OPOWER submits these comments to the Department of Energy in response to the recently issued Request for Information on smart grid implementation challenges. In particular, OPOWER writes to comment on the importance of effective customer engagement in smart grid policy making.

OPOWER is an energy efficiency software company that uses behavioral science and data analytics to help utilities better engage their customers and motivate them to use less energy. OPOWER is partnering with 43 utilities including seven of the nation's ten largest, and is providing the customer engagement platform in several major 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 directly to the customer.

I. Effective Customer Engagement is Critical to Smart Metering Success

The U.S. Government has invested billions of dollars in the smart grid and smart metering based on the assumption that they will allow utilities to more cost-effectively and reliably manage the delivery of electricity to consumers. The real time information provided by smart meters, for example, could enable utilities to implement dynamic pricing or demand response programs to better manage peak power. To realize these benefits, however, customers will have to understand and accept these new technologies. Furthermore, they will have to use the new information they are receiving to change their behavior in a meaningful and measurable way. New technology and information alone are helpful, but insufficient to motivate behavior change.

As recent experiences in California and Texas demonstrate, smart meters can confuse customers if not accompanied by an effective engagement or education campaign. Such confusion, if not checked, could result in a permanent customer backlash against smart meters and the smart grid more generally. In California, for example, residents of Bakersfield and Fresno protested against PG&E's initial smart meter deployment, which they mistakenly blamed for higher bills. This backlash led to an independent inquiry, which, in turn, slowed and nearly killed PG&E's smart meter deployment.[1] The inquiry revealed that smart meters functioned properly, but that customers had not understood their purpose or their impact on pricing.

As CPUC Chairman Michael Peevey 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."[2] Similarly, hundreds of Texas customers complained about of 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."[3]

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[1] 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>

[2] *CPUC Receives Results of Independent Evaluation of PG&E Smart Meters.* September 2, 2010. <docs.cpuc.ca.gov/word_pdf/NEWS_RELEASE/122937.doc>

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

In short, the value of smart meters is not obvious to customers. In fact, many customers assume that smart meters are making their electricity more expensive or having other negative impacts.

While smart meters provide excellent real-time data, data alone will not help consumers manage their energy usage. Behavior-based messaging is necessary to translate this new data into new insights that motivate customers to use energy differently. Such messaging gives customers a context in which to understand their energy use and is proven to motivate conservation. For example, data alone would not tell individual customers what is causing them to use more energy (i.e. thermostat set too high, leaving the lights on, etc) or what they can and should do to use less. This is tantamount to a doctor telling a patient that he or she has an illness without explaining what caused the illness, how to treat it, and how to prevent it from coming back in the future.

II. OPOWER's Customer Engagement Strategy

OPOWER fills this void with a record of successful customer engagement and behavior-based messaging that leads to large-scale, sustainable energy savings. 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%. These results have been consistent across electric and gas utilities, as well as in winter-peaking, summer-peaking, and mild climates.

OPOWER's approach to customer engagement 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 individual 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.

The results have been verified by several leading authorities. Summit Blue, an industry leading evaluation firm, has verified multi-channel behavior-based messaging's impact in Sacramento, California.[4] Professor Ian Ayers, of Yale University, has verified its impact within Washington State.[5] Professor Hunt Allcott, of the Massachusetts Institute of Technology, has verified its savings with Connexus Energy in Minnesota.[6] Moreover, Professor Allcott and Professor Sendhil Mullainathan, of Harvard University, published a discussion of multi-channel behavior-based messaging in *Science*.[7] In each case, the studies have not only verified the results of these programs, but have concluded that behavior-based programs are a simple and cost-effective source of energy savings.

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

[5] 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>

[6] Alcott, Hunt. *Social Norms and Energy Conservation.* February 2010. Availabe online at: <http://web.mit.edu/allcott/www/Allcott%202010%2020Social%20Norms%20and%20Energy%20Conservation.pdf>

[7] Alcott, Hunt and 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>

III. Behavior-based programs help customers take advantage of smart metering

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 2 million households in the United States and will be serving 10 million households in 2011.

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 message them the day before a critical peak pricing event or let them know they are on track for a high bill.

IV. OPOWER reaches customers at all income levels, including low-income 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 customers. Mailed reports under the utility brand create high rates of customer engagement (estimated to be as high as 85% in one study).[8] This strategy ensures that all populations–including low-income and elderly customers–have an opportunity to save. The consistency of OPOWER's results across demographics is illustrated below in Figure 3.

