the call satisfied. But, Duke Energy takes such customer feedback seriously, even if the number of such complaints is statistically insignificant. As a result, the team is considering changing the wording shown for that situation and returning to the report template a definition of efficient home in order to avoid future concerns. Making adjustments to respond to customer feedback is an important part of Duke Energy's continuous improvement process.

Presenting Energy Saving Ideas

Just below the current month comparison chart on the front page is a headline that reads, "What can I do to save money and energy?" This headline tops a two column box that presents home energy tips specifically targeted at that home for that month. The tips suggest ways the customer can save energy and improve their monthly comparisons with neighboring homes.

Tips cover topics ranging from lighting, HVAC, and water heating to weather sealing, appliance use, and new Energy Star recommendations. While many tips are generally applicable to all customers at any time, others are seasonally appropriate and are tailored to the particular characteristics of a given home. So, a tip about air conditioning appears during the summer and new homes don't receive suggestions about replacing old windows. A sample tip is shown in Figure 2 below.

Why pay for power you don't use?

Cut the standby power used for home entertainment

Save up to **$39** per year.

Your TV and all the associated gadgets use power even when they are off. This "standby power" is waste and can account for as much as 10% of the energy used in your home! To reduce this waste, plug your television and its accessories into a power strip or surge protector, and turn of the strip when these items aren't in use.

Figure 2. Energy Saving Tip

Tips can also be prioritized by potential energy saving impacts, so recommendations that can produce higher savings are mentioned before those likely to have a lesser impact. This dynamic system makes it possible to present one customer with a message about CFLs in January, while a neighbor who becomes eligible to participate in the program in February may see that same CFL message in March, while the first customer sees a message about task lighting that month.

To further increase the likelihood of the customer taking action, the program vendor pairs each tip with an estimate of the dollar savings that action might bring. Savings estimates are calculated based on a combination of deemed energy savings for the measure and particular household characteristics. For standard measures, such as replacing an incandescent bulb with a CFL, these calculations are fairly straightforward. However, others can be considerably more

complicated. For instance, showing an accurate savings estimate for changing a thermostat setting requires building model calculations based upon variables like heating fuel, square footage, and type of HVAC system, which may or may not be known depending upon the data available. Going to such lengths is far more complicated than simply presenting one standard dollar amount to everyone, but Duke Energy feels the extra effort is worthwhile because it demonstrates for the customer the real world financial value of making the effort.

The program vendor maintains a library of tips (Appendix E: Summary of Energy Saving Action Tips and Messages) and is contractually responsible for writing new tips and calculating the associated energy savings. Tips were written at the start of the contract and revised to align with Duke Energy's technical specifications and branding considerations. The savings estimates were likewise approved.

To ensure the tips remain fresh, the system is designed to present new tips to participants each month, with no repeated tips until all unseen messages in the tip library have been used. The original tip library contained a total of 23 energy savings tips, five of which were coded not to apply to newer homes, leaving a total of 18 tips for those customers. By April of 2013, the program vendor had reached the end of its original collection of 18 tips for Ohio participants, who had been receiving the program vendor-generated reports since March of 2012. (Kentucky customers would not run out of original tips until September of 2013.)

Because the program vendor had not yet written new tips, in April of 2013 some Ohio customers began receiving repeated tips. By intention, the tip generation system was to recycle tips by age, repeating the oldest ones first so that customers were less likely to recall seeing them before. However, spot check quality control measures revealed that program vendor programming issues caused at least one participant to receive the same tip two months in a row. As a result, the automated tip assignment system was suspended for all service territories until the software code could be updated. The program vendor's human resources were not available to make this fix until after the dollar to kWh changes (discussed under "Use of Rate Factors to Demonstrate Monthly Energy Costs in Dollars" above) had been completed. As a result, dynamic tip assignment shifted to a more universal methodology in the interim.

The program vendor wrote 28 new energy savings tips for its library, 14 of which will be paired with energy saving calculations, and 14 of which won't show specific dollar amounts for the energy savings, such as cleaning the lint trap on the clothes dryer or storing hot coffee in a thermos, since the savings will be small. Two new energy saving tips were selected for the reports that all participants were to receive in June. For the July reports, the program vendor worked with three new tips, including one about grilling outside in summer, and one about installing a programmable thermostat. The grilling tip was sent to all report recipients, while the thermostat tip only applied to 99% of customers. So the third tip to check the temperature of your freezer and refrigerator was sent to the remaining 1% of customers.

