

OPOWER, Inc. (“OPOWER”) offers the following comments to the Smart Metering Implementation Programme Prospectus (“Prospectus”) issued in July 2010, specifically related to how to structure program rollout to ensure that customers have a positive experience and are sufficiently educated about the longer-term advantages of advanced meters.

OPOWER is an energy efficiency software company using behavioral science and data analytics to help utilities engage their customers. Currently partnering with 37 utilities in the United States, including seven of the ten largest U.S. utilities, OPOWER’s software has become the customer engagement platform of choice in leading smart grid deployments. The OPOWER platform offers a cost-effective way to convert advanced meter data into insights that deliver the value of the smart grid to the customer directly.

The Prospectus is clear about the U.K.’s goal to deploy smart meters across the country with a focus on customer benefits and larger objectives of emissions reduction, market transformation, and energy network management. OPOWER is supportive of these objectives and offers the following comments on how the program can institute measures that will help provide consumers “greater visibility and control over their energy use,” as the Prospectus recommends.

While utilities have long recognized the operational benefits of smart metering (e.g., outage detection, remote meter reads, remote connect and disconnect capability, etc.), they have faced the challenge – regardless of geography – of communicating the specific benefits the smart meter benefits provides to the consumer. OPOWER recognizes that smart meters are a foundational technology that can help achieve the larger objectives of the nationwide meter deployments, and agrees with the assertion that “positive consumer engagement is key to delivering smart metering benefits.”

## **I. Effective Customer Engagement is Critical to Smart Metering Success**

The United Kingdom is invested in the success of both the smart grid and smart meters. It has recognized that advanced meters offer an opportunity to incent larger policy goals of emissions reduction and market transformation, as well as create a more dynamic relationship between the utility and the consumer. In order for these advantages to be realized, however, customers have to understand the information they are receiving.

The advent of smart meters in North America has presented new challenges to utilities and regulators alike. In particular, recent experiences in California, Texas, and Ontario have demonstrated a lack of consumer understanding about the investment in smart meters. In California, residents of Bakersfield and Fresno protested against PG&E smart meters, which they incorrectly blamed for higher bills. This backlash led to an independent inquiry, which, in turn, slowed PG&E's smart meter deployment.<sup>1</sup> Although the inquiry revealed that smart meters worked properly, it revealed that customers had not understood their purpose. As California Public Utility Commission Chairman Michael Peevey, the lead regulator on California smart meter implementation, observed, "I am happy to hear that PG&E's smart meters are functioning properly, but disturbed by PG&E's lack of customer service and responsiveness."<sup>2</sup>

Similarly, hundreds of Texas customers complained about their smart meters after receiving high bills. There, an investigation revealed that only two meters out of a sample of 5,600 (0.04%) had any problems – yet the utility (Oncor) received more than 4,000 complaints. Of those who complained, 3,000 did not even have smart meters. An Oncor spokesperson noted that the problem was insufficient customer engagement: "we can't do our job if we don't have some engagement with the customer."<sup>3</sup> Canadian utility Hydro One experienced a comparable customer-driven backlash after promoting smart meters as a tool to lower bills; in fact two thirds

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<sup>1</sup> *The San Francisco Chronicle*, *PG&E Probe of Smart Meters to Begin Soon*. March 9, 2010. <<http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2010/03/09/BU3V1CCQSI.DTL&tsp=1>>

<sup>2</sup> *CPUC Receives Results of Independent Evaluation of PG&E Smart Meters*. September 2, 2010. <[docs.cpuc.ca.gov/word\\_pdf/NEWS\\_RELEASE/122937.doc](http://docs.cpuc.ca.gov/word_pdf/NEWS_RELEASE/122937.doc)>

<sup>3</sup> *Intelligent Utility Magazine*, *Oncor Gets Smart*. July/August 2010. <<http://www.intelligentutility.com/magazine/article/oncor-gets-smart>>

of smart meter recipients saw bills rise after the first year of the program. Ontario Tories are now saying that, if elected, they will put a halt to smart meter installations.<sup>4</sup>

