their willingness to engage in communications with the utility, including openness to marketing messages or a willingness to contact the utility for information or assistance. In the table below, we tabulated some of the energy-related behaviors and levels of engagement of customers surveyed in the Opinion Dynamics study. The numbers represent the percentage of each segment that exhibits the behaviors or engages in the programs listed in the table.

Table 1. Behaviors and Engagement of Opinion Dynamics Segments

	Leading Achievers	Practical Spenders	Striving Believers	Thrifty Conservers	Disconnected
Behaviors					
Recycles	90%	n/a	83	68	65
Turns off lights	90%	81	88	87	74
Unplugs Electronics	33%	34	42	52	39
Engagement					
IOU Programs	38%	35	19	20	16
DR Alerts	36%	27	9	9	7
Energy Audit	27%	19	4	6	2
Solar Panels	9%	6	7	6	11
High Cost Purchases					
EE Large Appliance	94%	91	74	78	37
EE HVAC	81%	74	69	65	21
Double-Paneled Windows	76%	70	48	55	30
Low Cost Purchases					
CFLs	61%	56	45	40	35
Low Flow Showerheads	84%	78	59	59	31
Programmable Thermostat	81%	71	40	29	21
Income Levels					
< \$49,000	32%	53	39	60	75
< \$75,000	47%	78	56	74	83

It is evident from the table that all five segments have an extremely strong tendency for recycling and turning off lights when they leave a room. While these are considered “environmentally friendly” behaviors, they are also considered to be the social norm, so it is not surprising that all five segments showed such high participation. Nevertheless, the levels of environmental behavior are affected by the segment bias towards environmental issues. For example, while all of the segments demonstrated strong tendencies for recycling, the most environmentally-aware segment, “The Leading Achievers” recycles at a significantly higher rate than their counterparts, with 90% of this group recycling. Not surprisingly, “The Disconnected” segment has the lowest recycling rate with only 65% of the segment recycling. When looking at the relatively new conservation behavior of unplugging electronics when leaving the room to avoid “vampire load,” participation in that behavior is significantly lower in every segment, with only the segment most concerned about saving money (“The Thrifty Conservers”) showing participation above 50%. Interestingly, the two segments that recycle the most (“The Leading Achievers” and the “The Striving Believers”) showed the lowest tendency to unplug their electronics, but this may be because the behavior is perceived more as a money-saving action than an environmentally responsible action.

The table also demonstrates that engagement in utility programs is highly differentiated between the homeowner segments and the renter segments, with the two homeowner segments (“The Leading Achiever” and “The Practical Spenders”) showing significantly higher participation in virtually all IOU programs, especially for home energy audits and demand response programs. This should be expected as both of the programs are geared for home owners. Both homeowner groups also demonstrated a high propensity to purchase both high cost and low cost efficiency appliances and equipment. This parity in energy efficiency action is noteworthy given their differing fundamental motivations. While the “Leading Achievers” are energy altruists and considered to be the “state’s potential energy evangelists,” the “Practical Spenders” are more driven by convenience and comfort. It is also interesting that both segments indexed very highly on energy efficient actions that they would take, and yet by comparison, their engagement with the utilities is much lower. Further analysis would be required to understand if they are acting in a strong conservation manner through both their purchases and their behaviors, but are doing so outside of IOU programs, or whether they have high conservation inclinations, but are not executing on them.

It is also useful to compare “Practical Spenders” with “Thrifty Conservers,” as both share a conservative cost-conscious attitude. The study found that the home-owning “Practical Spenders” out-purchased the “Thrifty Conserver” renters in each category, both the categories related to homeownership such as large appliances, as well as those items that a non-homeowner would purchase, such as light bulbs. Conversely, the “Thrifty Conservers” outperformed the “Practical Spenders” in almost every behavioral category.

Similarly, home-owning “Leading Achievers” share a similar liberal leaning eco-conscious attitude with “Striving Believers.” In a similar scenario to their more conservative brethren, the renting “Striving Believers” outperformed the home-owning “Leading Achievers” by a slight margin in terms of conservation practices, but underperformed in comparison when it came to more energy efficient investments.

Given that the lower-income “Practical Spenders” were also more inclined to embrace conservation actions more than their higher income home-owning counterparts in the “Leading Achievers” group, this trend prompts the question: Are the lower-income renters, who appear to be actively looking for ways to save energy and money, seeking to do so through change of behavior versus purchases of energy efficient products because they have a renter’s mindset that inhibits the purchase of any item that could be seen as an investment in efficiency even if it has a direct benefit to them through a reduced utility bill, or whether their lower income levels prevent them from making these purchases, or both. Additional analysis, as well as data from the Behavioral Programs recently implemented by the IOUs may provide additional insight and actual savings data. The trend also prompts the question of why the home-owners are willing to purchase energy efficiency equipment, but are not as willing to engage in conservation behavior.

The survey conducted by Opinion Dynamics also revealed the income ranges of the customers in the five segments. This information is very useful when looking at what level of investment customers are able to afford. According to the survey, 75% of “Disconnected” earn less than \$49,999, as do 60% of “Thrifty

Conservers” and 53% of “Practical Spenders.” An overwhelming percentage of every segment except “Leading Achievers” earns less than \$75,000¹¹. With the upfront capital requirements of many efficiency, smart grid, renewable, and electric vehicle technologies, these lower income ranges could prove to be a challenge for many customers. Increasing numbers of financing programs including on-bill financing would certainly help, but cost may still be a challenge for a significant number of customers.

Finally, this study was a self-reported study, with many of the questions beginning with “have you ever purchased/done....?” The nature of self-reported data lends itself to higher instances of actions being reported and given that there were no specific time frames included in the question, these answers also represent a time range that could be as much as 20 years. Further, many consumers currently believe that any new appliance is equated with an energy efficient appliance, and consequently, would report any new purchase as an energy efficient action. Therefore, this survey data is most useful when looked at relationally. For example, the differential between the 94% of “Leading Achievers” who reported the purchase of an energy efficient appliance versus the 61% who reported the purchase of CFLs is a significant delta. Likewise, there is a significant delta between the 80% average participation of the “Leading Achievers” across all purchase decisions versus their levels of participation in utility programs which averages 33%.

ii. J.D. Power Smart Energy Consumer Study

J.D. Power recently conducted a national segmentation study entitled, “2011 Smart Energy Consumer Behavioral Segmentation Study”¹² in order to segment the electric residential customer population according to both their current and future energy usage behavior patterns. The smart grid sector of the utility industry has been on the forefront of identifying the customer’s new role in the operation of the grid. Noting that the optimal operation of the smart grid “requires a new definition of the customers role in the power supply chain, predicated on encouraging smart energy behaviors unfamiliar to many of them,”¹³ this study is the first of many steps J.D. Power is taking to find out if the customers are ready to embrace that role and what utilities might do to assist them. The smart grid sector of the utility industry is particularly interested in understanding how customers are using energy today to better predict the likelihood of those customers to engage in “energy management” behaviors in the future. “Energy management” is the term applied to the collection of actions that customers would take to optimize when, where, and how much electricity they consume, generate and store. The study identified six distinct segments of customers based on their energy activities and the degree of control they indicated they would undertake to manage energy cost and environmental impact. The customers ranged from those who outright rejected smart energy management behaviors and engagement with the utility (“Indifferent”), to customers willing to embrace both new technology and new behaviors (“Innovator”). The combined segmentation results nationally were virtually identical to the California utilities that participated in the study¹⁴.

¹¹ \$75,000 has been the income level cited as necessary to be able to afford major home energy upgrades in the California Energy Upgrade Whole House Program

¹² 2011 Smart Energy Consumer Behavioral Segmentation Study is available at: www.businesscenter.j.d.power.com

¹³ Ibid, page 1

¹⁴ California Segment results: Indifferent: 9%; Novice: 15%, Control: 18%, Opportunistic: 30%; Automate: 14%, Innovator: 14%.

The table below highlights what the six segments are, their percentage of the population, the actions they are willing to take, and their barriers to participation. The study also ranked the segments according to their stage of engagement or “readiness” to respond favorably to smart energy program offerings based on psychographic profiling and self-reported behaviors.

Table 2. J.D. Power Smart Energy Behavioral Segments

Segment	Estimated % of Population	Actions	Stage of Engagement	Preferred Rate Plan	Barriers to Participation
Indifferent	9%	Will not take actions	Pre-Active	Flat Rate	Are generally not interested in cost savings or environmental benefits
Novice	17%	Will take no-cost actions (such as lowering the water heater temperature)	Pre-Active	Flat Rate Plus Rebate	Are interested in saving money but do not know what to do and therefore are currently not taking action
Control	21%	Will use thermostat to optimize comfort, electricity usage and bill size	Contemplating	Flat Rate Plus Rebate	Are willing to turn down thermostat to save money, but are not willing to take other actions
Opportunistic	29%	Will take low cost measures (such as installing CFLs) that add up to savings	Contemplating	Time of Day	Are willing to conserve energy through actions, but are not willing to invest in "high-dollar" appliances and equipment
Automate	13%	Will authorize utility to remotely manage energy usage in exchange for savings	Active	Set and Forget It	Are willing to allow the utilities remote access to thermostat, but are not willing to manage their own usage
Innovator	11%	Will invest in high-efficiency new appliances and solar; already taking similar actions	Pro-Active	Flat Rate Plus Rebate	Will invest in "big-ticket" items including solar that yield significant savings, but are less willing to change behavior and feel they've already done all they can

On the positive side, the study found that five of the six segments are willing to take some action (every segment except “Indifferent”). However, as the table above highlights, most of the actions are of the no-cost, no inconvenience type. The “Indifferent” and the “Novice” groups are taking no actions either from lack of interest or lack of knowledge; the “Control” and “Opportunistic” segments are willing to make minor adjustments to their thermostats and install CFL’s, but are not willing to go further; and the “Automate” and “Innovator” are willing to invest in new technologies, but are less willing to engage in conservation behavior. Four of the six segments, or 76% of customers, are not willing to invest in energy efficient appliances and equipment, and are considered either “pre-active” or contemplating action.

Interestingly, the study found that all segments were motivated by cost savings and the environment, as even one in four in the “Indifferent” segment is beginning to explore ways to reduce electricity. However, the study also found that even the greenest segments would not choose green benefits over cost benefits. The study findings reinforced previous findings that even where customers believe in global warming and the importance of conserving energy for future generations, such as those in the “Opportunistic” segment, “they are driven by practicality and cost savings, not by a strong green ethos.”¹⁵

Another aspect of this study examined how the various customer segments regarded services that the utilities could offer that would give the customer more control. J.D. Power considers customer control over their energy usage one of the key benefits of the smart grid and also a key opportunity to getting customers engaged. One major strategy is customer control over their bills and rate plans. However, the study found that four of the six groups wanted to continue on a flat rate program or a flat rate with a rebate for demand response program participation (“Indifferent”, “Novice”, “Control”, and “Innovator”). Only two of the six were interested in a flexible rate program that offers different rates at different times of the day (often called time of use rates because the rate is based on the cost of energy at the time it is used). The two groups interested in a time of use rate were also interested in acquiring appliances that would be able to communicate with the grid in order to run at the most cost effective times of day. Not surprisingly, rate plan preferences correlated with the segment’s attitudes and behaviors on energy efficiency. Those who were in favor of a time of use rate plan were also technology-savvy and willing to let the technology work for them, minimizing both their costs and their inconvenience (“Automate”) or were looking for a way to save on their energy bills (“Opportunistic”). However, those who were in favor of a flat rate plan are those customers who do not embrace new technologies, nor trust the utility with control over any aspect of their home life, nor are not willing to change their behavior. Even with these anticipated savings, the three less engaged segments and the most engaged segment were not interested in changing their behavior even for energy savings.

This survey found some interesting challenges for regulators and utilities. On the one hand, the majority of customers are willing to take some action. On the other hand, most of the actions are limited in scope. The study found 76% of customers’ demonstrated limited engagement or readiness to respond favorably to smart energy program offerings and that control over their rate programs is a benefit that is either not understood or not valued by many customers.

On the positive side, the study has helped to identify several ways in which the utility could start to build more successful relationships with their customers, helping to answer the questions they are currently asking and through that relationship hopefully helping to move them along to the next stage of engagement. For example, the largest segment, “Opportunistic” represents 30% of the utility customers. Through this study this group is now known to be interested in a time of use rate and understanding how much electricity their appliances actually use, a combination of information that could drive them to make the types of energy efficient investments that they have to date been reticent to make. Moreover, the enthusiastic but un-active “Novice” is interested in better understanding the

¹⁵ 2011 Smart Energy Consumer Behavioral Segmentation Study page 3.

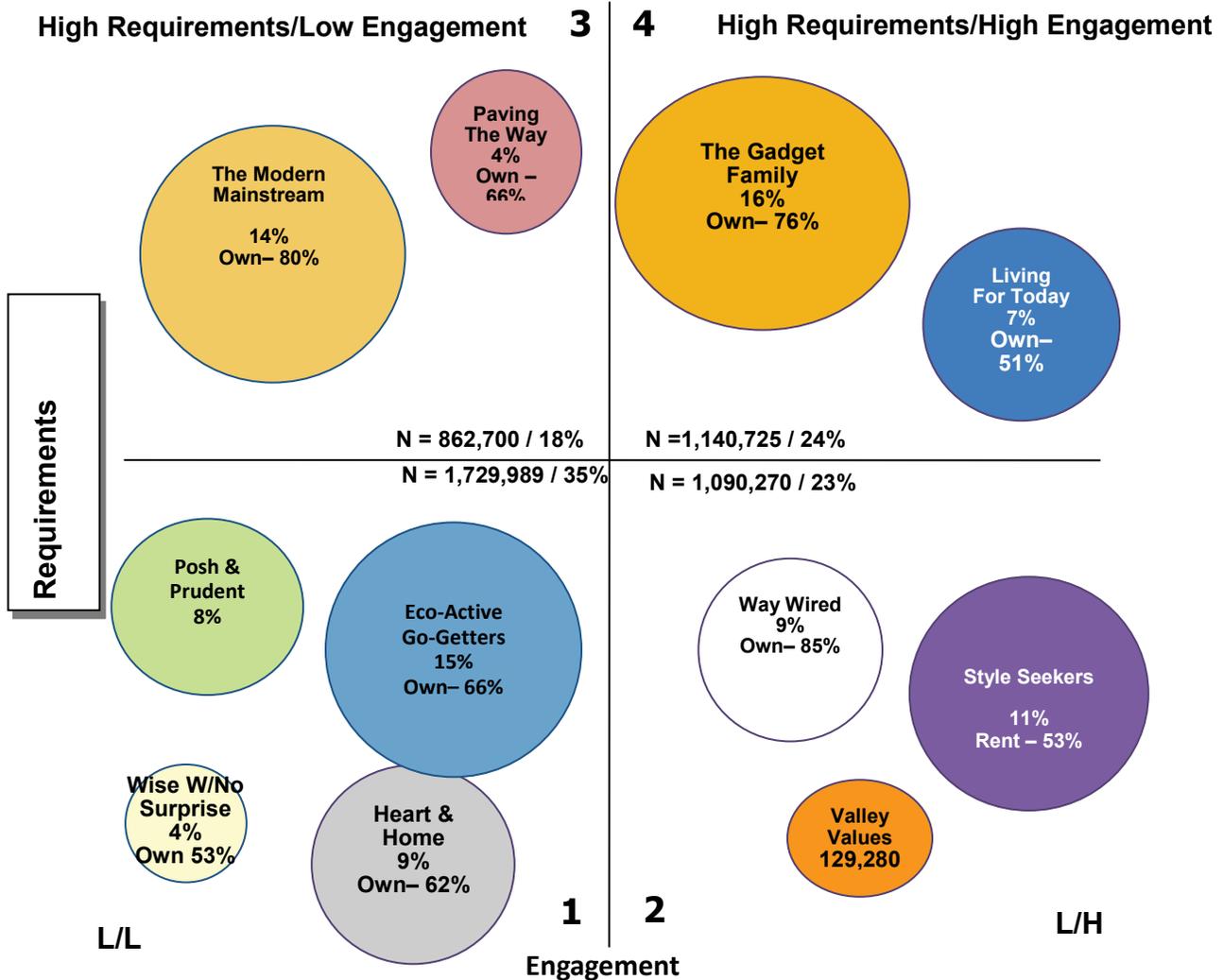
cost benefit calculation of actions. Presented simply and concisely and through the right channel, the information could encourage action. Finally, the study found an overwhelming interest across all segments to “receive points for reducing energy use,” an indication that a rewards program would be well received.

iii. PG&E Segmentation Efforts

Each of the California investor-owned utilities has also conducted extensive market segmentation studies of their own. We have chosen to highlight PG&E’s because they are further along in their ability to correlate the customer segments with program participation.