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

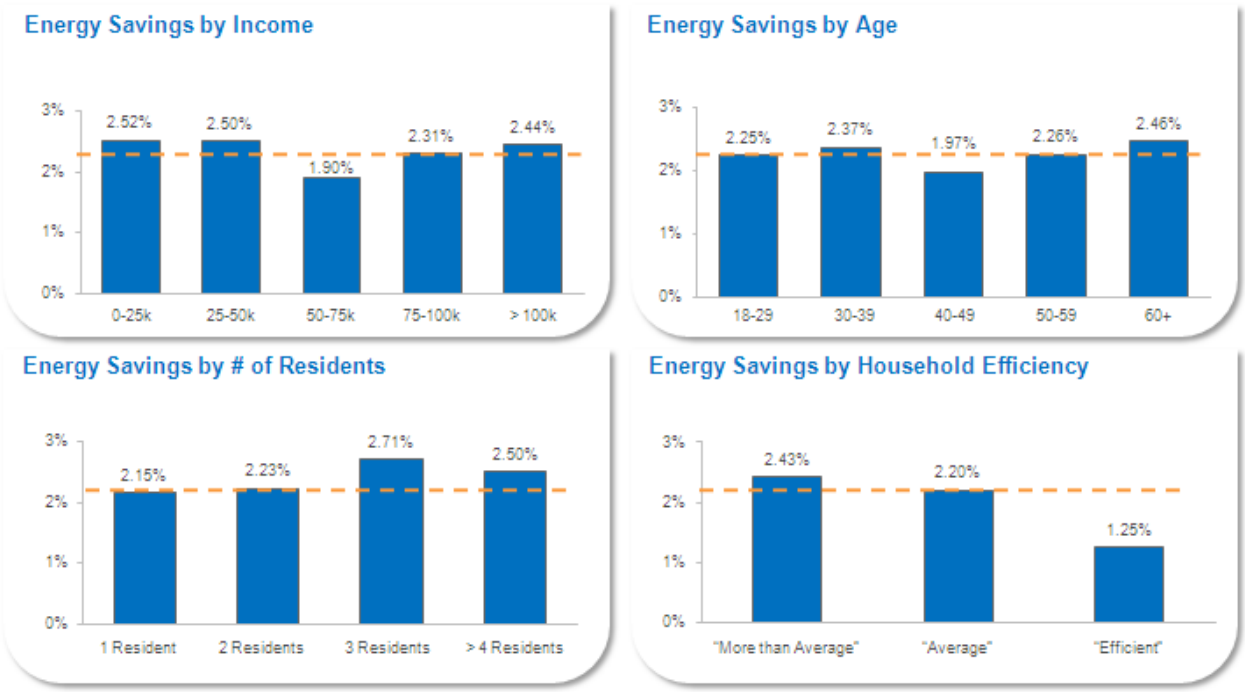

Figure 3: Consistency of OPOWER results

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.

V. Behavior-based programs with an opt-out design cost-effectively generate large-scale savings

Critical to OPOWER's strategy is an "opt out" program design with an emphasis on mailed reporting. Mailed reports enable utilities to engage the majority of targeted customers and drive large-scale energy savings. By using mail, behavior-based messaging reaches all demographic groups, including low income and elderly populations. This means that utilities can engage up to 85% of participants - far more than other efficiency measures. [9]

This high participation rate means that small savings on a per household basis add up to significant savings in aggregate. Moreover, behavior-based messaging increases participation in other utility programs. By motivating customers to act and enabling them with information, OPOWER has demonstrated a 15% impact on utility-sponsored efficiency programs.

Finally, these efficiency changes are generated cost effectively – on average, OPOWER's program costs $.02-$.03/kWh saved. This means that by using Home Energy Reports to engage

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

customers around the smart grid, utilities can generate significant, large-scale energy savings at very low cost to the ratepayer.

VI. Conclusion

A successful smart grid implementation will do more than move electrons efficiently. It 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 further enhanced by smart meter data. As the Department of Energy considers effective and proven smart grid approaches, OPOWER encourages the Department of Energy to support policies which turn “ratepayers” into “smart customers” who are better able to use the tools that the smart grid offers.