This interim solution appeared to be working at the time of this review. The program vendor advised Duke Energy that the updated software code for dynamic tip assignment would be ready for the October cycle of reports.

Duke Energy Messages

The second page of the report is visually commanded by the annual energy trend chart. Below that is the headline "Take action. Reduce your use." This marks the section of the report reserved for two customized messages directly from the MyHER product manager. The messages come in two types — general energy savings suggestions and promotions for other Duke Energy efficiency programs. The messages the customer sees are determined by the customer's previous participation in other Duke Energy programs. See Figure 3.

Take action. Reduce your use.

Heading out for a vacation?

Don't let energy vampires run wild in your house while you're out of town this summer. Every appliance with a clock, "power brick" or remote control is CONSTANTLY drawing power – even when switched off. Fight back! Do some unplugging before you head out the door. And consider installing a power strip or two. That way saving energy is as easy as flipping a switch.

One more thing: Be sure to turn your thermostat up or off before you head out. No point paying to cool a house when nobody's home!

Wouldn't it be great if doctors still made house calls?

Think those days are gone?

If you qualify for a Home Energy House Call, your free in-home energy assessment includes personalized information tailored to your home and energy practices, along with a free Energy Efficiency Starter Kit.

Visit www.Duke-Energy.com/MyHER612 to find out if our Energy Experts are accepting appointments in your neighborhood.

Figure 3. Duke Energy Messages

The MyHER product manager creates and maintains a calendar of messages for the year. Typically, one of the two messages shown each month is either a seasonally appropriate or a general message that can run at any time of the year. Seasonally appropriate tips could include suggestions for how to save energy while baking (delivered during November) or the direction ceiling fans should spin in summer (delivered in June). General messages could include energy savings tips like how to check the seal on a refrigerator door with a dollar bill, safety messaging such as calling 811 before you dig, or requests for contributions to help with heating assistance. These messages are generally shown on all reports. The second message slot tends to be more customized, based on promotions for other efficiency programs each month.

The MyHER product manager works with colleagues to develop a schedule to encourage enrollment in various Duke Energy efficiency and rebate programs each month. The program vendor's system cross-checks Duke Energy's customer participation records, and if the database indicates that the customer has not yet participated in the featured program, it includes a promotional message encouraging the customer to enroll (see Figure 3 above). If the database indicates that the customer has already participated in the program, then the program vendor's software coding replaces the program promotion with a more general substitute, such as a message encouraging readers to visit the Duke Energy website to watch energy efficiency videos.

Messaging Challenges

This system generally worked well for months. But the team ran into a challenge in October of 2012 when it sought to send out segmented messages regarding participation in Duke Energy's CFL program. This particular promotion added a new wrinkle to the system. Instead of requiring

a software look up to determine whether a customer had previously participated in the program at all, this segmentation scheme required the program vendor to query data regarding the number of CFLs that the customer had previously ordered. If the customer had ordered 9 or fewer CFLs, then they were to receive a message encouraging them to order additional bulbs. If they had ordered 10 or more CFLs, they were to receive a message encouraging them to be sure to install the bulbs that they already had.

Querying this new data field proved to be problematic, as was revealed during quality assurance checks. The underlying issue was subsequently identified and fixed before the next month's cycle. The effort proved effective, lifting CFL participation by more than three percent in OH, NC, and SC where the messages were sent.

With a dynamic system as complex as the one the program vendor uses to generate the reports, a certain number of technical challenges are inevitable. Other issues, however, are more accurately considered to be data quality lapses resulting from the complex nature of the data integration and report generation process. Those challenges are discussed below.

Data Quality Assurance

The above mentioned challenges represent the types of issues that Duke Energy and the program vendor work closely to resolve either through advance strategic planning or upon discovering a problem during the process of data quality assurance. Quality control checks are built into each step of the data ingestion and report generation process on the program vendor side. Duke Energy also maintains its own quality control measures to ensure that the reports are generated using accurate data, that graphs and messages are displaying correctly, and that the appropriate customers are receiving reports.