PG&E based their segmentation on a number of factors, but the primary two factors were the actual engagement levels of the customers and their utility requirements. PG&E defines “engagement” as any interaction with the utility from calls for outage assistance to participation in low income bill assistance programs and participation in energy efficiency rebate programs. As opposed to a survey-based approach, PG&E segmentation efforts use actual customer data, enabling segment definitions to be created and connected to each individual customer. After analyzing its customers on multiple dimensions, PG&E’s customers fell into four segments: High Requirements/High Engagement, High Requirements/Low Engagement, Low Requirements/High Engagement, and Low Requirements/Low Engagement. Further refining the four segments with lifestyle data, 11 personalities or “personas” emerged. Each quadrant has one major persona in it.

Figure 1. PG&E's 2012 Residential Customer Segments



The five major (largest and/or most active) personalities in the PG&E study are the following:

1. **The Gadget Family (16%, High Requirements/High Engagement)** are tech-savvy, larger households who earn moderate incomes and own large homes with high utility bills and all the latest equipment. While they are willing to pay for technology, they do so consciously and studiously. They show a tendency toward careful financial management, which may lead them to consider incentives in their purchase decisions. This segment actively participates in utility energy efficiency and rebate programs and in general shows a more involved relationship with their utility provider, including using digital channels to manage their use and pay their bills.
2. **Modern Mainstream (14%, High Requirements/Low Engagement)** are typically older, family-oriented, comfort-seeking, higher-income, tech-savvy, quality-conscious customers who own larger homes with high utility bills in the non-temperate areas. They are home-oriented and do home improvement projects. Despite their higher requirements, they are less engaged with

most of the utility programs offered and tend toward a more traditional relationship with their utility provider, paying by check each month and not using online account tools to manage their usage. Financial security and a focus on life's little luxuries may be preventing this group from becoming engaged with energy saving solutions.

3. **Style Seekers (11%, Low Requirements/High Engagement)** are mostly younger, mobile, fashion-conscious customers who have moderate income, low utility bills, and little savings. This group does not pay much attention to the environment, but does take advantage of low-income payment plans. They engage with their utility provider primarily around making payment arrangements, and often use online account tools to manage this process. Lower bills, a more migratory lifestyle and smaller, common-wall homes limit their likelihood to adopt energy efficiency solutions.
4. **Way Wired (11%, Low Requirements/High Engagement)** are mostly middle-aged, high-income households living in the coastal climates. They have large homes, high utility bills, and are very environmentally conscious and willing to pay more for environmentally-friendly products. This highly educated and financially savvy group engages with energy efficiency solutions at a higher rate than most other groups. Their focus on the environment combined with their "early adopter" attitude likely drives this larger share of energy solution engagement.
5. **Eco-Active Go-Getters (15%, Low Requirements/Low Engagement)** are urban dwellers, two-thirds of whom own their own home and live in a temperate/coastal climate. They are very ecologically-minded, career-oriented, high-income, tech-savvy, out-door loving, and cultured consumers. But they participate in almost no utility energy efficiency programs even though there are opportunities to reduce their utility bills, often because they do not believe the programs are aggressive enough. They often automate their utility bill payments so there is almost no interaction with the utility at all.

Each of these personas, which represent the five largest or most active of the eleven PG&E personas, have both needs and opportunities for utility program participation, and yet only the "The Gadget Family" and the "Way Wired" personas actually participate in programs other than payment plan programs with any great frequency. In some cases, the marketing message of the efficiency programs could be tailored to encourage greater participation, but in other cases, the overall personality of the group is just not inclined to participate. "Style Seekers," for example, are not interested in energy. Their low utility bills and low concern for the environment do not inspire them to participate in programs, and based on PG&E research, they are more interested in spending their time and resources shopping. Similarly, the "Eco-Active Go-Getters" are also not inclined to participate, but unlike the "Style Seekers" they appear to be a perfect target audience: although their energy usage is relatively low compared to other groups, they are very interested in the environment, own their own homes, and have the money to invest in energy efficiency. Nevertheless, whatever actions they are taking, they are not taking them with the utility.

Table 3. PG&E Customer Segment Program Participation

	Gadget Family	Way Wired	Style Seekers	Modern Mainstream	Eco-Active Go Getters
% of total customers	16%	8	11	14	15
Rebates (2012)					
% of customers participating in program	34%	34	7	5	0
% of segment participating in program	35%	68	9	6	0
Smart AC (2012)					
% of customers participating in program	40%	27	10	9	5
% of segment participating in program	13%	18	5	7	2

As seen in Table 3 above, the participation levels among customer personas vary greatly in the two programs highlighted. While the “Gadget Family” and “Way Wired” personas participate in both the Rebate¹⁶ programs and the Smart AC¹⁷ programs to a far larger extent than the other personas, only the “Way Wired” group demonstrates any real saturation of the persona, with 68% of the persona participating in the rebate program. As per their segment preferences, “Way Wired” homeowners have both the financial and the environmental motivation to participate in utility programs, which is likely why such a high percentage participate in the rebate program. A much smaller percentage of the segment participates in the Smart AC program, which may be attributed to the fact that many of them live in more coastal climates. The “Gadget Family” also participates more actively in the rebate program than the Smart AC program, although it is not clear why. Conversely, the “Modern Mainstream” segment also have the financial and environmental motivation to participate and yet don’t participate to any great degree in either program. While no “Eco-Active Go Getters” participated in the rebate program, their stated commitment to the environment might suggest that they are purchasing energy efficient products, but are not cashing in the rebates.

The J.D. Power study provides some additional potential insight to their participation behavior on the Smart AC program. The marketing of the Smart AC program suggests that the program participant can earn money for participating in the program (through the sign up payment), save money through

¹⁶ The Rebate program numbers represent the entire rebate program operated by PG&E. The participation is based on PG&E evaluations not customer responses and takes into account even rebates taken at the register.

¹⁷ Smart AC is a program offered by most utilities in California where the household agrees to allow the utility to cycle their air conditioning unit remotely during select days.

reduced energy bills, and help reduce their environmental impact. However universal these messages may appear, and however large a group one might think the program would attract, customer behavioral segmentation provides some useful insights. For example, the behavioral segments created in the J.D. Power study demonstrate that these messages will only appeal to one quarter of all customers. The rest of the customers might not participate for a variety of reasons including: no interest in any utility program, no matter what it is (Indifferent, 9%); no interest in sacrificing comfort for savings (Novice, 17%); no interest in having the utility control the thermostat, even though they might be willing to control it themselves (Control, 21%); or, no interest in technology-related solutions (Opportunistic, 29%).

Like the Opinion Dynamics and J.D. Power surveys, PG&E's actual customer data show low overall participation in energy efficiency programs and high barriers to participation. This data is useful in demonstrating that even those customers who might benefit from programs are not taking advantage of them.

IV. RECOMMENDATIONS

We undertook this effort to understand who the customers of today are and how they are responding to the current suite of utility programs in order to better understand how they would embrace the impending paradigm shifts in the electricity sector. From renewables and electric cars, to smart meters, energy efficiency and the EESP's Big Bold Goal of ZNE homes, there are many significant challenges ahead for the customer and the electricity sector. Customer segmentation data should be used to do at least the following:

1. Refine program participation and technology adoption/deployment forecasts.
2. Target programs to early adopters first, then high users of energy. Build on early success/penetration to reach other segments (word of mouth, advertise success stories, lessons learned).
3. Design multiple ME&O messages to fit multiple segments.

The electricity sector is entering a new paradigm where customer actions are more important to the overall operation of the grid than ever before. As noted previously in this report, much of the discussion around customer participation in the grid centers on the concept of customers becoming "smart customers" and/or taking on the role of "energy managers" in their own homes.

There are two primary actions that the utilities and regulators should consider in order to better embrace the challenges and the opportunities that this paradigm shift of the customer role provides the industry:

The **first** action that should be taken is prioritization of customer engagement through program designs and service offerings using additional data collection and analysis of customer needs and motivations. This paper is based on extensive customer segmentation research conducted by two highly regarded firms, and one internal study by an IOU, all of whom recommend further data collection and analysis be

conducted to understand more fully what motivates customers and drives their actions. In addition, further exploration of the role of homeowners as “energy managers” would also be useful in order to better define the term and set realistic expectations for customer adoption. This analysis could also play a large part in future product and program design and evaluations.

The **second** action is to expand the service offerings of the utility to better meet the needs of the customers in the new paradigm. If the customer is to make the transformation into an energy manager, he/she will require a significant amount of education, advice and other personalized resources that will help to facilitate and hopefully automate many of the energy management actions. There are many roles the utility and the larger energy service market could play in terms of providing this assistance. Mapping out the role of the utility and those of the larger market will be critical to successfully embracing the new paradigm.

These challenges to our industry require transformative solutions, and as such will take significant time and effort to achieve. As a first step, we propose forming an informal working group to begin looking at what exactly needs to be done to prepare the utilities, regulators, market, and consumers for the new paradigm. We envision that the results of this working group will be solutions to a successful execution of an industry-wide paradigm shift.

Customer participation, more than the actions of the utilities or of the regulators, is critical to meet California’s greenhouse gas emission goals in a cost-effective manner. Therefore, it will be crucial to the success of the overall goals to construct customer outreach systems that are designed specifically to meet both the needs of the customer and the needs of the system. In other words, programs should be designed to align with customer motivations, as well as reduce carbon emissions. If the customer’s needs are met, the customer will be engaged and the emissions targets will more likely be met. The demand curve has been successfully flattened over the last thirty years, but in order to decrease our demand by the levels required to meet AB32 goals, the electricity industry must make its own paradigm shift.

Attachment 10

Table of Contents

1. Joint Utility Comments on Customer Engagement questions -- pages 2-9
2. Appendix with Utility Specific Comments to Customer Engagement questions
 - a. O&R – pages 10-11
 - b. National Grid – pages 12-31
3. Utility Specific Time of Use Questions – pages 32-44

- 1. Please provide a list and brief explanation of your efforts to identify which individual customers are engaged in electricity management, usage and purchase (e.g. shopping) decisions. (E.g. compile and maintain lists of customers who have inquired about these issues, customers who have inquired about these issues, customers who have visited utility webpages containing this information, etc.) For each item on your list, please explain how your efforts differ among service classifications, and explain when you began that effort.**

The DUG (Distribution Utility Group comprised of: Central Hudson, Consolidated Edison, Orange & Rockland, National Grid, & NYSEG/RG&E) all offer programs that encourage customers to manage their energy usage, primarily through energy efficiency programs, but also through Time of Use rates, Retail Access, and Hourly Pricing Program for our large demand customers. The utilities actively promote customer participation in our energy efficiency programs (marketing examples include cable television spots, radio and newspaper ads, websites, website banner ads, social media, email, direct conversations with customers, and bill inserts). The programs are differentiated between residential and non-residential. Most utilities currently have a program which provides customers with their past energy consumption and encourages them to reduce energy usage (examples include OPower Reports, Green Button, and/or personalized on-line audit tools).

For energy efficiency programs, the utilities become aware of customers who are engaged in electricity management (electricity reduction management) by the application for energy efficiency program incentives. Generally, we do not actively track those customers' usage except as required as part of the measurement and verification process.

Customers may elect to install a demand response system behind the meter (i.e. Johnson Controls systems) and if the customer requests the utilities will provide a relay device that sends "pulses" to their equipment. Utilities are not actively tracking this. For example, Con Edison offers demand response programs for all customer classes, using incentives to engage customers. These demand response programs encourage customers to become aware of which appliances or building functions contribute most to their energy usage and actively participate in alleviating system critical situations.

Retail Access offers residential and commercial customers the ability to manage their supply costs by shopping for their energy supplier. Certain utilities offer customers comparison options such as calculators and shopping tools found on utility websites. These tools generally allow residential customers to compare bill amounts that include marketer charges (from their selected Energy Service Company) to bill amounts for the same periods for gas/electric usage that their utility would have charged for the same service.

All utilities have specialized call centers or dedicated customer service representatives that address customer inquiries related to energy efficiency programs. Direct Mail, Bill Inserts, Friends/Colleagues and Sales Reps generate calls.

- 2. Do you measure the extent to which individual customers are engaged in energy management, usage and purchase decisions? If so, please explain how you do so and what you currently do with this information, how your answer may differ according to service classification and when you began such measurement.**

All utilities have data regarding participation in the various programs (i.e., customer counts). Some utility EE programs have specific participation targets), which drives activities. Other programs do not

have specific targets, but are tracked regularly solely for informational purposes. EEPS has been measured since the program began in 2007. Historical data for other programs varies based on each utility customer information system's data availability. Other than learning about individual customer activities which are associated with specific energy efficiency incentive applications, we do not measure participation in energy management through energy efficiency programming.

Large industrial and commercial customers are most actively engaged through utility account representatives who handle energy usage management with the customer, including participation in energy efficiency programs.

3. Regarding questions 1 and 2, please explain what you expect to do differently in the next 6 months, 12 months and 5 years.

The utilities see several opportunities for action in short, intermediate and long terms. These are not necessarily program specific, but different aspects can be applied to each program where it is a good fit. The utilities believe that the results of the REV proceeding will drive future planning.

- Research: Customer research and analysis of data to segment and target customers for products and services. For example:
 - National Grid has been collecting customer usage data from distributed energy resource solutions (including EV charging stations in Upstate New York) in market or in pilot to analyze and evaluate actual customer behavior. This will be used to inform and shape future solution development to drive greater customer engagement. (Begin within next 6 months and will be an ongoing source of customer knowledge)
- Preference Management: Solicit and capture customer interest in communications and products (bill alerts, efficiency messaging, outage alerts).
- Customized Service: Offer customers the ability to define their relationship (or engagement) with their utility through products and services and preference management:
 - Optional pricing plans (pre-pay, TOU Supply, price comparison tools)
 - Billing and Payment (pick your billing date, eBill, AutoPay)
 - Energy Usage information. Potential examples include on-line usage portals, email and text alerts, mobile app push notifications, and Green Button
 - Communications (bill alerts, outage alerts, targeted promotions)
 - Utilization of Smart Meters
- Potentially integrate additional web tools to assist customers in understanding and managing their energy usage.