These reactions, though misguided, make sense when considered from the customer's point of view. To the average customer, a smart meter is simply a device installed on their house by their utility. The customer probably does not know what benefit the meter provides, but certainly suspects that he or she is paying for it. In short, the value of smart meters is not obvious to customers. While smart meters provide excellent real-time data, data alone will not help consumers manage their energy usage. Rather than focusing on giving consumers data, utilities should offer analysis that is targeted and insight that is actionable. Indeed, it is important to note that the utility objectives for the deployments in CA, TX, and Ontario were not materially different than those outlined in the Prospectus here. There, utilities recognized the benefits of installing more sophisticated, customer-facing infrastructure, but failed to educate consumers about those benefits and provide a platform that could take their usage data and transform it into useful, actionable information.

## **II. OPOWER's Customer Engagement Strategy**

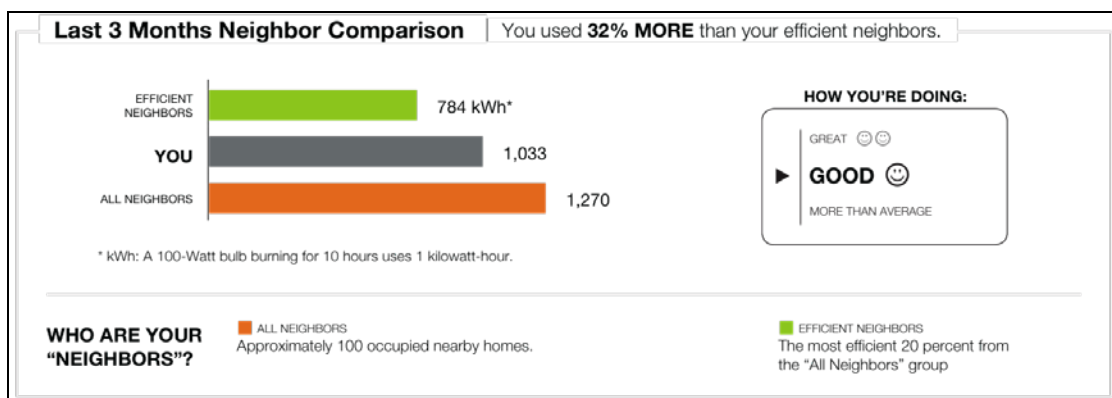
OPOWER has a record of successful customer engagement and large-scale energy savings, thanks to an approach to customer engagement that is organized around two concepts – motivating behavior change, and providing relevant, targeted information to the motivated consumer. Relying on utility supplied data, OPOWER's program translates usage patterns into meaningful insights coupled with targeted action steps. Already proven with monthly meter reads, the more frequent data provided by smart meters provides significant opportunity to better reach customers and help them save energy. Indeed, the OPOWER approach was featured by

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<sup>4</sup> Global Toronto. "Ontario Tories would scrap smart meters." Sept 15, 2010.  
<<http://www.globaltoronto.com/ontario-tories-would-scrap-smart-meters/3528964/story.html>>

then-Conservative Party leader David Cameron in a February 2010 speech at the TED Conference, where he pointed to an example of an OPOWER report as a tool that “can transform people’s behavior,” asserting that the “best way to get someone to cut their electricity bill” is through the type of customer engagement platform OPOWER provides.<sup>5</sup>

OPOWER starts by using behavioral science to create a context for understanding energy use. OPOWER does this by dynamically creating a 100-home comparison group for each house that only compares homes of similar size. Home comparison groups are defined by a number of customizable variables, including proximity, demographic, and climate data. Years of behavioral science research have demonstrated that peer based comparisons is a highly motivating way to present information.<sup>6</sup> A sample neighbor comparison module is shown below.



Second, customers receive individually targeted savings tips based on their energy usage patterns, housing characteristics, and demographics. Instead of presenting customers with a thick booklet of ideas on how to save energy, OPOWER presents customers with only the most relevant and actionable suggestions on how to save. For example, OPOWER would not suggest that a renter insulate his flat, but might recommend smart thermostats to owner-occupied homes with high heating bills.

