OPOWER thanks the Missouri Public Service Commission ("PSC") for the opportunity to submit these comments in response to the Commission's proposed statewide energy efficiency goals. In Case No. EX-2010-0368, the PSC shows a firm commitment to driving significant energy reductions in the state by establishing rigorous efficiency goals for its utilities.

OPOWER is an energy efficiency company using behavioral science and data analytics to drive reductions in residential energy consumption, submits these comments to support the PSC's energy efficiency targets and to affirm its understanding that utilities in the state may use behavior-based programming in order to meet their annual savings goals. For reference, background on behavior-based efficiency and OPOWER's results are attached as Appendix A.

Programs with rigorous methodology and verifiable results are critical to achieving large scale energy efficiency in Missouri

Momentum behind energy efficiency has been building in Missouri for the past year, beginning with the 2009 legislative approval of SB 376, which allows utilities to recover costs of energy efficiency programs. With proposed rules 240-20.094, 240-3.163, 240-3.164, 240-20.093, the PSC has proposed to take the next step to encourage energy efficiency in Missouri by establishing efficiency targets for the state's regulated utilities. OPOWER also supports the Commission's decision to allow a shared-savings utility performance incentive, enabling utilities to remain accountable to their ratepayers as well as their shareholders.

OPOWER believes that Missouri utilities can achieve the proposed targets cost effectively—if Missouri encourages innovation in energy efficiency. Proposed rule 4 CSR 240-3.164, Section G, provided below, defines an energy efficiency measure.

> (N) Measure means any device, technology or operating procedure that makes it possible to deliver an adequate level and quality of energy service while:
>
> 1. Using less energy than would otherwise be required; or
>
> 2. Altering the time pattern of electricity so as to require less generating capacity or to allow the electric power to be supplied from more fuel-efficient units.

It is OPOWER's understanding that behavior-based programs fall under this definition and that Missouri utilities would be able to count these savings towards their annual energy efficiency goals. In order to further clarify this subsection, however, OPOWER suggests that Subsection 1 be changed to read "Creating a measureable reduction in energy consumption." This change would make certain that the word "measure" encompasses initiatives which can be considered conservation or energy efficiency, such as behavior-based programs. In the process, the PSC would enable utilities to pursue such programs which have been proven to generate quantifiable, significant and reliable energy savings cost-effectively.

APPENDIX A

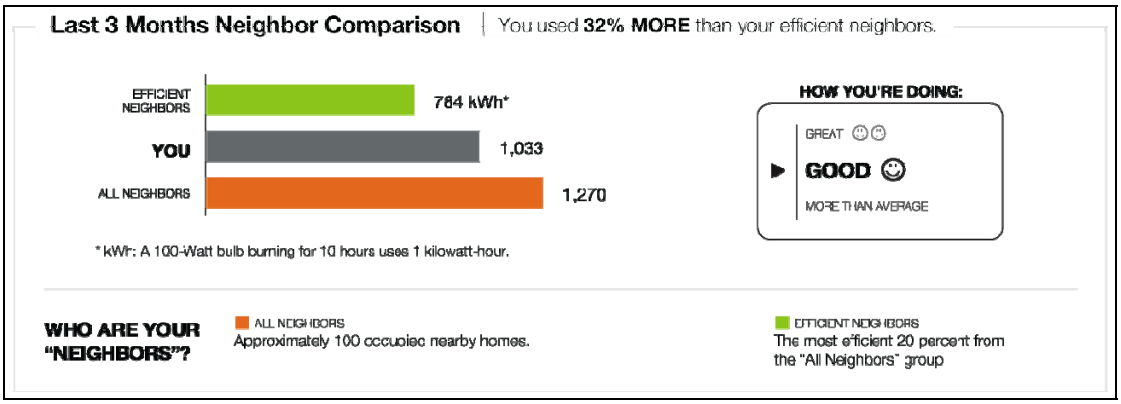
OPOWER is an energy efficiency company using behavioral science and data analytics to drive reductions in residential energy consumption. Below is a description of OPOWER's program design, results, and regulatory acceptance across the United States.

I. Behavior-based messaging creates measureable energy savings.

Human behavior is the single largest untapped efficiency resource. The reason is straightforward – behavior impacts almost every facet of energy use in the home or business.[1] For example, the value of an energy star washing machine is reduced if the consumer views the "Energy Star" label as a license to use the hot cycle. Often, the only way for renters to realize meaningful energy savings is to adjust their behavior. Behavior-based programs, like OPOWER's, address this problem by motivating customers to take actions that result in measurable, large-scale energy savings.

OPOWER's approach to energy efficiency 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.

OPOWER's Home Energy Reports, provide recipients with a context for understanding their energy use. OPOWER does this by dynamically creating a 100-home comparison group for each house that only compares home of similar square footage. Home comparison groups are defined by a number of customizable variables, including proximity (e.g., within 0.25 miles) and census and climate data. Years of behavioral science research have demonstrated that peer based comparisons is a highly motivating way to present information. 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 several of the most relevant and immediately actionable suggestions on how to save. For example,

[1] McKinsey and Company. *Unlocking Energy Efficiency in the US Economy*. Page 22

OPOWER would not suggest that a renter insulate his apartment, but might recommend smart thermostats to owner-occupied homes with high heating bills.