4. What do you believe are the near term opportunities for improving customer engagement in DER?

Below is a list of potential near term opportunities to improve customer engagement in DER. Whatever programs are undertaken should ensure that the outreach and education is targeted to the appropriate audiences across the State to ensure that all utilities are performing in a consistent fashion.

Customer Research & Analysis

There could be opportunities to do a quantitative and qualitative assessment of customer needs, interest, priorities, and preferences. In conjunction, an assessment of current participation in efficiency,

supply markets, alternative energy products will assist in identifying customer segments (early adopters) and support/barriers to entry.

Customer Marketing

Utilities may have the ability to build off of successful marketing efforts from energy efficiency programs, low-income programs, and other marketing efforts. Many customers see their utility as their trusted energy advisor looking for insight and expertise. By providing additional outreach and education to our customers we can enhance their ability to make informed decisions with regard to their energy purchases. Potential methods include increasing emphasis on trade ally networks, enhancing digital access and information, providing targeted marketing based on customer profile, and continuing traditional means as well. Whenever possible, DERs should be marketed as a package of energy solutions, such as energy efficiency together with demand response.

Energy Data Management Tools

Energy data management tools like the Green Button, that standardize the format of customer utility consumption data, and Portfolio Manager, that allows for benchmarking against peers, can help customers better analyze and understand their consumption patterns, and possibly opportunities for managing their energy use.

Financing Opportunities

Access to financing had been identified as a barrier to market acceptance of some clean energy technologies. By informing customers of opportunities like those available through On Bill Recovery, the New York Green Bank and program specific opportunities, customers are more able to move from awareness of clean energy opportunities to execution and implementation of DER projects.

Time-of-use Rates/Critical Peak Pricing Rebates

Time-of-use rates, including rates for electric vehicles, provide opportunities for customers to respond to prices and lower their energy bills by adjusting their behaviors to consume energy during off-peak hours. Critical peak pricing rebates where customers lower their usage during critical periods may also help improve customer engagement in DER.

Expansion of Behavioral Programs

There is potential opportunity to expand existing energy efficiency behavioral programs to all customers, transitioning traditional utility-customer relationships to relationships that empower customers, provide platforms to build the demand for energy services, and foster dynamic energy services economies. The utility's assets—a trusted brand, customer energy data, grid topology data, and the potential ability to monetize demand reduction could be leveraged to help jump start the market for home energy automation with tools like smart thermostats and the establishment of inexpensive residential demand response programs.

Targeted DSM Potential

The utilities are at different stages in the deployment of targeted DSM. Some utilities have successfully implemented a program while other utilities are investigating the potential of targeted DSM pilot program in areas of the service territory in need of capital investment as a result of accelerated growth in peak demand.

5. Are you aware of any studies of what DER related services customers in different service classifications want, and what they'd be willing to pay for and, if so, please provide.

Generally there are not many studies available.

National Grid is in the process of completing a marketing research study to provide customer needs input into Innovative Solution Development. The objective of this study was to better understand what customers need and value in the context of new and future energy solutions for home, business, and transportation. In addition, National Grid has explored the customers' awareness of interest in and opinion on these solutions. The study was conducted across the National Grid footprint and they surveyed both residential and commercial customers. The three solution areas studied include: Grid Modernization, Distributed Generation and Storage and Alternative Fuel Vehicles. National Grid is available to discuss this study in further detail with DPS Staff.

Since 2010, O&R has participated in the NYSERDA Geographic Balance Program to encourage the installation of large scale Photovoltaic (PV) in selected areas of the service territory. The Company will continue its efforts with NYSERDA to install PV in areas where peak demand reduction is needed to help offset capital investment.

6. Are you aware of examples of successful customer engagement efforts (possibly though EEPs or DR Programs) and, if so, can you please provide.

Below is a review of customer engagement efforts by utility.

National Grid

National Grid has been working with customer for many years in New York, Massachusetts and Rhode Island. We have observed, based on what we directly manage with other states we service as well as benchmarking efforts in other states, that customer engagement and customer satisfaction are driven by:

- More robust numbers of product offerings that customers can avail themselves to;
- Increased levels of customer communications;
- Simplified processes from beginning to end (e.g., automated incentives).

EEPS Residential Behavioral Programs

National Grid's EEPS Electric and Gas Residential Building Practices and Demonstration Programs have been successful in engaging customers in management of their home energy consumption. These programs utilize a social marketing campaign, with normative messaging techniques, to encourage responsible energy behavior and choices. The campaign provides home energy reports (HERs) to households in National Grid-NY's combined gas and electric service territories in upstate New York. The HERs provide recipients with feedback on their household energy use including a comparison of the recipient household's energy usage with that of neighboring homes, thereby introducing a subtle form of peer pressure (often referred to as "social norming") among households to achieve energy savings. The recent program impact evaluation found that participating customers not only consumed less electricity and natural gas, but were also more likely to participate in other energy efficiency programs offered by National Grid when compared to the control group.

Central Hudson

Energy Efficiency

An example of customer engagement through EE is our Home Energy Report Program. This is an approved PSC program through 2015. We send 110,000 Home Energy reports to residential customers (both electric and dual fuel) to make them aware of their usage as compared to similar homes in their general area, and encourage them to take some type of action. Action includes, as easy as hanging clothes to dry to participating in one of our programs to receive a rebate.

Our other programs such as our Residential Electric and Gas HVAC and Commercial Gas HVAC are driven by our Trade Allies. 54% of the customers that participate in our programs have heard about them through their Trade Allies. Keeping the Trade Allies engaged in turn keeps our customers engaged. All of our programs have some sort of customer engagement. All of these programs have marketing components that work to educate the customer and provide information on what they can do to take control of their usage.

Solar Integration

For four years, we have successfully hosted an Annual Solar Summit for installers, which have in turn, helped installers to engage homeowners and streamline the process of interconnection of DERs by better understanding the utility needs. External speakers have included Assemblyman Kevin Cahill, and representatives from the Ulster County office, NYSERDA, Sustainable CUNY, NYPA, TSEC, and NYSEIA, among others, facilitating a discussion of key challenges in the renewables industry. We also maintain a website dedicated to DG: <http://www.centralhudson.com/dg/>, which includes links to key information as well as the ability to apply for interconnection and review the status of an application via the web. Our call center includes a subset of employees specifically trained to answer billing-related DG questions, and our Engineering staff is available to walk installers and customers through the process. Our engagement has resulted in 1,878 DER systems installed and 327 pending which represents nearly 2% of our system peak load.

Smart Meter Pilot

Central Hudson worked with NYSERDA and Consert on smart meter/load control project. The objective was to demonstrate the ability to manage customer load in order to reduce demand during peak or emergency events. Consert's Virtual Peak Plant (VPP) was used for the project. VPP allows both the customer and the utility, through a web portal, the ability to control the usage of central air conditioners, electric water heater, and pool pumps. A total of 240 residential customers that met the air conditioning requirement were targeted for the project and the final participation was 57 customers. A total of 16 test events were conducted spanning from 1-8 hours in duration on days when the anticipated high temperature was in excess of 90 degrees. During the events the average reduction per customer ranged from 0.52-1.76 kW.

Overall this project confirmed the ability of a utility to control and reduce customer demand through the modification of equipment temperature settings or by turning off the equipment. However there was limited type of load that could be curtailed; mainly central air conditioners. The northeast does not have a high saturation of central air conditioners as compared to other regions. Existing homes in the area

likely use window air conditioning for the limited amount of cooling required. Therefore it becomes difficult to realize a significant decrease in demand if the type of load that utility is controlling is not prevalent. In addition, the overall outcome of the program was hampered by limited participation within the targeted customer group. Customers were reluctant to participate unless there was an incentive or reward to justify their time investment and sacrifice. Customers had the option to “opt out” of an event and at times the rate was above 50%.

While Consert’s utility web portal was relatively easy to use to schedule load curtailment events there were issues with customer learning curves associated with their programmable thermostats. There were also equipment problems, both customers equipment not up to code and failure of cellular modem interface installed in the meter.

NYSEG/RG&E

NYSEG and RG&E have seen active participation in our EEPS programs. NYSEG and RG&E operate a full suite of Energy Efficiency programs which successfully engage customers, supporting trade allies and ESCOs. A brief summary of those engagement efforts, including the YES portfolio advertising campaign and the current Silver Creek Targeted Demand Side Management Pilot Program, follows.

Residential and Commercial Rebate, Recycling and Direct Install Programs

For these programs, the Companies implement an integrated marketing plan engaging both customers and trade allies as appropriate. Individual vehicles may include but are not limited to direct mail, collateral materials, the Companies’ Web sites, news releases, events and individual and small group outreach. Each program uses a portion or all of the following engagement activities, often in concert with the program implementation vendor.

Specific engagement vehicles used to market to targeted audiences that have produced successful results:

- Email – Mailings to customers and specific trade allies to stimulate interest in the program.
- Webinars – General and specific sessions held to promote the programs and engage customers and trade allies.
- Collateral – Program forms, brochures, and applications will be presented in a collective folder during customer visits and are found online.
- Events and outreach – Program workshops/seminars to promote program awareness and dialogue on program features and processes. Attendance at various trade shows used to educate audiences, network with participants and stimulate participation.
- Advertising
- YES Campaign – general energy efficiency program advertising to promote overall program awareness (see more information below).
- Web site – nyseg.com and rge.com contain information to inform customers and trade allies about program features and updates. All program forms are available for download from the Companies’ Web sites.
- Press releases – program successes will be promoted through this medium as appropriate.
- Trade Ally Network (CIRP only) – organized periodic communications and program updates provided to the network participants.

- Outreach Staff – both Company Marketing personnel and individual program (vendor) personnel provide customer engagement for these programs.
- In some programs, free energy efficiency measures are used to engage customers with an initial opportunity for energy savings, which often leads to greater customer engagement.
- Leveraged engagement from third parties is often used as in the Refrigerator Freezer Recycling Program's partnership with Sears stores to engage customers at the point of sale.
- Fulfillment centers for low and no cost energy savings measures are being introduced to engage online customers.
- Program cross promotion (between energy efficiency programs) is also used successfully to more fully engage customers as participants.

Block Bidding Program

The Block Bidding Program is a unique program, utilizing a somewhat different engagement strategy which engages not only customers, but ESCOs and related service providers who aggregate customer projects. For this energy efficiency program, large customers and aggregators (offering combined project size of at least 100 MWH) are targeted through web site notifications, press releases, email, individual phone and in person contact, during an open Request for Proposal (RFP) period. The engagement of third party aggregators (ESCOs, energy services companies, suppliers, trade allies) is essential to meet the larger project thresholds needed for this program.

Silver Creek Targeted Demand Side Management Pilot Program

The Village of Silver Creek is located on the shores of Lake Erie, within the Town of Hanover, Chautauqua County, New York, in an area of Western New York known as the Concord Grape Belt. NYSEG would like to relieve some of the demand on two circuits in this area by helping customers use energy more effectively.

This Silver Creek Targeted Demand Side Management Pilot Program is the proposed solution using the Energy Efficiency Portfolio Standard (EEPS) nonresidential programs Small Business Direct Install (primary), Commercial and Industrial Rebate Program (secondary), and residential Refrigerator and Freezer Recycling Program (RFRP) (tertiary) offering various measures that will reduce summer peak load. This project will take place during June, July and August 2014.

- Small Business Direct Install Program Solution

Currently the Companies offer up to 70% customer incentives for measures in this program. This initiative will utilize available 2012 – 2013 SBDI funds to target customers who are within the designated capacity constraint areas with 100% customer incentives. Targeted outreach and customer communications, including a letter and telephone calls to the customers on affected circuits and outreach to public officials; will be provided. .

- Commercial and Industrial Rebate Program Solution

The CIRP solution targets Non-Residential customers within the designated capacity constraint areas with an average demand of over 110 KW who otherwise would not be eligible for the SBEE program. The CIRP program administrator will make personal calls to the potential customer base that fall into this demand range on these two circuits, explaining the program opportunity and urging them to respond quickly to realize the opportunity. While demand savings are difficult to quantify until a customer identifies a project scope and engineers the solution for implementation we would assume any projects that become realized will support the future demand reduction on these circuits.

- Refrigerator and Freezer Recycling Program Solution

The RFRP solution targets residential customers on Silver Creek circuits 178 and 179 with direct mail "Spring Cleaning" RFRP advertising and current rebate levels.

YES Campaign

An advertising campaign consisting of television, billboards, online, newspaper and social media, the NYSEG and RGE “Your Energy Savings” (YES) campaign kicked off mid-March of 2014. YES uses a visual approach, driving people to a website to learn more about the programs offered. The Social Media campaign began in April with the introduction of the “Say YES to Energy Savings” page. The page gives energy saving tips each week as well as testimonials from customers who have participated in the program. Currently the page has 140+ followers, and we are looking to further promote it internally.

Con Edison

Con Edison has energy efficiency, demand response and demand management programs with successful customer engagements at a number of levels from large commercial buildings to single family residential. A key marketing strategy is the creation and brand support of the Con Edison Green Team. The Green Team is a trusted group of employees, implementation contractors, market partners and outreach coordinators who bring energy efficiency, demand response and demand management solutions to customers. This brand and solution strategy is supported with advertising via traditional media such as television, radio and print as well as non-traditional digital media. At the end of 2013, the Green Team enjoyed a 76% awareness and favorability among commercial customers. Con Edison also utilizes social media platforms, its own website and content management to reach key customers. Internally, Con Edison leverages customer bill inserts, a customer newsletter, call center management and employee communications, such as the intranet and video screens, to promote programs. Community outreach is also a key strategy to create ambassadors and third-party endorsements for programs. The message is disseminated through the Con Edison public affairs group as well outreach coordinators reaching out to business improvement districts, business organizations, community boards and enterprise zones.

Orange & Rockland

O&R has experienced examples of successful customer engagement involving EEPS programs. For example, several customers have participated in our programs multiple times receiving rebates for lighting, motors, HVAC and custom-designed projects. One customer who was skeptical of payback estimated in the Small Business Direct Install Program decided to participate at only one of his store locations. After the estimated savings was realized in the first few months, he decided to enroll all of his store locations and is very satisfied. In our C&I Existing Program several large customers including a large pharmaceutical and large shopping mall have worked with O&R staff to implement multiple projects. These successful relationships have been the driver in exceeding the C&I Program annual goal in 2013 and 2014. In addition, for the C&I Program over 50% of the total project participation is attributable to customers who have already participated in the program. This repeat participation is a direct result of the relationship that the O&R Green Team has developed with its customers as their energy efficiency expert.

Orange and Rockland Utilities, Inc.
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1. Please provide a list and brief explanation of your efforts to identify which individual customers are engaged in electricity management, usage and purchase (e.g., shopping) decisions. (E.g., compile and maintain lists of customers who have inquired about these issues, customers who have visited utility webpages containing this information, etc.) For each item on your list, please explain how your efforts differ among service classifications, and explain when you began that effort.