<sup>5</sup> “The Next Age of Government,” delivered by David Cameron, February 9, 2010, TED (Technology-Entertainment-Design) Conference

<sup>6</sup> Cialdini, R; Schultz, W. *Understanding and Motivating Energy Conservation via Social Norms*. Grant from the William and Flora Hewlett Foundation. 2002-2005.

### III. Behavior-based programs are proven to generate measureable and verifiable results

OPOWER's Home Energy Reporting program has been consistently effective in each deployment to date. Every utility with at least six months of results has achieved energy savings between 1.5% and 3.5%. The consistency and reliability of results across electric and gas utilities, as well as in winter-peaking, summer-peaking, and mild climates across the United States lead OPOWER to believe it would achieve similar results in the United Kingdom.

Figure 1 shows the consistency of savings that utilities have achieved through OPOWER's program:

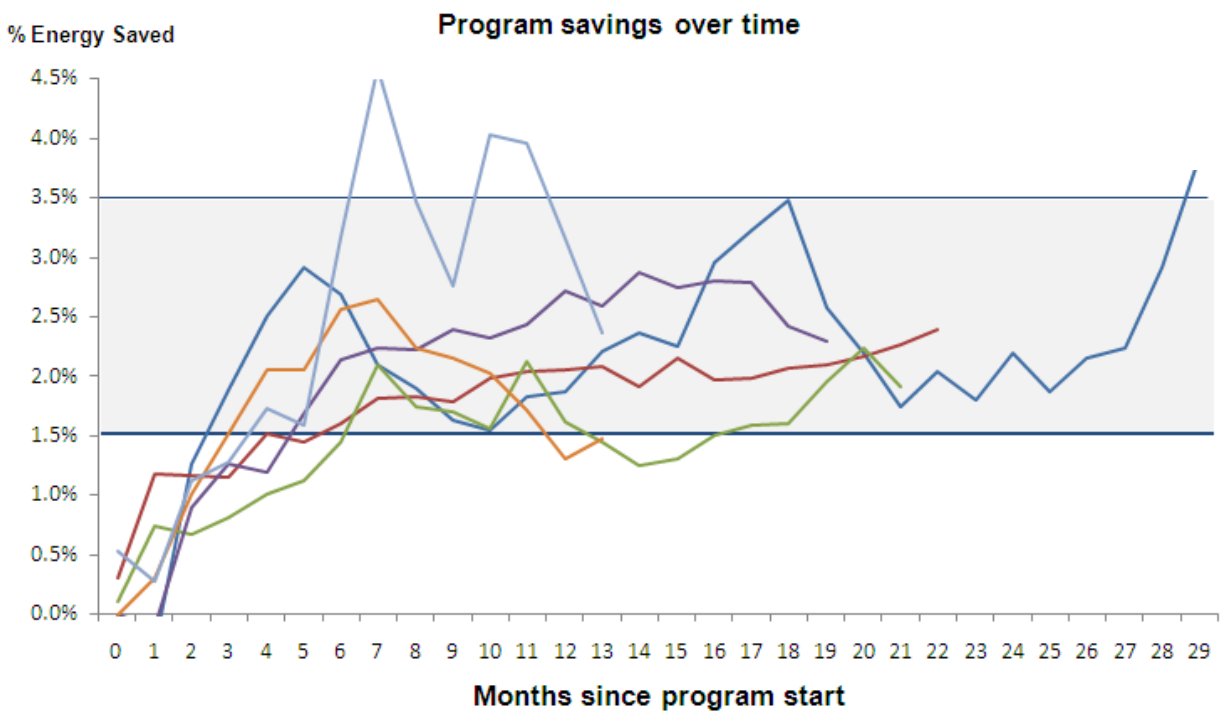


Figure 1: Results from OPOWER's Home Energy Reporting Program

By using experimental design, OPOWER is able to isolate and evaluate the impact of behavioral messaging. OPOWER can cleanly measure the savings driven by its Home Energy Reports by setting up using randomized test/control methodology that supports a rigid measurement of

program impact. This methodology is backed by a transparent measurement and verification methodology consistent with the guidelines provided by the National Action Plan for Energy Efficiency, an initiative led by the US Department of Energy and Environmental Protection Agency, and the California Evaluators Manual, a nationally-referenced publication on evaluation of energy efficiency programs.<sup>7</sup>