When the program vendor assumed report generation in March of 2012, much of the quality assurance process resided within its production arm. However, as errors have been discovered, Duke Energy has added layers of oversight. Since that transition, the following types of data quality issues have been discovered and corrected:

- Incomplete data population,
- Improperly rendered graphs due to missing data,
- Data precedence issues, whereby older inaccurate data replaced corrected information,
- Inappropriate data ranges,
- Inaccurate messaging per household characteristics,
- Dollar savings estimates of incongruous amounts,
- Not accounting for program participation,
- Inaccurate message segmentation,
- Repeated energy saving tips two months in a row,
- Duplicate mailings to some participants within a single month (sent several weeks apart),
- Mailing to approximately 100 participants in a control group in North Carolina, and
- Heat fuel type coding issues resulting in inaccurate rendering of energy saving calculations for some customers and in improper cluster comparisons shown in reports sent during April of 2013 (discussed below).

Many, but not all, of these errors were corrected prior to mailing. To ensure they don't return, as well as to find as yet undiscovered issues, Duke Energy instituted a policy whereby the program vendor sends bundles of PDFs as a representative sample for review. As more errors have been found, the amount of PDFs to be checked per production batch has increased. The current amount is 10,000 PDFs per weekly batch or 40,000 PDFs per month. When Duke Energy receives the PDFs, the MyHER program data analyst strips the data out of the PDFs and checks it for accuracy using a combination of algorithms on a SQL server and visual data inspection in batches of 1000 in a CSV file. This secondary quality assurance method has uncovered numerous data integrity issues that have subsequently been satisfactorily addressed. Yet not all issues can be found through data sampling.

For this reason, Duke Energy also receives a file from the program vendor containing all customer information handled during the month. With approximately one million customers receiving reports and still more customers not receiving reports that month due to various eligibility requirements, the file size is immense. The data analyst reviews this file as well. It was during such a review that the inadvertent mailing of 100 customers in a control group in North Carolina was discovered. The source of the problem was identified and the fix applied. The 100 customers were removed from the control group and the database was updated with a note explaining the reason for the transfer.

While this error was small, the incident has sparked concern within Duke Energy. Managers are concerned that the program's full quality assurance review of customer data is currently occurring after the reports have been sent. Thus, the MyHER product manager and others are currently considering the possibility of instituting a full data integrity check for all PDFs prior to granting approval for release to printing and mailing. With such a high number of customers in the program, this step is being carefully considered prior to undertaking the many steps necessary to automate as much of the requisite quality assurance process as possible. "The effort may be a necessary trade off given the volume of the data and the complexity of the data handling rules for this product. It's a cost-benefit decision," said one interviewee.

Printing and Delivery

Once Duke Energy has confirmed that the PDF data complies with quality assurance requirements and that all necessary corrections have been made, the program vendor receives the go-ahead to release the PDFs to the printing and mailing subcontractor for production and delivery. The printing subcontractor prints the reports and envelopes. Then it sends them to a commingler for processing and mailing via the U.S. post office. The printing subcontractor also checks for first-time program participants and inserts a welcome letter for those who have not previously received a report.

Report Frequency

Pilot testing in Ohio and South Carolina compared the effectiveness of monthly versus quarterly delivery of the reports. Results showed that customers who received monthly reports saw greater energy impacts. However, the MyHER reports are currently delivered to qualifying customers eight times per year. Since heating and cooling costs account for the largest shares of a typical home's energy usage, the reports are generally sent three months in a row during winter and three months in a row during the summer, since these are peak heating and cooling months. The

reports are also sent every other month during fall and spring when customers typically require less HVAC. This frequency of delivery was deemed to be the optimum balance between reinforcing energy saving behaviors and managing program costs for production, printing, and delivery. Duke Energy retains the ability to shift report delivery months for a given state without impacting delivery in other states based upon weather, programming needs, or regulatory requirements.

Print Quality

Both the Duke Energy staff and the program vendor employees we spoke with expressed concerns about the quality of the printing done by the printing subcontractor. Minor issues regarding text, color, and gradient fades had been identified and resolved. But one significant issue involved the presence of streaks or bands of white in the color banner that made it appear that the printer is running out of ink.