Large Customer Engagement

O&R has maintained relationships with its Service Classification 9 and 22 customers (> 1000 KW peak demand) and since the inception of the EEPS Proceeding has begun to engage these customers in their energy efficiency planning and shopping efforts. Our C&I Existing Buildings Program utilizes on-site meetings with facility managers and decision makers to provide customers with the resources and tools necessary to participate in our energy efficiency program and shopping for alternate suppliers. In addition, as a result of successful interactions with the SC9/22 customers, these on-site meetings have expanded to include customers with peak demands greater than 300 KW where utility experts address customer issues ranging from service reliability, tariff rates, energy efficiency and retail choice. These meetings have driven participation in the C&I program and provide the opportunity for valuable interaction to engage customers in meeting all their energy efficiency and shopping needs.

Mass Market Green Team EEPS Marketing Campaign

O&R has partnered with Con Edison to launch the Green Team marketing campaign to educate customers on the benefits of investing in energy efficiency and how the O&R Green Team can help. Radio spots, cablevision commercials, print advertising in newspapers, the ORU website, along with internet advertising highlight the benefits of investing in energy efficient technologies and drive customers to O&R's website to learn more about our direct install, rebate and recycling programs, and an on-line audit tool.

Hourly Data for Mandatory Hourly Priced (MHP) Customers

O&R offers a Customer Care (CC) tool to all of its MHP customers that provides access to their hourly usage data. Customers are given a login and password and download their usage using the software so that they can better manage their usage and shop for a competitive supply price.

On-Line Audit Tool

O&R provides customers with an easy to use on-line audit tool that links actual historical customer billing data with actual local weather data to disaggregate

customers' usage into easy to read end-use graphs. The resulting audit report highlights how their energy dollars are spent and provides no cost/low cost recommendations along with longer term cost-effective investments to lower their bills. O&R has begun to use the data obtained from the on-line surveys to develop targeted marketing lists to send email blasts that market specific programs that they may be eligible to participate in. For example, a targeted email blast was sent to customers that responded during the audit that they had a second refrigerator. The email blast highlighted \$50 rebate and the economic/environmental benefits of our refrigerator recycling program.

On-Line Shopping Tool

O&R provides customers with an easy to use on-line shopping tool that allows customers to shop for an alternate electric and gas supplier. Customers anonymously request offers from alternate suppliers who provide both fixed and variable pricing offers. Customers then follow up with the offer that best fits their needs and contact their selected alternate supplier to facilitate enrollment in retail choice.

Outreach Events

O&R attends home shows, fairs, school events and various community meetings to promote energy efficiency, provide customers with tools and resources to better manage their energy use whether shopping for an alternate supplier or seeking participation in O&R suite of programs. For example, O&R is a member of the Rockland Business Association, Rockland Economic Development Corporation, and the Orange County Partnership.

Voluntary Time-of-Use (VTOU) Rates

O&R offers residential, commercial, and industrial customers VTOU (SC19, 20, and 21) rates for both delivery and supply.

O&R compiles and maintains list of all of EEPS participants and can also track email addresses for customers utilizing on-line audit and shopping tools. Follow up with EEPS participants is performed primarily for process and impact evaluation efforts.

1. Please provide a list and brief explanation of your efforts to identify which individual customers are engaged in electricity management, usage and purchase (e.g. shopping) decisions. (E.g. compile and maintain lists of customers who have inquired about these issues, customers who have inquired about these issues, customers who have visited utility webpages containing this information, etc.) For each item on your list, please explain how your efforts differ among service classifications, and explain when you began that effort.

Customer Targeting, Profiling , Modeling

National Grid uses extensive internal and external data including attributes, attitudes, transactional and interactions to form the foundation of how we connect with customers, including understanding who has or has not engaged in electricity management. For the past year or so, we have utilized our extensive customer data to inform how we reach and communicate/educate customers about electricity management. In leveraging the data, we develop both residential and commercial customer profiles which help us more effectively reach customers. These profiles help to depict groups/segments of customers and provide key insights such as which Energy Efficiency (EE) or other products they may be interested in, what are the best channels to reach them and what messages would more likely resonate with them.

Beyond Profiling, a further and more sophisticated use of our extensive data is utilizing it more analytically to develop propensity models. Propensity models use data mining technology to provide a quantified estimate of an individual customer's anticipated likelihood to participate in a specific solution, such as an EE program. From these models, we are able to produce a ranked list of customers based on their likelihood to adopt an EE program. In order to develop these models for a specific EE program, a significant number of data must be obtained and therefore time is needed to acquire it. We have undertaken developing these models for the NY EE programs, providing us with an understanding of who is more likely to participate in a particular program.

During this past year, National Grid developed propensity models for both EE eligible Residential and Commercial customers. For the most part, the methodology used to develop the models were similar for both Residential and Commercial customers. For residential customers we were able to use the target market identified through the propensity model to develop more robust customer profiles for a specific EE target market, such as the Refrigerator Recycling Program. These robust profiles were then leveraged to better market to customers. Results of this very targeted approach is under review however in other states we have seen this approach achieve up to double digit increases in customer response and participation thereby making our marketing more effective and efficient.

Transactional Emails

An average of 500,000 emails are automatically sent each month in Upstate New York after customers transact with us on the web. Within the email, we can promote Energy Efficiency and energy management tips, as well as drive customers to the National Grid Energy Efficiency landing pages where they can learn more about how to better manage their energy. Therefore, utilizing our email list is another avenue to understand who engages regarding energy management.

National Grid Website

Beyond our extensive database and email approach, our website is a key area of engagement for our customers and one which we utilize to track energy engagement. We have the ability to pull web data to identify online customer engagement with specific content/pages related to electricity management, usage data and purchase decisions. In the future we plan to utilize this information for targeted communications and identifying opportunities to increase engagement via, for example, content recommendations and improved site design.

Provided below is web activity for National Grid. This includes all National Grid regions except MA Gas and NYC Gas (Upstate NY electric and gas, Rhode Island electric and gas, New Hampshire electric, LI gas, Mass electric).

Page	URL	Average PageViews/Month*
Energy Efficiency Landing page	https://www1.nationalgridus.com/EnergyEfficiencyServices	19,200
Services and Rebates	https://www1.nationalgridus.com/EnergyEfficiencyPrograms	27,400
Savings Tips	https://www1.nationalgridus.com/SavingTips	3,200
Preserve the Environment	https://www1.nationalgridus.com/PreserveTheEnvironment	470
Path To Efficiency	https://www1.nationalgridus.com/PathToEfficiency	350
Usage and cost graph	Self Service	51,200
ESCo Calculator (UNY only)	https://www1.nationalgridus.com/ESCoCostComparisonChart	3,600

**Based on June 1, 2013 - May 1, 2014*

ESCo Calculator - Upstate New York only

An example of an energy management tool that provides another window to residential customers' engagement is our ESCo Calculator, found on our website. National Grid provides all UNY customers

National Grid

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with information needed for them to proactively manage their electricity costs by enabling them to choose their energy supplier. This tool allows customers to compare bill amounts that include marketer charges (from a customer's selected Energy Service Company) to bill amounts for the same periods for gas / electric usage that National Grid would have issued if we were purchasing energy on the customer's behalf.

2. Do you measure the extent to which individual customers are engaged in energy management, usage and purchase decisions? If so, please explain how you do so and what you currently do with this information, how your answer may differ according to service classification and when you began such measurement.

National Grid spends significant effort on measuring the effectiveness of how we engage customers on EE programs. Historically, we have done much of the measurement through manual tracking however in the year or so we have invested in an automation system, Gridforce, that enables us to track mid-sized and large Commercial customers from a response to through participation. Currently, this system is not being utilized for residential and small business customers as the programs for these segments are heavily dependent on vendor partners, who currently do not have access to our system. In addition to tracking and measuring our results, we also benchmark them against best-in-class results, regardless of industry. Attached is a sample of our EE dashboard which highlights key performance metrics, which then help to inform if any customer communication changes need to be made going forward.

In addition to measuring our results, we also have resources to analyze the information. For example, National Grid has used EE participation data to identify individual customers that have previously participated in EE measures. In 2013, electric commercial customer participation data was analyzed to determine which measures an individual customer had participated in. We then identified the progression of EE measures that a customer is likely to follow. This allowed us to market specific measures to individual customers based on what they had previously participated in and the natural progression for next step measures.

2014 EE Marketing: Q1 Results & Q2 Calendar

Contacts:

Kate Ringe-Welch: Residential & Business Marketing

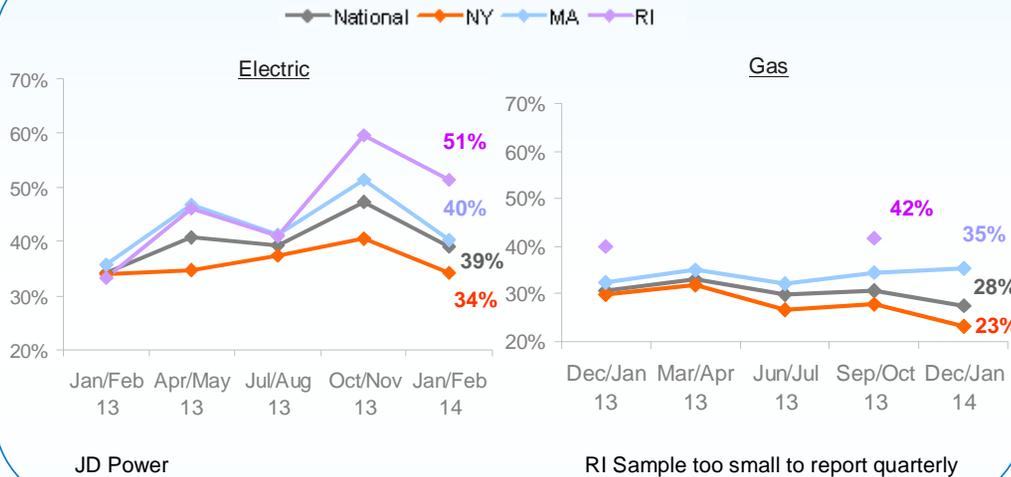
Mel Berger: Trade Marketing

Doreen Lucas: Sales & Channel Support

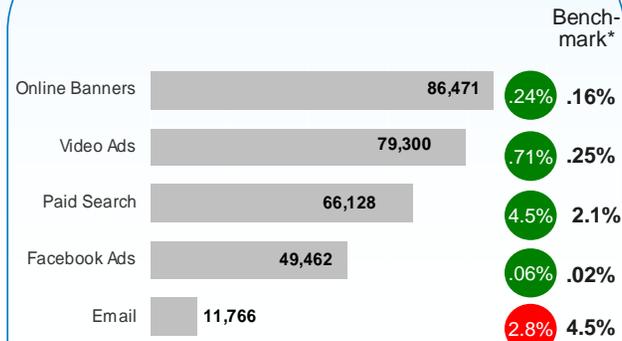
Executive Summary

- Latest National Grid EE residential awareness for all jurisdictions at 39% for electric and 28% for gas. RI leading the pack. Refreshed EE awareness campaigns in MA (radio, print, digital) and RI (radio, digital) in Q1. Plan to launch EE umbrella campaign theme in Q2 across the footprint. Added EE awareness question to Brand Image Relationship Tracker survey for monthly tracking.
- Digital major driver of strong residential customer responses of 293,300 from marketing activities.
- Residential program Committed Appointment goals are on track or exceeding goals for MA and RI. NYC and UNY programs in building mode.
- MA Communities Marketing RFI received positive response to identify 5 communities to drive wider EE participation.
- Developing tracking of household measure penetration (1, 2, 3+) to determine depth of measure adoption. Chart will be included in upcoming dashboard.

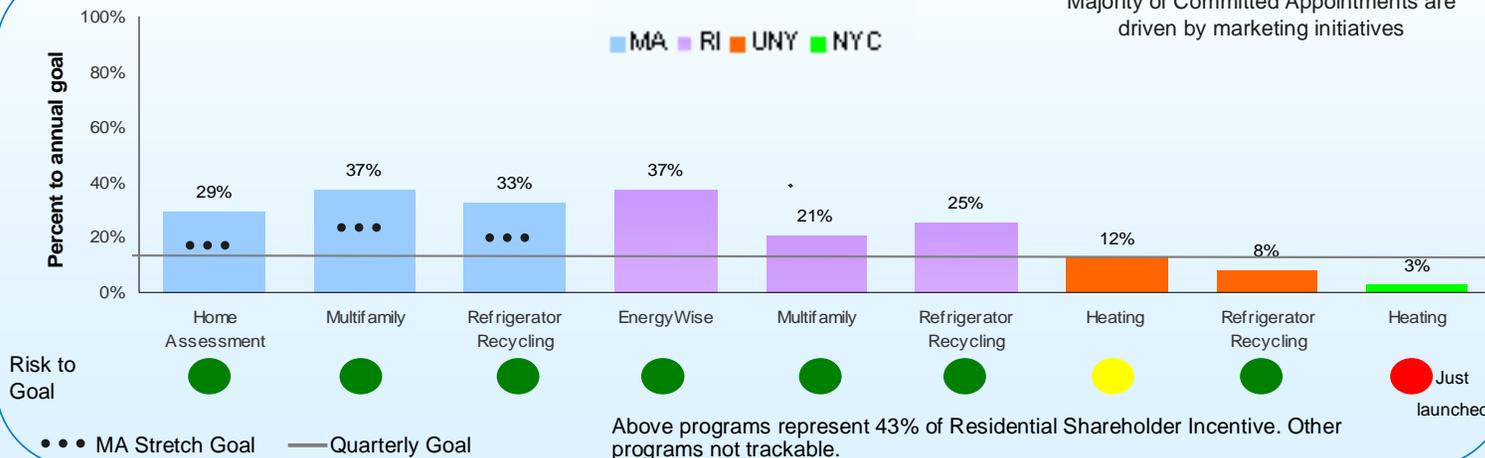
EE Awareness



Customer Responses



Committed Appointments



Highlights



MA

- Lighting & Products Special Facebook Offer
- Ref Rec \$100 Limited Time Offer in Print
- Educational HES video
- Co-branding guidelines prepared for HES Home Performance Contractors



RI

- Providence Journal Deals
- Educational video for EnergyWise
- Local papers for EnergyWise
- Digital (Facebook, banner ads and paid search) for HEHE



NY

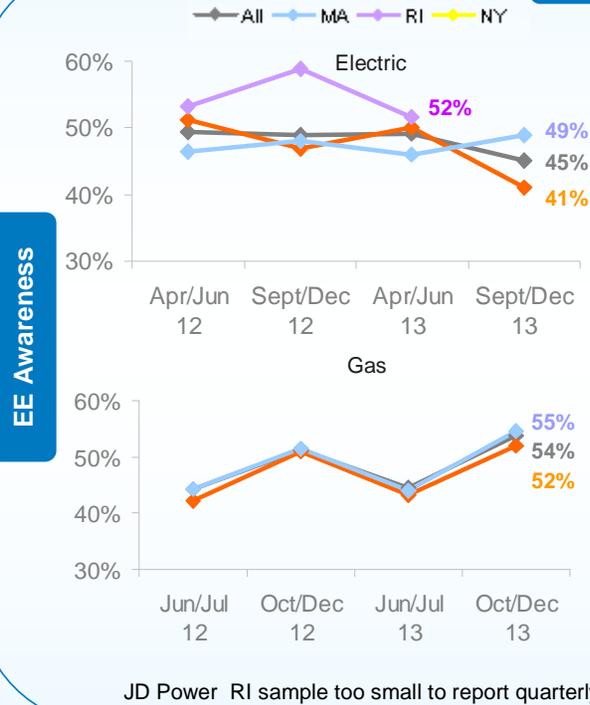
- Digital (Facebook, banner ads and paid search) for HEHE
- EE Landing Page Live

ALL

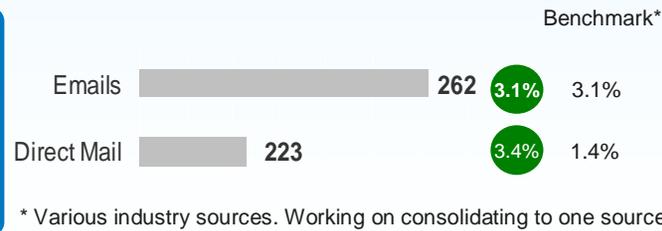
Executive Summary

- “Yesterday’s Office” Campaign digital suite generated strong click-thru’s (14,600). Social media posts included links to video and new EE business tips.
- Small Business Program Goals on track in MA, RI and NY. EE Awareness measured 45% for electric and 54% for gas.
- Thought Leadership Agency RFI developed and sent to potential bidders.
- Internal focus groups conducted with Sales, Implementation and Jurisdictional teams to develop Vertical Value Propositions for large/ small businesses.
- Thought Leadership survey requirements scoped to validate value propositions (focus groups) and benchmark/ track large business EE awareness, customer satisfaction and perceptions of National Grid as a trusted advisor.
- NEEP Business Leader Award nominations were completed. Citizen’s Bank in RI and Union College in NY selected as state champions. Cedar Foods and Chestnut Hill Realty were selected as Business leaders winners in MA. Additional Case studies were created for Manth Brownell, Tapecon and Industrial Color Labs.