Furthermore, OPOWER's results have been verified by several leading authorities in the field. Summit Blue, an industry leading evaluation firm, has verified OPOWER's impact in Sacramento, California.<sup>8</sup> Professor Ian Ayres, of Yale University, has verified OPOWER's impact with in Washington State.<sup>9</sup> Professor Hunt Allcott, of the Massachusetts Institute of Technology, has verified OPOWER's savings with Connexus Energy in Minnesota.<sup>10</sup> Moreover, Professor Allcott and Professor Sendhil Mullainathan, of Harvard University, published a discussion of OPOWER's approach in *Science*.<sup>11</sup> In each case, the studies have not only verified the results of OPOWER's program, but have also come to the conclusion that behavior-based programs are a simple and cost-effective source of energy savings.

#### **IV. OPOWER reaches customers at all income levels, including vulnerable customers**

OPOWER's results are consistent across income, age, and have an above-average impact for seniors and vulnerable citizens. This is made possible through an "opt out" program design with an emphasis on mailed reporting, which enables OPOWER to engage the majority of targeted

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<sup>7</sup> California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals (April 2006), p. 31; The California Evaluation Framework: Project Number: K2033910 (June 2004), p.102-121 and NAPEE Model Energy Efficiency Program Impact Evaluation Guide Section 4.4, p.4-10 (2007).

<sup>8</sup> Summit Blue. *Impact Evaluation of OPOWER SMUD Study*. September 2009.

<<http://www.opower.com/LinkClick.aspx?fileticket=naU7NN5-430%3d&tabid=72>>

<sup>9</sup> Ayres, Ian. *Evidence from Two Large Field Experiments that Peer Comparison Feedback Can Reduce Residential Energy Usage*. July 2009. Available online at:

<[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1434950](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1434950)>

<sup>10</sup> Allcott, Hunt. *Social Norms and Energy Conservation*. February 2010. Available online at:

<<http://web.mit.edu/allcott/www/Allcott%202010%20Social%20Norms%20and%20Energy%20Conservation.pdf>>

<sup>11</sup> Allcott, Hunt and Sendhil Mullainathan. *Behavior and Energy Policy*. *Science*. March 2010. Available online at: <<http://web.mit.edu/allcott/www/Allcott%20and%20Mullainathan%202010%20-%20Behavioral%20Science%20and%20Energy%20Policy.pdf>>

customers. Mailed reports under the utility brand create high rates of customer engagement (estimated to be as high as 85% in one study).<sup>12</sup> While much attention has been given to the internet and in home displays as a way of engaging customers, those approaches are limited. According to the United Kingdom Department of Culture, Media, and Sport's 2009 *Digital Britain* report, over 15 million adults—nearly one third of the population—do not use the internet.<sup>13</sup> The Smart Metering Implementation Programme Prospectus has discussed in home displays as a potential way to reach customers. However, in addition to their overall high cost, maintenance and battery-life issues may restrict their potential to help people save energy, particularly with vulnerable customers. OPOWER's mailed reporting approach ensures that all populations—including vulnerable and elderly customers—have an opportunity to save. The consistency of OPOWER's results across demographics is illustrated below in Figure 2.