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 enable the delivery of large-scale energy savings. By using mail, behavior-based messaging reaches all demographic groups, including low income and elderly populations. This means that participating utilities can engage 85% of participants - far more than other efficiency measures. [2]

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.

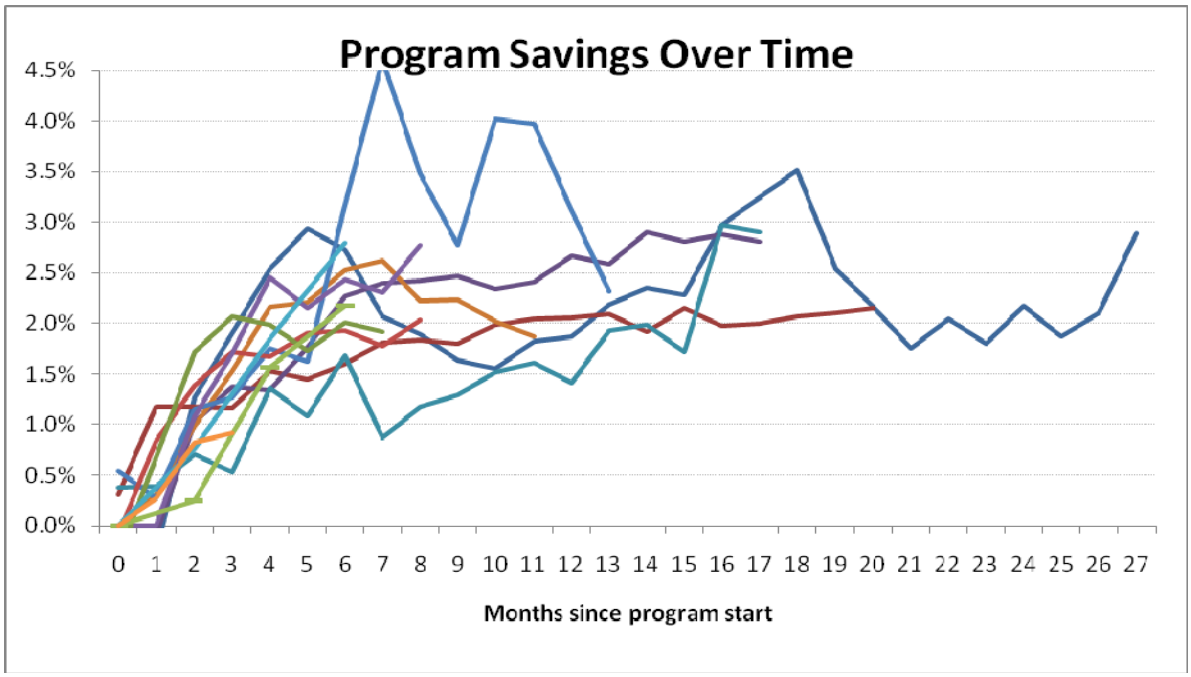
Most importantly, these efficiency changes are generated cost effectively—on average, OPOWER's program costs $.03/kWh saved. This means that by including Home Energy Reporting in its portfolio, Missouri utilities can generate significant, large-scale energy savings at very low cost.

II. 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%. These results have been consistent across electric and gas utilities, as well as in winter-peaking, summer-peaking, and mild climates. Furthermore, programs deliver savings when ratepayers—and utilities—need them most.

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

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



Rather than impacting only select groups, behavior-based results are consistent across income, age, and have an above-average impact for seniors and low-income citizens. Furthermore, in each of these deployments, energy savings have consistently increased over time.

- With Sacramento Municipal Utility District (SMUD), a large municipal utility in California, the savings in the second year of the program have been greater than the savings in the first year. After 27 months, these savings are not only continuing, but are increasing—in the second year of the program, SMUD customers were saving 22% more energy than the year before.[3]

- Electricity savings in Puget Sound Energy, a large IOU in Washington are now more than 2% with nearly two years of results. Savings for the last six months savings have been 2.04% and 1.43% for electricity and natural gas, respectively.[4]

- Connexus Energy, a large electric distribution cooperative in Minnesota, has seen savings of more than 2%.[5] Cumulative savings after 15 months are more than 2.3%, and averaged more than 2.6% in the winter of 2010.

---

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

[4] Ayres, Ian. *Evidence from Two Large Field Experiments that Peer Comparison Feedback Can Reduce Residential Energy Usage.* 2009.

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

- Moreover, Professor Allcott and Professor Sendhil Mullainathan, of Harvard University, recently published a peer reviewed discussion of OPOWER's approach in *Science*, the leading journal of the natural sciences. [6]

Each evaluation has come to the same, simple conclusion: OPOWER's behavior-based programs are a significant and cost-effective source of energy savings.