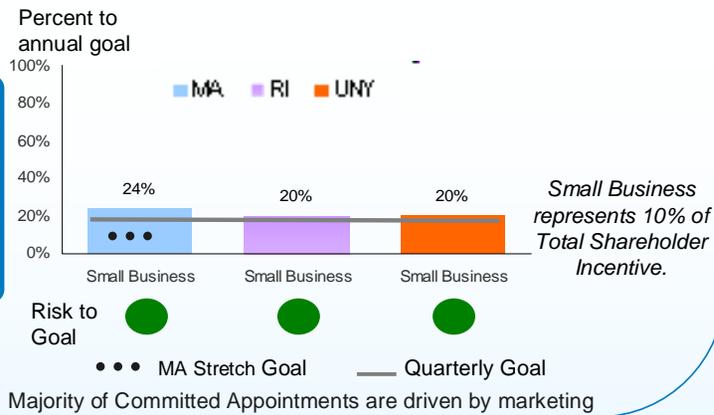
Small Business Metrics



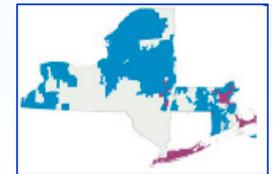
Customer Responses



Customer Appointments

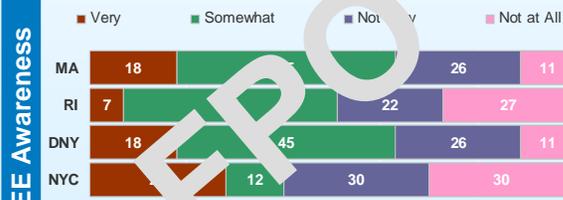


Marketing Highlights- All

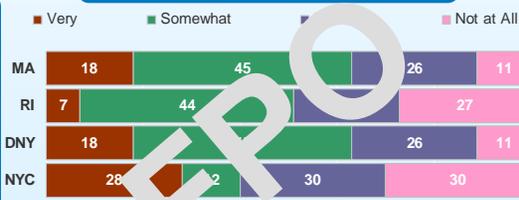


- Value Proposition Focus Groups
- “Yesterday’s Office” Digital (NE)
- NEEP Business Leader Awards
- EE Landing Page EE Business Tips
- Vertical Sales Support Collateral
- Enhanced Online Ordering System
- Strategic Direction for Trade Allies
- NYC Multifamily Direct Install Promo
- Intro for SMB New Customer Options

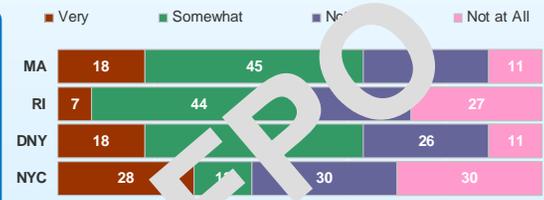
Large Business Metrics



Customer Satisfaction



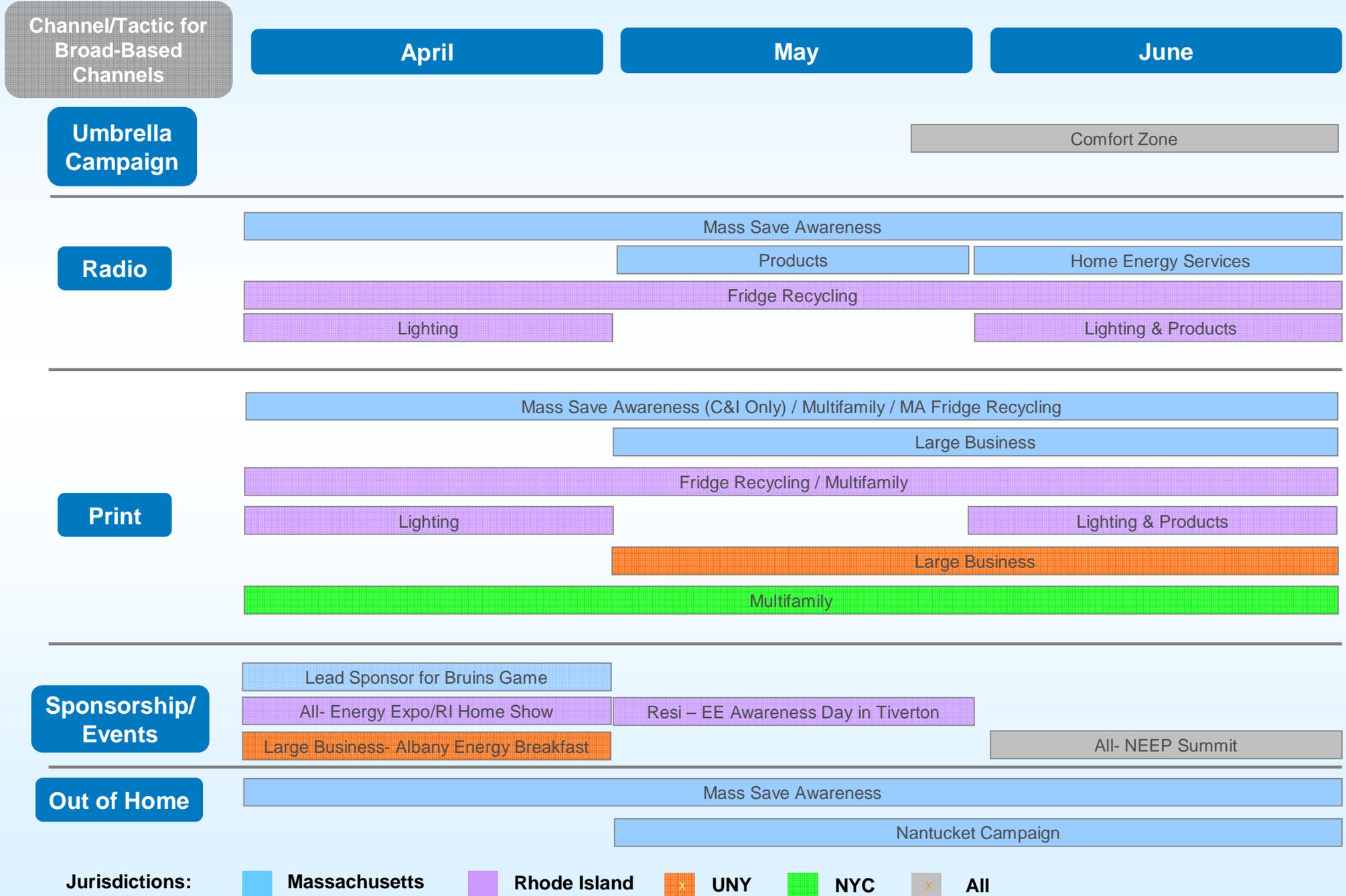
Trusted Advisor



Results will come from Quarterly Thought Leadership Survey under development

Large Business represents 56% of Total Shareholder Incentive

2014 Q2 EE Activity by Channel



2014 Q2 EE Activity by Channel

Channel/Tactic for Digital Channels

April

May

June

Mass Save Awareness / Home Energy Services / Fridge Recycling

Lighting

Lighting & Products

Large Business / Heating & Cooling

Fridge Recycling

Heating & Cooling

Energy Wise / Lighting

Lighting & Products

Large Business

Multifamily

Multifamily

Banner / Mobile Ads

Social Media

Mass Save Awareness / Lighting, Products & Fridge Recycling/Heating & Cooling

Lighting, Products & Fridge Recycling / Heating & Cooling

Heating & Cooling

Small Business

Paid Search

Mass Save Awareness / Home Energy Services / Lighting, Products & Fridge Recycling/Heating & Cooling

Lighting, Products & Fridge Recycling/Heating and Cooling

Energy Wise

Heating & Cooling

Heating & Cooling

Small Business

Pre-Roll Video

Mass Save Awareness

Home Energy Services

Heating & Cooling

Energy Wise

Heating & Cooling

Heating & Cooling

Small Business Program

Jurisdictions:



Massachusetts



Rhode Island



UNY



NYC

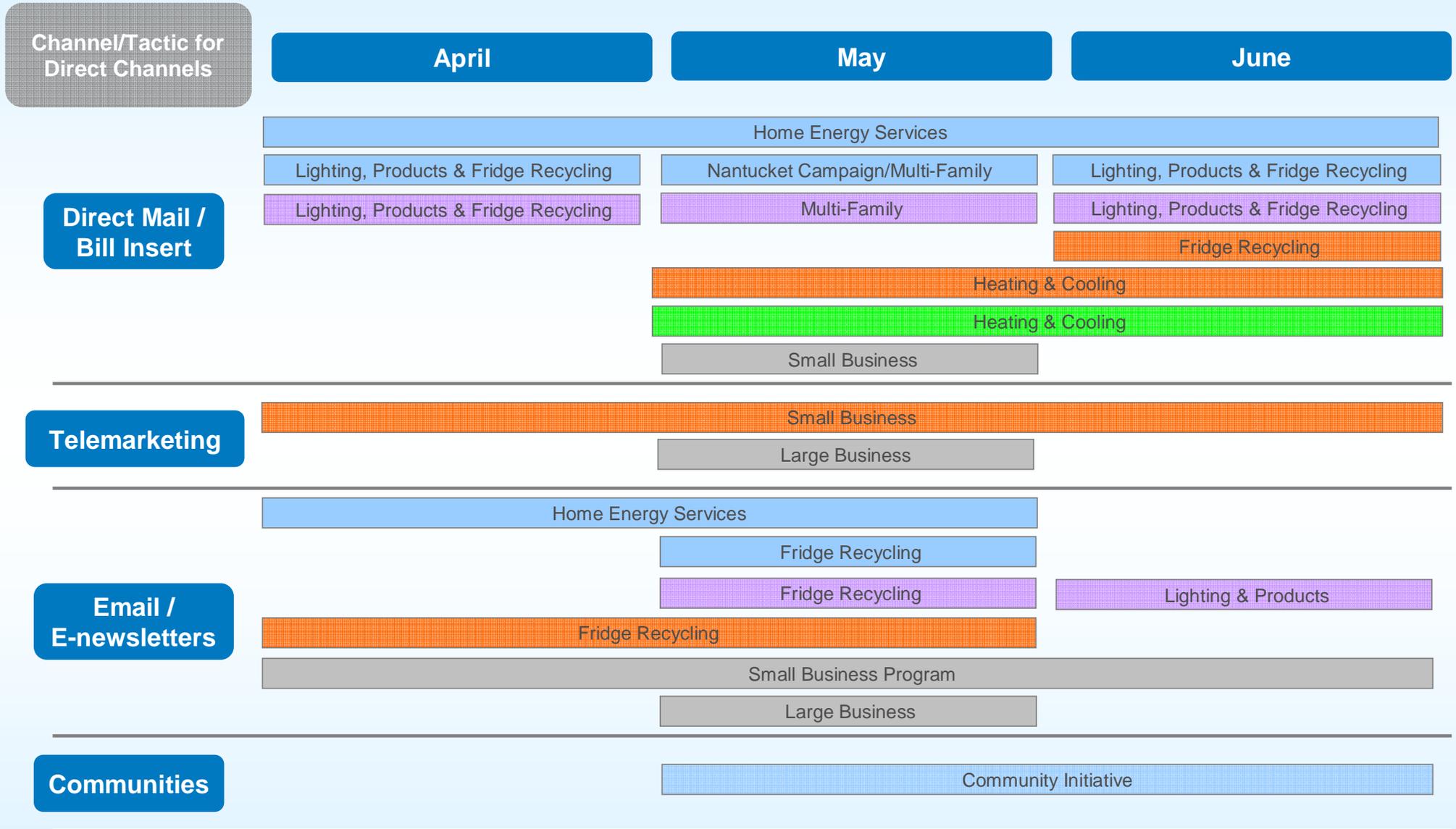


All



LI * previously committed

2014 Q2 EE Activity by Channel



Jurisdictions: ■ Massachusetts ■ Rhode Island ■ UNY ■ NYC ■ All

3. Regarding questions 1 and 2, please explain what you expect to do differently in the next 6 months, 12 months and 5 years.

Data Mining

National Grid will continue to leverage its internal and external data, data mining technology and analytic capabilities to find new ways for engaging our commercial and residential customers engaged in energy management. (Ongoing)

Usage Data

National Grid has been collecting customer usage data from distributed energy resource solutions (including EV charging stations in Upstate New York) in market or in pilot to analyze and evaluate actual customer behavior. This will be used to inform and shape future solution development to drive greater customer engagement. (Begin within next 6 months and will be an ongoing source of customer knowledge)

GridForce Implementation

National Grid plans to further automate the tracking and measurement of the EE programs through automation. This will be an ongoing effort to further utilize its reporting capabilities. Longer term, we look towards potentially including residential and small business customers into the system.

Customer Needs Research

National Grid will continue to build on its market area research that it initiated in 2014 (Study mentioned in response to Question 5) around Grid Modernization, Alternative Fuel Vehicles and Distributed Generation and Storage to better understand customer awareness, interest and willingness to pay or participate in solutions in these markets. (Next 12 months and ongoing)

Customer expectations are also set by day-to-day experiences with companies outside the utility industry ranging from Amazon to Starbucks to Xerox, which reflect the rapid technology-driven changes in society and service. In addition to our primary research studies, National Grid will be looking externally at leading behavioral research and industry thought leaders for utilities and beyond to better understand our customers' increasingly diverse and evolving set of needs, including not only cost, reliability and quality, but also information, convenience, comfort, choice, control, security, community, and environment to identify ways to further engage them.

Collective Customer Analysis

To further augment our customer knowledge, National Grid will begin to analyze customer and demographic data at the region/town level (where possible) to balance the needs of our individual and collective customers. This will provide us with a "holistic" picture of our customer base.