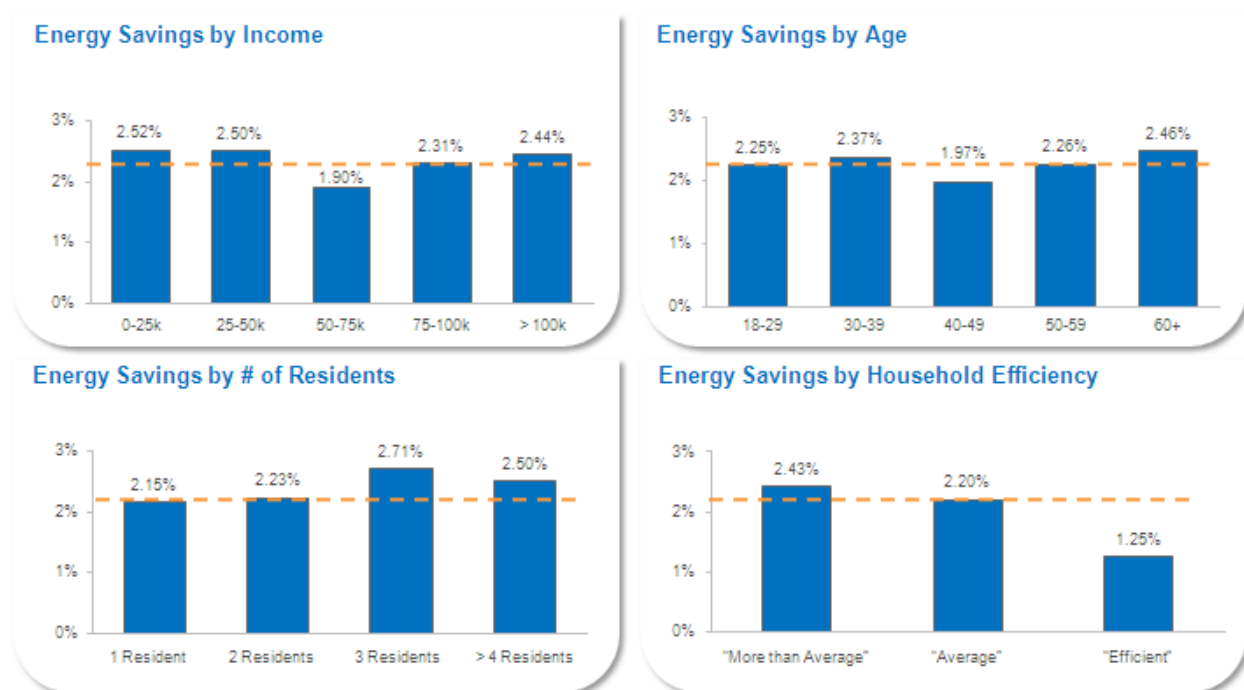


Figure 2: Consistency of OPOWER results

<sup>12</sup> Summit Blue. *Impact Evaluation of OPOWER SMUD Study*. September 2009.  
<http://www.opower.com/LinkClick.aspx?fileticket=naU7NN5-430%3d&tabid=72>

<sup>13</sup> Department for Culture, Media, and Sport. *Digital Britain*. June 2009.  
<http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>

This reliable distribution of energy savings is critical to helping customers realize the value of smart meters. Effective engagement—and energy savings—across an entire customer base will ensure that customers of all demographics will have the chance to take advantage of the money savings opportunities afforded by smart meters.

With better data about a household's usage provided through smart meters, OPOWER can generate stronger insights. While other platforms are still being developed and optimized in anticipation of smart meter installations at scale, the OPOWER platform is already at work—and delivering significant savings—to 1.6 million households in the United States.

Moreover, the OPOWER approach is fully compatible with – and, indeed, is enhanced by – smart meters. With traditional meters, OPOWER is able to tell customers the months in which they use the most; with smart meters, OPOWER can tell customers the hour of the day when they use the most. Furthermore, OPOWER will be able to help customers take advantage of the energy savings opportunities provided by smart-meter enabled initiatives such as dynamic pricing and demand response. For example, for customers who sign up for alerts, OPOWER can text messaging them the day before a critical peak pricing event or let them know they are on track for a high bill. Currently, with daily data, OPOWER can disaggregate heating and cooling



usage in a way that allows customers to see how their air conditioning or heating use compares to that of their neighbors. Insights like these can help demonstrate the value of smart meters to the customer.

## **V. Conclusion**

A successful smart grid implementation will engage residential users in their energy use for the first time. OPOWER has demonstrated that motivating, targeted information can prompt a measurable change in energy consumption. We are confident that this approach will be augmented by smart meter data. As Office of the Gas and Electricity Markets and the Department of Energy and Climate Change consider the most effective smart metering approach for the United Kingdom, OPOWER encourages the commission to create “smart customers” who are better able to use the tools smart metering offers.