III. The results of OPOWER's program can be accurately measured through experimental design

By using experimental design, OPOWER is able to isolate and cleanly evaluate the impact of behavioral messaging. OPOWER can robustly 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 National Action Plan for Energy Efficiency guidelines and the California Evaluators Manual, and have been verified by several leading authorities in the field.

Because the results from behavior-based programs are predictable, persistent and reliable, OPOWER prefers to measure program savings after they have occurred.

Ex-post measurement prioritizes cost-effectiveness over cost alone, yet leaves room for innovation. Furthermore, in OPOWER's experience, an ex-post measurement methodology is the approach regulators are most comfortable with when giving credit for behavior-based programs.

To see how this approach works, consider OPOWER's deployment with the Sacramento Municipal Utility District (SMUD). Together with OPOWER, SMUD launched its behavior-based program to 35,000 homes, while maintaining a 50,000 home control group. The two groups were randomly selected and had no statistically significant difference in their energy consumption prior to deployment. Since deployment, the impact has been clear: over more than two years, behavior-based messaging has decreased consumption by 2.5% in the test group. Because the groups are, in the aggregate, identical—save for the fact that one group receives OPOWER's reports while the other does not—the difference in energy savings may safely be attributed to behavioral messaging.

IV. Behavior-based programs are a part of energy-efficiency programs across the country

[6] 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>

The strong, verified results from these large-scale pilots have been central to the support of regulatory authorities in several states for utility filings that include large behavior-based savings. So far, regulators in California, Massachusetts, and Minnesota have approved utilities in the state to pursue deployments of OPOWER's program in any size. These utilities will also receive credit for the program towards their state-mandated energy efficiency goals. This acceptance is described in further detail below.

- California – In April 2010, by a 5-0 vote, the California Public Utilities Commission decided to allow California's investor owned utilities to count savings generated by behavior-based programs, like OPOWER's, toward their efficiency goals. Both residential and non residential customers were included in the ruling, meaning that there are no limits to the size or scope of deployment of OPOWER's program in the state. In approving the decision, CPUC Commissioner Dian Grueneich noted that: "It is essential that we create a regulatory environment in which potential game-changing efforts such as these innovative behavioral-based strategies can flourish. Today's decision does this."[7]

- Massachusetts – The Massachusetts Department of Energy Resources ("DOER") is allowing IOUs in Massachusetts to count savings generated by OPOWER's program towards their state mandated energy savings targets.

  In a filing approving these goals, the DOER noted that "one successful organization upon whose work the Program Administrators [utilities] would like to build is Positive Energy [now OPOWER], a corporation that is committed to persuading consumers to save energy through a combination of technology, analytic direct marketing, and behavioral science."[8]

- Minnesota – Minnesota's OES has approved two of the state's largest utilities, Centerpoint Energy and Minnesota Energy Resources Corporation (MERC) to count savings generated by OPOWER's programs to their state-mandated energy efficiency targets.

Savings claimed for OPOWER's program by Centerpoint Energy (MN)

	Total Mcf Saved	Number of Households	Total Annual Mcf saved per Household
2010	85,250	50,000	1.71 Mcf
2011	127,875	75,000	1.71 Mcf
2012	139,035	100,000	1.71 Mcf

After reviewing filings including OPOWER's program, OES was effusive in its praise of behavior-based programming:

[7] *CPUC Adopts Protocol To Count Savings From Behavior-Based Energy Efficiency Programs: CPUC Press Release*, April 8, 2010.
[8] Massachusetts Joint Statewide Three-Year Electric Efficiency Plan: 2010-2012. Page 238

OES Staff are pleased to see that CPE [Centerpoint Energy] will be starting the Residential Home Energy Reports project in 2010. Recent evaluations of programs across the country and in Minnesota suggest that home energy reports are a cost-effective way to educate customers and encourage energy saving behavior. CPE plans to include 225,000 residential customers, approximately 30 percent of the Company's residential customers, in this program by the third year of its triennial plan. This project is also expected to be one of the largest drivers of new energy savings in the Company's Residential Segment. CPE's program provider, Positive Energy [now OPOWER], reports that customers receiving a home energy report typically reduce their energy use by 1.5 to 3 percent. Based on this information, the Company estimates that households receiving home energy reports will reduce their energy use by 1.55 percent or 1.71 MCF annually. OES Staff believe that this is a reasonable assumption at this time. In future filings, the energy savings claimed by the Company should reflect the actual energy savings associated with the project based on measurement and verification by Positive Energy [now OPOWER].[9]

V. Conclusion

OPOWER supports the ambitious energy efficiency standards proposed by the Missouri Public Service Commission, and believes that behavior-based energy programs are an innovative and proven source of savings for Missouri utilities.

[9] Minnesota Office of Energy Security. *Proposed Decision.* October 2009. Page 23. Behavior-based programming was approved in the Final Decision dated November 23, 2009.