EE Market Potential Study

National Grid is undertaking an EE Market Potential study that will include an in-depth analysis of eligibility requirements and potential barriers to participation as well as previous participation for each

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program. Ultimately we will be able to use the market potential analysis to provide customer and program (including subprogram and measure) specific targeting recommendations. (Next 5 years)

Green Button

National Grid responded to the challenge from the White House to implement a standard format for customers to download their energy usage data online for the purpose of monitoring and controlling consumption and costs. We're on track to have both our UNY and DNY system information available for download via Green Button on our website by year end 2014.

Email

As a key channel for communicating and engaging customers, National Grid will continue to grow our email address database. This is an ongoing effort and acquisition will continue in the out years as well.

Mobile

Though still in its early stages, mobile will over time be another key channel for National Grid to engage customers as more customers utilize this channel of communication.

Web Redesign

In the next 12 months: This year, we have embarked on a new Website Redesign Project where we will be improving the Customer Experience online. This includes providing simple and easy navigation to information and customer transactions, adding in a search feature, improving the view/pay bill process and cross promoting our payment options, assistance programs and Energy Efficiency where appropriate throughout the users journey.

Website Enhancements

In the next 12-18 months: We are planning to integrate OPower web tools to assist customers in understanding and managing their energy usage. This will include tabs in the My Account feature on the National Grid web site to help customers understand their usage and provide visibility into how they can control and manage their usage / costs.

Preference Management

National Grid aims to engage with customers in the arenas they prefer. Our digital roadmap plans include setting up a preference management system where customers can decide through what channels they would like to receive messages, alerts and information. This includes; Text Messaging, Emails and Mobile App Push Notifications.

4. What do you believe are the near term opportunities for improving customer engagement in DER?

Customer Marketing

National Grid understands customer needs are constantly changing and markets are always evolving, as such we utilize a yearly planning approach to develop our Customer Marketing Plans. See Appendix. The Plans provide a yearly roadmap on what we expect to do and how we need to engage customers. They are reviewed on a quarterly basis to ensure any customer or market changes are reflected going forward and results from our in-market test and learn methodology is constantly reflected.

The Plans are based on the value of continuous outreach and education to our customers so they can make informed decisions with regard to their energy purchases. Towards such ends, National Grid provides a strong understanding of its customers within the Plan, while also indicating what strategies and tactics are needed to achieve participation goals. By using marketing strategies that leverage customer insights National Grid is well positioned to market to our customers.

Near term opportunities to improve customer engagement were indicated in the Plan as follows:

- Developing a unified marketing approach – one consistent, integrated marketing campaign;
- Defining a clear value proposition by target audience – understanding the messages that resonate;
- Increasing emphasis on trade ally and sales support – utilizing partners as an extension of our Sales teams; providing better support to our Salesforce
- Shifting from campaign focus to thought leadership in C&I – from lead generation to relationship building and moving to trusted advisor
- Focusing the media mix to digital channels to optimize results – moving from traditional to more digital channels....reach them where they are today utilizing an integrated approach;

Though all the above opportunities are critical to improve engagement, of note is our very substantial investment and effort to move more aggressively on developing and/or improving our digital channels. As we look to reach all customers, traditional channels will continue to be utilized however as more customers use digital we need to ensure we reach them there too. As indicated earlier, web continues to be a key customer channel and social is becoming more so each day. To this end, we have developed a Social Conversation Suite in our Brooklyn facility where we track customer engagement in real-time, taking our conversation to a new level of sophistication. More details on our digital strategy or the other customer engagement strategies can be provided upon request.

In addition to the above key customer Marketing areas of engagement for this year, Events play an important role in National Grid customer engagement, education and outreach. Throughout 2014, National Grid will be participating in expos, state and county fairs and home shows throughout the state of New York. Informing and engaging our customers on Energy Efficiency Programs, safety and other relevant topics is a key priority of many of these events. Below is a complete list of planned events throughout New York for 2014.

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Start Date	End Date	Event Title	EventCity
5-Jan-14	5-Jan-14	Hauppauge Industrial Association (HIA-LI)'s Annual Meeting & Legislative Breakfast	Commack
10-Jan-14	10-Jan-14	Long Island Association (LIA) Executive Breakfast	Woodbury
21-Jan-14	23-Jan-14	Air-Conditioning Heating & Refrigeration (AHR) Expo	New York
26-Feb-14	26-Feb-14	NYSERDA Combined Heat and Power (CHP) Expo	Flushing
11-Mar-14	11-Mar-14	Dance Africa with BrooklynAcademy of Music	Syracuse
13-Mar-14	16-Mar-14	2014 Home and Garden Show of Central New York	Syracuse
19-Mar-14	19-Mar-14	National Grid Annual Municipal Meeting	Malta
19-Mar-14	20-Mar-14	Buildings NY	New York
20-Mar-14	20-Mar-14	National Grid & Junior Achievement 2014 Youth Leadership Conf.	Brooklyn
24-Mar-14	24-Mar-14	National Grid's 3rd Annual Energy Solutions Partners Recognition Event	Albany
25-Mar-14	25-Mar-14	National Grid's 3rd Annual Energy Solutions Partners Recognition Event	Syracuse
26-Mar-14	26-Mar-14	National Grid's 3rd Annual Energy Solutions Partners Recognition Event	Buffalo
26-Mar-14	26-Mar-14	LIBI 24th ANNUAL TRADE EXPO	Melville
1-Apr-14	1-Apr-14	KingsboroughCommunity CollegeEcoFestival 2014	Brooklyn
9-Apr-14	9-Apr-14	Johnstone Supply 2014 Spring Trade Show	Flushing
28-Apr-14	29-Apr-14	Advanced Energy Conference (AERTC) 2014	Albany
30-Apr-14	30-Apr-14	Staten Island Eco Dev Corp. Annual Conference (SIEDC)	Staten Island
Apr. 2014	Apr. 2014	JDRF Diamond & Denim Gala	Verona
Apr. 2014	Apr. 2014	MetLife- Earth Day Fair	Oriskany
Apr. 2014	Apr. 2014	Utica National Insurance- Earth Day Fair	New Hartford
Apr. 2014	Apr. 2014	Bristol-Myers Squibb- Earth Day Fair	Syrcause
1-May-14	1-May-14	Big Rig Day	West Syracuse
7-May-14	7-May-14	United Way of Long Island Annual LIVE United Celebration Luncheon	Woodbury
8-May-14	8-May-14	The RensseleaerCounty Regional Chamber of Commerce 113th Annual Business Expo	Troy
8-May-14	8-May-14	Buffalo Bills Draft Day Event	OrchardPark
15-May-14	15-May-14	Corporate Challenge Race - Albany	Albany
22-May-14	22-May-14	Hauppauge Industrial Assoc. Business Trade Show (HIA-LI)	Brentwood
May. 2014	May. 2014	Renew ErieCounty Energy	Buffalo
5-Jun-14	5-Jun-14	Corporate Challenge Race - New York	New York
5-Jun-14	5-Jun-14	Staten Island Economic Development Corp (SIEDC) Green & Clean Expo 2014	Staten Island
6-Jun-14	6-Jun-14	American Red Cross- Mash Bash	Buffalo
10-Jun-14	10-Jun-14	2014 BrooklynHospital Foundation Founders Ball	Brooklyn
Start Date	End Date	Event Title	EventCity
14-Jun-14	14-Jun-14	Brooklyn Pride Annual Celebration	Brooklyn
17-Jun-14	17-Jun-14	Corporate Challenge Race - Syracuse	Syracuse
19-Jun-14	19-Jun-14	Corporate Challenge Race - Buffalo	Buffalo
19-Jun-14	19-Jun-14	Safety Fair	Wellsville
1-Jul-14	1-Jul-14	Long Island Workplace Challenge (Marcum)	Long Island
22-Jul-14	27-Jul-14	Saratoga County Fair	Ballston Spa

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Jul. 2014	Jul. 2014	VehicleDay-BornhavaSchool	Buffalo
Jul. 2014	Jul. 2014	Tri-CityValley Cats "Go Green Night"	Troy
Jul. 2014	Jul. 2014	UB-BEAM Day at NG	Buffalo
Jul. 2014	Jul. 2014	Shakespeare In Delaware Park- Measure for Measure	Buffalo
Aug. 2014	Aug. 2014	Batavia- Corporate Challenge	Batavia
6-Aug-14	17-Aug-14	Erie County Fair	Hamburg
20-Aug-14	20-Aug-14	United Way Day of Caring	Buffalo
21-Aug-14	1-Sep-14	New YorkState Fair	Syracuse
23-Aug-14	23-Aug-14	5k/10k walk run supporting cancer research and patient care at Roswell Park Cancer Institute in Buffalo	Buffalo
20-Sep-14	20-Sep-14	Back To School Expo (Science ,Technology, Engineering and Math and Wellness) Expo for Capital Region)	Albany
23-Sep-14	30-Sep-14	Climate Week NYC	New York
1-Oct-14	1-Oct-14	2014 Live United Community Festival	Brooklyn
1-Oct-14	1-Oct-14	Greater Long Island Clean Cities Coalition (GLICCC) Annual Advancing the Choice Conf.	Farmingdale
24-Oct-14	26-Oct-14	Long Island Brentwood, NY Fall Home Show	Long Island
Sep. 2014	Sep. 2014	University of Albany Career Fair	Albany
Sep. 2014	Sep. 2014	Rensselaer Polytechnic Institute (RPI) Career Fair	Troy
Sep. 2014	Sep. 2014	University at Buffalo Sustainable Living Fair	Buffalo
Sep. 2014	Sep. 2014	BuffaloNite in WashingtonD.C.	WashingtonD.C.
Sept. 2014	Sep. 2014	Saratoga Showcase of Homes	Saratoga
Sept. 2014	Sep. 2014	Showcase Schenectady	Schenectady
24-Oct-14	24-Oct-14	Hauppague Industrial Association (HIA's) 5th Annual Energy & Environmental Conference	Stony Brook
26-Oct-14	28-Oct-14	NYSSBA's 94th Annual Convention & Education Expo	Rochester
Oct. 2014	Oct. 2014	2014 School Facilities Management Professional Development Conference & Exhibit	Saratoga Springs
Oct. 2014	Oct. 2014	Central New York-Great Pumpkin Festival	Oswego
1-Nov-14	1-Nov-14	Vision LI Smart Growth Summit	Melville
Nov. 2014	Nov. 2014	All Star Night Gala	Buffalo
Nov. 2014	Nov. 2014	Facilities Management Expo-WNY	Depew
Nov. 2014	Nov. 2014	Hospital Hospitality Home Holiday Lighting (Kevin Guest House)	Buffalo
Dec. 2014	Dec. 2014	Fundraising Breakfast for Carly's Club	Buffalo

Energy Data Management Tools

Energy data management tools like the Green Button, that standardize the format of customer utility consumption data, and Portfolio Manager, that allows for benchmarking against peers, can help customer better analyze and understand their consumption patterns, and possibly opportunities for managing their energy use.

Financing Opportunities

Access to financing had been identified as a barrier to market acceptance of some clean energy technologies. By informing customers of opportunities like those available through On Bill Recovery, the

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New York Green Bank and program specific opportunities, customers are more able to move from awareness of clean energy opportunities to execution and implementation of DER projects.

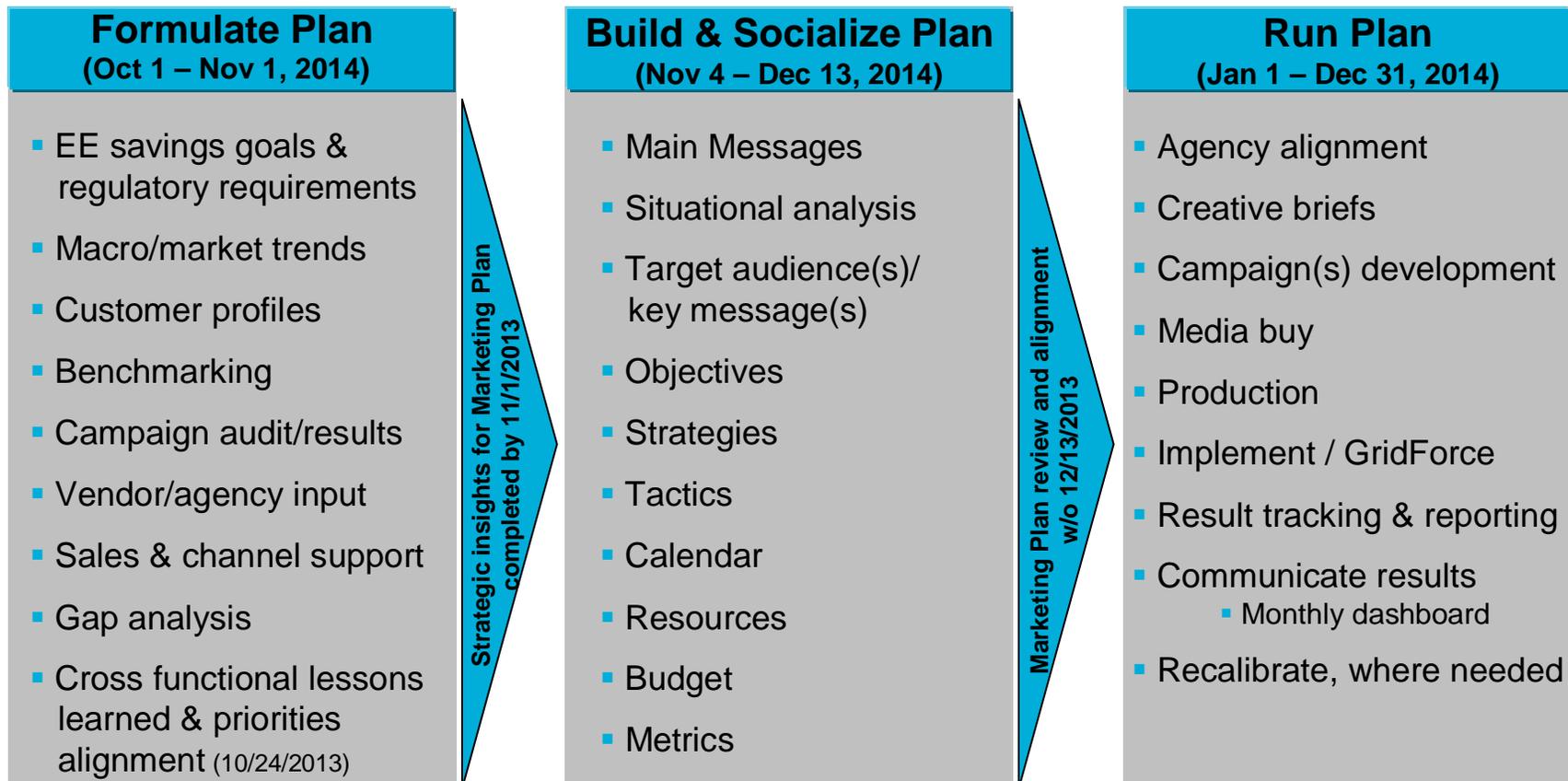
Time-of-use Rates

National Grid is expecting deployment of a new voluntary time-of-use rate in the coming months. This particular rate will target owners of electric vehicles, though be available to all residential customers. Time-of-use rates provide opportunities for customers to respond to prices and lower their energy bills by adjusting their behaviors to consume energy during off-peak hours.

Expansion of Behavioral Programs

There is potential opportunity to expand National Grid-NY's existing energy efficiency behavioral programs to all customers, transitioning traditional utility-customer relationships to relationships that empower customers, provide platforms to build the demand for energy services, and foster dynamic energy services economies. The utility's assets—a trusted brand, customer energy data, inexpensive channels, grid topology data, and ability to monetize demand reduction could help jump start the market for home energy automation with tools like smart thermostats and the establishment of inexpensive residential demand response programs.