The printing subcontractor maintains its own quality control process that duplicates one report out of every thousand for a visual inspection prior to mailing. Employees at the printer were satisfied, but the MyHER product manager double checks the print quality using returned mail and seed names of fellow Duke Energy employees who share their reports in the office. It was these Duke Energy second level checks that identified the printing issues.

Once made aware of the issue, the program vendor worked with the printing subcontractor to resolve the situation. The problem appeared to be caused by the ink jet technology used to print the reports. Ink jet printing is used because it is less expensive than laser-based technologies. Given that the customer is likely to spend a limited time reading the report, the economic value of ink jet printing seemed an appropriate trade off to the higher quality and greater consistency of other printing technologies. However, large-scale production revealed the printing flaws, which were not seen during pre-contract demonstrations.

According to the the program vendor operations manager who oversees the printing subcontractor, the printing house made several attempts to eliminate the print artifacts. The most recent attempt was the deployment of a new proprietary ink jet technology in March of 2013. This was the last effort to be considered by Duke Energy and the program vendor, who were simultaneously evaluating other vendors. The new technology was tested in full-scale deployment for one monthly cycle for reports sent to participants in April 2013. The print quality was deemed adequate, albeit with a continued watch to ensure that standards are maintained. As of June 2013 both the program vendor and Duke Energy were satisfied with the print quality.

The program vendor is contractually obligated to uphold print quality standards per the terms of its service level agreement. Those terms were temporarily suspended while the issue was being investigated. When the final decision about the printing subcontractor was reached, those terms came into enforcement.

Report Delivery

The service level agreement between Duke Energy and the program vendor specifies that the vendor, and hence the printing subcontractor, will ensure the 98% on-time delivery of each batch of reports in a 17-day production cycle, with four batches per month and a total volume of

approximately one million reports across all service territories. Of these reports, approximately 44,000 are currently designated for Kentucky customers.

Both the program vendor and Duke Energy report that these service levels have been satisfactorily met in all months, except June of 2013, when data quality lapses, and the necessitated corrections and fixes, caused report production to halt for seven days, as discussed under Data Quality above. As a result of the week-long production halt, the first reports in the June cycle entered the mail stream 12 days late. A shorted production cycle incrementally reduced the delay to a single day for the last batch of reports sent in that monthly cycle. This brought the next month's reports back into a normal timeframe for delivery. The program vendor was assessed a financial penalty for this delay according to service level contracts.

Enterprise Server

In addition to holding responsibility for producing and distributing the reports, the program vendor also provides an online web portal, called the Enterprise server, which hosts customer household data, as well as PDF copies of each customer's monthly reports. This system makes it possible for agents of the call center vendor and Customer Prototype Lab to input customer-generated corrections for their household data (e.g. square footage, home age, heating fuel type) and call up copies of monthly reports to discuss them with customers on the phone or via email.

The Enterprise system is designed to run 24 hours per day, even though the system only needs to be accessible to customer service representatives during business hours. As with any server, it must be maintained and it occasionally experiences operational issues. The majority of the time, those issues are fixed through scheduled maintenance and planned performance upgrades. However, as may be expected with an online system, the server has also experienced a few crashes that have taken it offline. The root causes of these issues have been different each time. Most often, the system has gone down for only a few hours or less due to a software issue that was quickly fixed. Once, a hardware failure required a day for replacement. This also occasioned the installation of redundancy measures to prevent the issue from reoccurring. Despite this handful of down times, the call center and email support agents report that they are pleased with the system's ease of use and robust reliability.

Call Center Customer Support

Because the MyHER program is designed as an opt-out program that delivers reports throughout the year, Duke Energy deemed it important to have a toll-free number and a dedicated call center for customer support. The call center vendor provides call center operations for the MyHER program in all Duke Energy service territories that offer the program. This same third party vendor provides call center support for other Duke Energy programs, as well. For this program, the call center vendor staffs 13 trained customer service representatives (CSRs) and two team leads. The call center vendor began supporting the MyHER program overall on June 11, 2012.