Approach to Marketing Plan Development



The marketing Planning process	The output of the marketing planning process Strategic marketing plan contents	Marketing theory (Structures, frameworks, models)	Financial theory / Structure
Phase 1 Goal setting	Mission statement Financial summary		
Phase 2 Situation review	<p>Market overview</p> <ul style="list-style-type: none"> → Market structure → Market trends → Key market segments → Gap analysis <p>↓</p> <p>Opportunities Threats</p> <hr/> <p>Strengths Weaknesses</p> <p>↓</p> <p>Issues to be Addressed</p> <p>↓</p> <p>Portfolio summary</p> <p>↓</p> <p>Assumptions</p>	<p>Marketing audit Market research Market segmentation studies Gap analysis Product life cycle analysis Diffusion of innovation Ansoff matrix Forecasting Market research</p> <p>Issue management</p> <p>Key success factors matrix Market research Market segmentation studies</p> <p>B.C.G. Matrix Directional policy matrix</p> <p>Downside risk assessment</p>	<p>Competitor analysis Industry/sector analysis Risk evaluation Ratio analysis, valuation studies Cost of capital NPV analysis Project evaluation Life cycle costing</p> <p>Profitability analysis by products / segments Comparative analysis of competitor products Experience curves and cost structures</p> <p>Cash flows and risk evaluation Sensitivity analysis</p> <p>Sensitivity analysis Decision trees Probability theory</p>
Phase 3 Strategy Formulation	<p>Marketing Objectives</p> <ul style="list-style-type: none"> (By product) (By segment) (Overall) → Strategic focus → Product mix → Product development → Product deletion → Market extension → Target customer groups <p>Marketing Strategies</p> <ul style="list-style-type: none"> (4 x 4 ps) (Positioning/branding) → Product → Price → Promotion → Place 	<p>Porter matrix Ansoff matrix Bcg matrix Directional policy matrix Gap analysis</p> <p>Market segmentation studies Market research Response elasticities</p> <p>→ McDonald PRODUCTIVITY MATRIX Blake mouton matrix</p>	<p>Performance targets / ratios Cost, price, volume (CPV) analysis Marginal and absorption costing Activity base costing</p> <p>Budgeting and financial planning Zero base budgets</p>
Phase 4 Resource Allocation And monitoring	Resource Requirements	<p>Forecasting Budgeting</p> <p>Measurement and review</p>	<p>Integrated financial planning Limiting resource analysis</p>

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5. Are you aware of any studies of what DER related services customers in different service classifications want, and what they'd be willing to pay for and, if so, please provide.

National Grid has exceptional in-house customer research and insights capabilities. Our work in both quantitative and qualitative research has lead our efforts to inform and engage customers. Our work in the area of Innovative Solutions Development is one example.

National Grid is in the process of completing a marketing research study to provide customer needs input into Innovative Solution Development. The objective of this study was to better understand what our customers need and value in the context of new and future energy solutions for home, business, and transportation. In addition, we also explored the customers' awareness of interest in and opinion on these solutions. The study was conducted across the National Grid footprint and we surveyed both residential and commercial customers. The three solution areas studied include: Grid Modernization, Distributed Generation and Storage and Alternative Fuel Vehicles.

National Grid is available to discuss this study in further detail with DPS Staff.

6. Are you aware of examples of successful customer engagement efforts (possibly through EEPs or DR Programs) and, if so, can you please provide.

National Grid has been working with customer for many years in New York, Massachusetts and Rhode Island. We have observed, based on what we directly manage with other states we service as well as benchmarking efforts in other states, that customer engagement and customer satisfaction are driven by:

- More robust numbers of product offerings that customers can avail themselves to;
- Increased levels of customer communications;
- Simplified processes from beginning to end (e.g. automated incentives).

EEPS Residential Behavioral Programs

National Grid's EEPs Electric and Gas Residential Building Practices and Demonstration Programs have been successful in engaging customers in management of their home energy consumption. These programs utilize a social marketing campaign, with normative messaging techniques, to encourage responsible energy behavior and choices. The campaign provides home energy reports (HERs) to households in National Grid-NY's combined gas and electric service territories in upstate New York. The HERs provide recipients with feedback on their household energy use including a comparison of the recipient household's energy usage with that of neighboring homes, thereby introducing a subtle form of peer pressure (often referred to as "social norming") among households to achieve energy savings. The recent program impact evaluation found that participating customers not only consumed less electricity and natural gas, but were also more likely to participate in other energy efficiency programs offered by National Grid when compared to the control group.

Utility Specific Time of Use Questions/Answers

Central Hudson

(a) Give a brief description/overview of your VTOU rate(s). Was it created with electric vehicle customers in mind? How many periods does it include? What times do those periods encompass? Does the VTOU rate change seasonally as well as throughout the day?

Central Hudson's TOU rates were not developed with EV end use in mind; however in the Company's electric rate case 09-E-0588, CH was directed to eliminate its residential TOU delivery rates. However, following discussions between the Company and PSC Staff, Central Hudson filed and the Commission approved retention of its time differentiated delivery rates giving recognition to the fact that elimination of the TOU rates may have been premature in light of the evolving EV market.

Customers are billed on-peak and off-peak rates for the Energy Delivery charge, and on and off-peak rates for the Market Price Charge and Market Price Adjustment. Participants will receive an annual letter that compares total charges for their usage under the Time-of-Use and standard rates for each bill rendered.

Customers can choose from three time periods for their weekday, on-peak usage: 1) 8 a.m. to 8 p.m., 2) 9 a.m. to 9 p.m., or 3) 10 a.m. to 10 p.m. The on-peak and off-peak rates are the same for all three periods. All weekends and six major holidays per year (New Year's Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day and Christmas) are considered off-peak.

Billing Line Items	Time-of-Use Charges	Standard Residential Charges
Customer Charge	\$27.00	\$24.00
Energy Delivery charge, per kwh		4.963 cents
On-peak energy delivery charge	6.144 cents	n/a
Off-peak energy delivery charge	4.022 cents	n/a
Base MFC Administration Charge	0.078 cents	0.183 cents
MFCBase MFC Supply Charge	0.085 cents	0.203 cents
NYS Assessment	0.333 cents	0.333 cents
Market Price Charges		Market supply charges
On-peak market price charge	118 percent of standard charge	n/a
Off-peak market price charge	89 percent of standard charge	n/a

All other billing charges that apply to both standard and Time-of-Use rates are the same.

Note: MFC Administration and Supply Charges and the NYS Assessment Charge are updated annually effective July 1.

(b) Describe the meters in use by your VTOU customers. What metering capabilities are required to facilitate a VTOU rate? What is the maximum number of periods that these meters can accommodate?

Central Hudson currently utilizes General Electric kV2 digital meters to measure TOU. There are several meter forms available for this meter type. The meter is required to be programmed to measure during the required time periods and to display the individual indexes per each period. The maximum number of periods that these meters can accommodate is 4.

(c) How many customers are enrolled on your VTOU rate(s) (i.e. number of enrolled customers, percentage of total customers enrolled on the VTOU rate, and percentage of total load enrolled on the VTOU rate)?

As of year-end 2013:

- There were 1,162 customers enrolled in our TOU program.
- This represents less than 1% of total customers.
- Percentage of load was less than 1% of total load.

(d) What percentage of load would an average customer have to shift to off-peak periods in order for the VTOU rate to make economic sense for that customer?

A customer must use more than 57% of their electricity during off peak periods in order to realize savings.

(e) Is there a difference in the monthly basic service charge between customers served under your VTOU rate(s) and customers served under the otherwise applicable standard rate for each service classification? If so, how much is the difference? What percentage of load would an average customer have to shift to off-peak periods in order to recoup any such difference under the VTOU rate?

Please see table above for basic service charge information. As stated above the customer must use more than 57% of their electricity during off peak periods in order to realize savings.

(f) Is your VTOU rate(s) offered in conjunction with other energy management or efficiency residential programs? Does it provide any rebates and/or special pricing?

TOU customers have the option to participate in other energy efficiency programs and rebates. There no TOU specific rebates.

Con Edison

(a) Give a brief description/overview of your VTOU rate(s). Was it created with electric vehicle customers in mind? How many periods does it include? What times do those periods encompass? Does the VTOU rate change seasonally as well as throughout the day?

Residential VTOU Rate

A new voluntary time-of-use rate (SC 1 Rate III) went into effect for Con Edison customers beginning on March 1, 2014. SC 1 Rate III was designed to encourage the shifting of residential energy use away from both supply and delivery peak periods. By offering attractive off-peak supply and delivery rates, particularly during the summer, it also encourages SC 1 customers who have a plug-in electric vehicle ("PEV") to engage in vehicle-charging at their residence during those off-peak hours.

A description of the peak, off-peak and super-peak periods is below, along with the delivery charges applicable to each period.

Peak	Off-Peak	Super-Peak*
8AM - 12 Mid	12 Mid - 8AM	2PM - 6PM

*The super-peak period will be in effect Monday through Friday only during the summer months (June 1 — September 30). Super-peak pricing will apply only to a customer's supply charges.

	Peak	Off-Peak	Super-Peak*
June 1 — Sept 30	19.01 cents/kWh	1.34 cents/kWh	19.01 cents/kWh
All other months	7.04 cents/kWh	1.34 cents/kWh	N/A

A customer/basic-service charge of \$19.87 per month applies, along with any applicable delivery charges and adjustments as specified in general rule 26 of the Con Edison electric tariff. Since the above Super Peak applies only to supply pricing, the Super-Peak delivery price is the same as the Peak delivery price. The Company also offers a VTOU rate (SC 1 Rate II), which has since been closed to new applicants. This rate was not specifically created with PEVs in mind. A description is as follows:

Summer

On peak: Monday through Friday, 10 AM to 10 PM, excluding Independence Day (July 4) and Labor Day (the first Monday in September)

Off peak: All other hours of the week

Non-Summer

On peak: Monday through Friday, 10 AM to 10 PM, excluding New Year's Day (January 1), Memorial Day (the last Monday in May), Thanksgiving Day (the fourth Thursday in November), and Christmas Day (December 25)

Off peak: All other hours of the week

	Peak	Off-Peak
June 1 — Sept 30	30.32 cents/kWh	1.16 cents/kWh
All other months	11.00 cents/kWh	1.16 cents/kWh

(b) Describe the meters in use by your VTOU customers. What metering capabilities are required to facilitate a VTOU rate? What is the maximum number of periods that these meters can accommodate? The Company uses meters that match the number of time periods such as a three-register meter (which is the maximum required under our current offerings).

(c) How many customers are enrolled on your VTOU rate(s) (i.e. number of enrolled customers, percentage of total customers enrolled on the VTOU rate, and percentage of total load enrolled on the VTOU rate)?

Residential VTOU – 1,920

Based on historic data, the residential VTOU customers represented about 0.1% of total residential customers and 0.7 percent of total residential load.

(d) What percentage of load would an average customer have to shift to off-peak periods in order for the VTOU rate to make economic sense for that customer?

This would depend on the usage and the Service Class of the customer.

For example, an SC1 (residential customer) under Rate II using 450 kWh per month would need to consume more than 78 percent of their Summer usage in the off peak to see delivery savings. This same customer would need to consume more than 29 percent of their usage during off-peak in the non-Summer months to see delivery savings. At 1,000 kWh per month, these percentages would be 73 and 18 percent, respectively.

Correspondingly, an SC1 (residential customer) under Rate III using 450 kWh per month would need to consume more than 59 percent of their Summer usage in the off peak to see delivery savings. This same customer will always see delivery savings in the non-Summer months. At 1,000 kWh per month, the Summer percentage would be 54 percent, and again, for the non-Summer months the customer will always see delivery savings.

Please note, the above does not factor any savings that may occur under supply pricing.

(e) Is there a difference in the monthly basic service charge between customers served under your VTOU rate(s) and customers served under the otherwise applicable standard rate for each service classification? If so, how much is the difference? What percentage of load would an average customer have to shift to off-peak periods in order to recoup any such difference under the VTOU rate?

The monthly basic service charge for customers served under the Company's standard SC1 (residential) electric rate is \$15.76. Customers enrolled in the Company's VTOU rate pay an additional: (1) \$8.54 per month for a total of \$24.30 under Rate II, or (2) \$4.11 per month for a total of \$19.87 under Rate III. An SC1 Rate II customer (assuming monthly usage of 450 kwh per month) would need to shift an additional 7 percent of their usage to the off peak to see delivery savings during the Summer. This same customer would need to shift an additional 19 percent to the off-peak period to see delivery savings during the non-Summer months. At 1,000 kWh per month, these percentages would be 3 and 9 percent, respectively.

An SC1 Rate III customer (assuming monthly usage of 450 kwh per month) would need to shift an additional 5 percent of their usage to the off peak to see delivery savings during the Summer. This same customer would need to shift an additional 16 percent to the off-peak period to see delivery savings during the non-Summer months. At 1,000 kWh per month, these percentages would be 2 and 7 percent, respectively.

Please note the above does not consider any savings that may be achieved under supply pricing.

(f) Is your VTOU rate(s) offered in conjunction with other energy management or efficiency residential programs? Does it provide any rebates and/or special pricing?

The Company's VTOU rates are not specifically offered in conjunction with other energy management or efficiency programs. Our new residential VTOU rate does not include any rebates, but does include a one year price guarantee if the customer owns an electric

NYSEG/RG&E

(a) Give a brief description/overview of your VTOU rate(s). Was it created with electric vehicle customers in mind? How many periods does it include? What times do those periods encompass? Does the VTOU rate change seasonally as well as throughout the day?

NYSEG has two voluntary residential time-of-use service classes, SC No. 8 Residential – Day Night Service and SC No. 12 Residential with Time-of-Use Metering. SC No. 8 is for customers with monthly usage of 1,000 kWh or more and SC No. 12 is for customers with annual usage of 35,000 kWh or more.

NYSEG also has a voluntary non-residential time-of-use service class, SC No. 9 General Service – Day Night Service. This service class is for customers with monthly usage of 1,000 kWh or more.

RG&E has a voluntary residential time-of-use service class, SC No. 4 Residential Service – Time-of-Use Rate. This service class has two schedules, Schedule I is for customers with an annual usage of 24,750 kWh or less and Schedule II is for customers with annual usage greater than 24,750 kWh.

The voluntary time-of-use rates were not created with electric vehicle customers in mind. The rates were established many years ago and the focus was on demand side management, primarily to encourage customers to move their usage to off peak periods

RG&E Residential TOU SC No. 4 has two periods, on-peak and off-peak.

NYSEG day-night services, SC 8 residential and SC 9 non-residential have two periods, on-peak and off-peak.

NYSEG Residential TOU SC No. 12 has three periods, on-peak, mid-peak, and off-peak.

RG&E			
SC4 Sch I and Sch II- Residential	All months	On-peak	Monday - Friday, 7:00 AM - 9:00 PM
		Off-peak	Monday - Friday, 9:00 PM - 7:00 AM, Sat and Sun all hours
NYSEG			
SC8 - Residential	All months	On-peak	7:00 AM - 11:30 PM
		Off-peak	11:30 PM - 7:00 AM
SC12 - Residential	Summer: June - August	On -Peak:	Monday - Friday, Except Holidays: 10:00 AM - 6:00 PM
		Mid-Peak:	Monday - Friday, Except Holidays: 7:00 AM - 10:00 AM and 6:00 PM - 11:30 PM;
		Off-peak:	Sat, Sun and Holidays: 7:00 AM - 11:30 PM
			All days: 11:30 PM - 7:00 AM
	Winter: December - February	On-Peak:	Monday - Friday, Except Holidays: 7:00 AM - 10:00 AM and 5:00 PM - 10:00 PM
		Mid-Peak:	Monday - Friday, Except Holidays: 10:00 AM - 5:00 PM and 10:00 PM - 11:30 PM;
		Off-peak:	Sat., Sun., and Holidays: 7:00 AM - 11:30 PM
			All Days: 11:30 PM - 7:00 AM
	Off-Season: March - May, September - November	Mid-Peak	All Days: 7:00 AM - 11:30 PM
		Off-peak:	All Days: 11:30 PM - 7:00 AM
SC9 - General Service Non-residential	All months	On-peak	7:00 AM - 11:30 PM
		Off-peak	11:30 PM - 7:00 AM

The VTOU rate changes seasonally only for NYSEG SC 12 Residential TOU, see the chart above.

(b) Describe the meters in use by your VTOU customers. What metering capabilities are required to facilitate a VTOU rate? What is the maximum number of periods that these meters can accommodate?

NYSEG and RG&E's existing meter population used on voluntary residential TOU accounts is a mix. For our simple dual (i.e. on-peak / off-peak) rate, we have a mixed population of mechanical double dial meters, hybrid meters and of course the more modern solid state meters. Our other residential TOU rate is a bit more complex and is a seasonal rate that contains three rate periods with three seasonal periods. The meters used to measure customers on this rate are mostly solid state meters but some hybrid meters are still in use.

The metering capabilities required to facilitate a VTOU rate is the use of more expensive TOU meters equipped with batteries. The batteries are required to maintain date and time during power outages. The TOU meters must also be equipped with a perpetual calendar function to eliminate calendar expiration issues and by extension, the need for future site visits to extend the calendar through reprogramming. Our current solid state TOU meter is capable of up to four TOU rate periods.

(c) How many customers are enrolled on your VTOU rate(s) (i.e. number of enrolled customers, percentage of total customers enrolled on the VTOU rate, and percentage of total load enrolled on the VTOU rate)?

At NYSEG, 135,074 customers participate in VTOU rates. This is approximately 15.3% of total customers. Through April, 2014, VTOU load accounts for approximately 15.7% of total load.

At RG&E, 5,090 customer participate in VTOU rates. This is approximately 1.4% of customers. Through April 2014, VTOU load accounts for approximately 37.1% of total Load.

(d) What percentage of load would an average customer have to shift to off-peak periods in order for the VTOU rate to make economic sense for that customer?

A large factor in determining the percentage of load that an average customer would have to shift to off-peak periods in order for the VTOU rate to make economic sense for that customer is the differential between peak and off peak energy costs. For this analysis, NYSEG-RGE used calendar year 2013 results. The results for other time periods will be different based on the peak/off peak differential. NYSEG-RGE has been studying the effectiveness of current residential time of use rates with staff, and has been analyzing the potential for a new voluntary residential time of use rate with electric vehicles in mind. This rate may be an alternative to the existing time of use rates.

Based on calendar year 2013 results a NYSEG SC1 customer using 1,000 kWh per month would have benefitted from the SC8 Residential Day/Night rate if they had used at least approximately 23% during the Off Peak hours. As monthly usage increases, the fixed monthly costs carry less weight and the percent of usage needed in the off peak hours decreases. For instance, at 2,000 kWh, the breakeven point would be 17% Off Peak usage.

For NYSEG SC12, based on 2013 results and a flat monthly usage pattern, there were limited opportunities for customers to realize a savings if they switched from SC1 to SC12.

For RGE SC4, based on 2013 results, customers have limited opportunities to realize a savings if they switched from SC1 to SC4. Customers that fall under schedule I that average 2,000 kWh/month would have needed to have nearly all their usage during the off peak hours in order to see a savings. Customers that would fall under SC4 Schedule II could see a savings in some months, but based on flat monthly usage, they would not see a savings over the twelve month span.

(e) Is there a difference in the monthly basic service charge between customers served under your VTOU rate(s) and customers served under the otherwise applicable standard rate for each service classification? If so, how much is the difference? What percentage of load would an average customer have to shift to off-peak periods in order to recoup any such difference under the VTOU rate?

Yes, there is a difference in basic service charges.

For RG&E, the basic service charges are as follows:

Residential:

SC1 (non-TOU):	\$21.38
SC4 (TOU):	\$24.86

Non-Residential:

SC2 (non-TOU):	\$ 21.38
SC8(TOU):	\$589.54

For NYSEG, the basic service charges are as follows:

Residential:

SC1 (non-TOU):	\$15.11
SC 8 (Day/Night):	\$17.40
SC12 (TOU):	\$24.11

Non-Residential

SC6 (non-TOU):	\$17.60
SC9 (TOU):	\$20.41

(f) Is your VTOU rate(s) offered in conjunction with other energy management or efficiency residential programs? Does it provide any rebates and/or special pricing?

The VTOU rates separate from our energy efficiency programs. We do however, offer rebates for measures that might be useful to a customer with TOU rates. For example, Building Energy Management Systems and Lighting Controls would both be eligible for a Custom Rebate in our commercial EE programs. A programmable thermostat when installed with a new energy efficient gas furnace would be eligible in our residential gas program (electric savings from reduced running of furnace fan).

Orange and Rockland Utilities, Inc.

(a) Give a brief description/overview of your VTOU rate(s). Was it created with electric vehicle customers in mind? How many periods does it include? What times do those periods encompass? Does the VTOU rate change seasonally as well as throughout the day?

O&R offers a residential voluntary TOU option under SC No. 19. SC No. 19 was not created with electric vehicle customers in mind. There are three periods in the summer and two periods in the winter. Below are those periods and the current delivery rates (as of June 1, 2014). In addition, the monthly Market Supply Charge contains a peak and off-peak pricing component.

Summer Periods (June – September)

Period I: 24.774 ¢/kWh: Monday – Friday (except holidays), 12:00pm – 7:00pm

Period II: 8.864 ¢/kWh: Monday – Friday (except holidays), 10:00am – 12:00 pm and 7:00pm – 9:00pm

Period IV: 1.595 ¢/kWh: All other times

Winter Periods (October – May)

Period III: 8.864 ¢/kWh: Monday – Friday (except holidays), 10:00am – 9:00pm

Period IV: 1.595 ¢/kWh: All other times

(b) Describe the meters in use by your VTOU customers. What metering capabilities are required to facilitate a VTOU rate? What is the maximum number of periods that these meters can accommodate? O&R uses a General Electric KV2C Encompass meter that can be programmed for up to four TOU periods and four seasons.

(c) How many customers are enrolled on your VTOU rate(s) (i.e. number of enrolled customers, percentage of total customers enrolled on the VTOU rate, and percentage of total load enrolled on the VTOU rate)?

At year-end 2013, there were approximately 3,700 customers on our residential VTOU rate, or 1.6% of total customers and 2.0% of total load.

(d) What percentage of load would an average customer have to shift to off-peak periods in order for the VTOU rate to make economic sense for that customer?

There are a number of ways a customer can shift load for a VTOU rate to make economic sense. For example, in the summer, a typical O&R customer using 677 kWh/month could shift approximately 75% of his or her electric load to Period IV (off-peak) and still use 5% in Period I (super-peak) and 20% in period II (peak) and see cost savings.

(e) Is there a difference in the monthly basic service charge between customers served under your VTOU rate(s) and customers served under the otherwise applicable standard rate for each service classification? If so, how much is the difference? What percentage of load would an average customer have to shift to off-peak periods in order to recoup any such difference under the VTOU rate?

The monthly basic service charge for customers served under the Company's standard residential service classification SC No. 1 is \$19.00. Customers enrolled in the Company's VTOU rate under SC No. 19 pay an additional \$13.00 per month or a total of \$32.00.

There are a number of ways a customer can shift their load to recoup the delta in the monthly basic service charge. For example, in the summer, a typical O&R customer using 677 kWh/month could shift approximately 86% of his or her electric load to Period IV (off-peak) and still use 2% in Period I (super-peak) and 12% in period II (peak) and see cost savings of approximately \$13.00 (i.e., the delta in the SC No. 1 and SC No. 19 basic service charges).

(f) Is your VTOU rate(s) offered in conjunction with other energy management or efficiency residential programs? Does it provide any rebates and/or special pricing?

O&R's VTOU rates are not specifically offered in conjunction with other energy management or efficiency program.

Customer Engagement – TOU questions from DPS Staff

- a) *Give a brief description/overview of your VTOU rates. Was it created with electric vehicle customers in mind? How many periods does it include? What times do those periods encompass? Does the VTOU rate change seasonally as well as throughout the day?*

The Company currently has one residential time of use rate available for customers, Service Classification No. 1-C Residential and Farm Service – Optional Large Time of Use Rate (SC-1C). In addition, the Company also filed proposed tariff leaves for another residential voluntary time-of-use rate (SC-1 VTOU) that will offer both time of use delivery and commodity rates. SC-1 VTOU is still pending PSC approval and is scheduled to become effective September 1, 2014.

SC-1C

The SC-1C rate has been in place since 1989 and was originally a mandatory time of use rate for large residential and farm service customers using 30,000 kWh or more annually. This rate was changed to an optional time-of-use rate for residential customers on September 1, 1998 in Case 94-E-0098 and 94-E-0099. This rate was not created with electric vehicle customers in mind. The time periods developed for this rate class generally favor large use customers like farms and religious institutions.

The SC-1C rate has one delivery charge for all kWh usage, but there are three time periods (with seasonal distinctions) for the pricing of commodity as shown below:

Winter (Dec, Jan, Feb)

On Peak: 5:00 p.m. to 8:00 p.m., weekdays
Shoulder Peak: 9:00 a.m. to 5:00 p.m., weekdays
Off Peak: 8:00 p.m. to 9:00 a.m., weekdays. All hours on weekends.
Christmas and New Year's are defined as off peak.

Summer (Jun, Jul, Aug)

On Peak: 11:00 a.m. to 5:00 p.m., weekdays
Shoulder Peak: 8:00 a.m., to 11:00 a.m. and
5:00 p.m., to 8:00 p.m., weekdays
Off Peak: 8:00 p.m. to 8:00 a.m., weekdays. All hours on weekends.
Independence Day is defined as off-peak.

Off-season (Mar, Apr, May, Sep, Oct, Nov)

All hours of all days.

SC-1 VTOU (proposed)

In accordance with the Order issued on March 15, 2013 in Case 12-E-0201, the Company filed a proposal for a residential voluntary time of use rate that will become effective September 1, 2014 pending Commission approval. The primary goal of the SC-1 VTOU offering is to support New York State's Plug-in Electric Vehicle initiatives and to encourage off-peak charging. For this reason, the proposed SC-1 VTOU rate will include three rate periods: on-peak, off-peak and super-peak. Delivery rates will be charged based on a customer's on-peak (including super-peak) and off-peak usage. Commodity rates will be charged based on a customer's on-peak, off-peak and super-peak usage. All of the summer capacity costs will be collected during the super-peak period. There will be an incremental customer charge of \$3.36/month to recover the costs of the enhanced metering required to bill the SC-1 VTOU rate. In addition, the Company will offer a price guarantee for PEV full service customers for the first twelve months on the VTOU rate.

Super-Peak: Summer (Jun-Aug) 2:00 pm to 6:00 pm, weekdays only (excluding weekends and holidays)
On-Peak: 7:00am to 11:00pm, all year round
Off Peak: 11:00 pm to 7:00 am, all year round

- b) *b) Describe the meters in use by your VTOU customers. What metering capabilities are required to facilitate a VTOU rate? What is the maximum number of periods that these meters can accommodate?*

For Service Classification No. 1-C, the Company is currently using New York State approved meters which are equipped with an AMR module that is capable of transmitting three channels of data. These meters allow the Company to pick up three readings from the meter to register total kWh, on-peak kWh and shoulder-peak kWh. The billing system then calculates the off-peak kWh values. This type of meter is the most cost effective and also allows customers to participate in both the SC1-C rate and net metering if applicable. These same types of meters will also be used for the SC-1 VTOU offering and the register that records shoulder-peak for SC-1C will record the super-peak period for SC-1 VTOU.

The metering for the residential time-of-use rates must have at least three channels to facilitate the Company's current SC-1C rates and proposed SC-1 VTOU rates because each offering has three periods. As explained above, the meters register the on-peak kWh, shoulder/super-peak kWh and total kWh and the billing system calculates the off-peak kWh. The meters in use today can only accommodate three periods.

Customer Engagement – TOU Responses
June 9 National Grid

- c) *How many customers are enrolled on your VTOU rate(s) (i.e. number of enrolled customers, percentage of total customers enrolled on the VTOU rate, and percentage of total load enrolled on the VTOU rate)?*

As of April 2014, National Grid has 6,083 customers on the SC-1C rate which represents approximately 0.9% of total customers and 0.4% of total load.

- d) *What percentage of load would an average customer have to shift to off-peak periods in order for the VTOU rate to make economic sense for that customer?*

SC-1C: A customer using an average of 650 kWh per month would need to shift 21.5% from on-peak and 50% from shoulder-peak to off-peak to break even on the SC-1C rate compared to SC-1 standard rates. Any additional shifts to the off-peak period would increase the savings for these customers.

SC-1 VTOU: A customer using an average of 780 kWh per month (650 average usage + 130 additional kWh for a plug-in electric vehicle) would need to shift approximately 5% from super-peak to on-peak and 17% from on-peak to off-peak to break even on the SC-1VTOU rate compared to SC-1 standard rates. Any additional shifts to the off-peak period would increase the savings for these customers.

- e) *Is there a difference in the monthly basic service charge between customers served under your VTOU rate(s) and customers served under the otherwise applicable standard rate for each service classification? If so, how much is the difference? What percentage of load would an average customer have to shift to off-peak periods in order to recoup any such difference under the VTOU rate?*

The monthly basic service charge for standard residential rates (SC-1) is \$17/month. The monthly basic service charge for SC-1C is \$30/month. The monthly basic service charge for the proposed residential VTOU rate will be \$17/month plus a \$3.36/month incremental metering charge for the additional costs related to the time of use meter needed to bill the rate. As explained in question d) above, a customer on SC-1C rates would need to shift approximately 21.5% from on-peak and 50% from shoulder peak to off-peak in order to break even on SC-1C rates compared to SC-1 standard rates. A customer on SC-1 VTOU rates would need to shift 5% from super-peak to on-peak and 17% from on-peak to off-peak to break even on SC-1VTOU compared to SC-1 standard rates. This analysis takes into account not only the difference in the customer charge, but also the differences in delivery charges and commodity costs for these customers because these are also factors that determine how economic the time of use rate would be for a particular customer at a particular usage level.

Customer Engagement – TOU Responses
June 9 National Grid

f) Is your VTOU rate(s) offered in conjunction with other energy management or efficiency residential programs? Does it provide any rebates and/or special pricing?

Customers on VTOU rates are eligible to participate in the same residential energy efficiency programs that they would have been eligible for under SC-1 standard residential rates. There are no rebates or special pricing related to energy efficiency programs on VTOU rates.