Call Volume

Call volume for the program is low. For all states served by the program, only 10,124 inbound calls have been received as of June 30, 2013. For Kentucky, the total call volume during that time was 375 calls on a base of approximately 44,000 customers. Given that reports are now sent to more than one million Duke Energy customers, this equates to less than one percent of

customers. The percentage of calls by customers from Kentucky is less than one tenth of one percent.

Overall, call volume averages less than 30 calls per day, with lows of typically less than 20 and peaks reaching less than 100 calls per day when reports are mailed. The call center team leader that we interviewed reports that individual state call volume follows a predictable month over month pattern. Each time a new round of customers is added to the program, the percentage of calls rises for the first two reports, peaks by the third report, and then diminishes since by this time the majority of customers who desire to correct errors or ask questions have done so.

TecMarket Works considers this pattern, and the correspondingly low percentage of customer calls, to be a positive indication that the reports are well-designed with accurate data, meaningful comparisons, and clear messaging.

Call Handling

All CSRs are equipped with a Telescript software system that generates context-specific scripting to guide them in the most appropriate responses. The system also captures all call data for record keeping, reporting, and quality assurance.

When customers call in, agents are trained to acknowledge the customer's request and to ask for an account number. This is used to locate the appropriate household records. If the customer has called previously and is calling from same number, the Telescript system will auto-populate the information. However, agents always have the customer confirm the account to ensure they have the proper file just in case someone is calling from one phone to discuss a different household's report or they are using a different phone. If no existing record is found, the agent inputs the customer's name, address, phone number, and account number.

After ensuring the customer's contact information is in the system, the customer's specific desires are addressed. Depending upon the request, the CSR uses a dropdown menu to select the most appropriate call type. This brings up a script that specifies how to deal with that kind of call.

If the customer has specific concerns, those are addressed first. For instance, customers sometimes ask why the amount on the reports doesn't match the amount on their bills. The Telescript system provides the CSR with a response akin to the following: "Your bill uses your kWh and your actual rate, but to compare everyone on a level playing field we use an average price per kilowatt-hour because customers may have different rates." Similarities between bill and report also arise because billing cycles do not necessarily correspond with monthly report cycles, so agents explain that the reports are intended to be informative and advisory rather than duplicative.

Once specific concerns have been addressed, the agents access the program vendor's online Enterprise system that provides online access to the customer's specific reports, so they can view customer reports in real time, while the customer is on the phone. The agent verifies that the most recent report, which is typically what the customer has in hand, is showing the correct square footage, heating type, and year the home was built. Making one or more of these

corrections is the most common reason to call, so customers frequently mention them. But the agents are trained to always ask in an effort to be thorough, since the conversation presents an ideal opportunity to improve Duke Energy's records and the accuracy of the home report comparisons. Any corrections are updated in the Enterprise system. The changes are also captured to show how many customers are calling to correct their information and which data points are the most frequently corrected. The most frequently corrected data points are heat fuel type, square footage, and home age, in that order.

Next, the agents direct customers to the energy saving action items on bottom of page one and the Duke Energy message section on page two. Depending upon the interest of the customer, a discussion of other energy efficiency saving measures may follow. The Telescript system contains answers to previously asked customer questions. So agents are prepared to discuss where to install energy efficiency upgrades, where customers can find tax incentives for energy efficiency, CFL mercury content, and more. The agents are also trained to discuss basic information about Duke Energy's other energy efficiency programs. If customers are interested in a specific program, the agents provide the toll-free phone number and an offer to transfer the caller to the appropriate department. If the customer is calling to order free CFLs, this service is also taken care of during the phone call.

The Telescript system also guides the CSR in the event that a customer wants to stop receiving the reports. As the agents accommodate the request, they are trained to inquire for a specific reason the customer wants to opt-out. Check boxes in the system make it easy to capture common reasons, including when customers feel they're already efficient enough; they no longer need the report; they don't feel the report is accurate; they don't want to waste paper and/or postage; or the report is being sent for a garage account or a home business. Another field captures less standard reasons. The three most common reasons for opting out are that the reports are an inappropriate use of Duke Energy's resources (40%), customers believe they are doing enough (16%), and no reason given (10%).

Conversely, if a customer wants to opt-in to the program, the Telescript system guides the agent through that process as well. The agent collects account information and confirms eligibility based on disqualifiers such as an apartment number or a lack of 13 months of billing information. If the customer is qualified, then the data and request are passed to Duke Energy for processing, since the customer may be part of a control group and further tracking adjustments may need to be made. If the customer is ineligible due to lack of 13 months of billing data, they are informed that they will be automatically enrolled when they become eligible.

Approximately 95 percent of customer calls follow one of the previously mentioned general scenarios. The remaining five percent of customers may have specific concerns that require redirection to other Duke Energy departments, such as bill inquiries, making payments, arranging credit, and speaking with customer service about other account-related matters. The frequency of redirected calls was notably diminished beginning on September 17, 2012, when an interactive voice response (IVR) system was installed on the front end of the program's phone system. The system intercepts inbound calls and says:

"Thank you for calling My Home Energy Report. To ensure that you receive accurate and courteous service this call may be recorded. For questions or more information about My Home Energy Report press one. For questions about your Duke Energy bill, electric services and all other questions press two."

This less-than-30-second step helps to ensure that customers reach the right department as swiftly as possible. It also helps reduce call handling costs, since it frees up MyHER agents to spend more time focusing on program-related calls.

Training

In addition to the on-the-spot support provided by the Telescript system, the the call center vendor's customer service team underwent two days of intensive training on June 7 and 8, 2012. Training was provided by Duke Energy representatives from the MyHER new product development and product management teams, as well as by representatives from Duke Energy's Customer Prototype Lab (CPL), which handled call center functions during the previous two years of piloting and operational functioning. Training included a program overview, PowerPoint presentations, training playbooks, sample reports for agent review, the program welcome letter, and a comprehensive compilation of frequently asked questions and suitable replies developed and tested during two years of customer phone calls. The agents were also trained on how to use the program vendor's Enterprise system.

All customer responses generated by the Telescript system and used by the call center vendor and CPL (see Email Customer Support below) have been carefully crafted by Duke Energy to deepen customer engagement and foster customer satisfaction.

In the event the program vendor's Enterprise server goes down, CSRs are trained to report the issue so a trouble ticket can be sent to the program vendor. CSRs then manually note the customer's account information and any requested data corrections, so the information can be added to the Enterprise system when it comes back online. If customers have questions about their reports, then the agents return the customer's calls when the system is operational. The call center vendor reports that this has only been an issue approximately five times during their usage of the Enterprise system.

Quality Control

Quality assurance is maintained through three layers of call monitoring. For all Duke Energy programs that it supports, not just MyHER, the call center vendor's internal review process randomly reviews two calls by each agent per week. The the call center vendor's quality assurance lead then meets with the agent to review the call and conduct coaching according to an agreed upon checklist. This is the first level of review. The next level is conducted by Duke Energy staffers who randomly select 50 calls per month and perform a similar checklist review and coaching session. The final layer of review is performed by the MyHER product manager, who also randomly selects calls to listen to.

Call review primarily focuses on set standards for interpersonal engagement with the customer, such as building rapport, being apologetic, remaining professional, explaining things effectively,

avoiding slang terms or abbreviations the customer may not be familiar with, and providing respectful service. Agents are also judged on call management, such as how well they steer the course of the call and keep the caller on point. Another point quality controllers look at is customer focus, which is a category for assessing an agent's job knowledge and problem-solving skills as applied to meeting customer's expectations, offering solutions to customers, and acting with customer interests in mind. Yet another category of review looks at call results to ensure that business objectives are being met and supported, such as trying for one-call resolution, properly identifying the caller, being proficient, and upholding the Duke Energy brand.

When interviewed, the MyHER product manager reported that current call center operations are going well. Earlier in the program cycle, shortly after call center launch, she indicated that quality assurance revealed a discrepancy between call monitoring suggestions and initially trained procedures for reviewing a customer's report. That has since been resolved.

Service Level Agreements
In addition to meeting quality assurance standards, the call center vendor's service level agreements specify requirements for average answer time, average call handle time, and abandonment rates. Both the call center vendor and Duke Energy report that the call center is well-staffed, well-trained and that call standards are being met.

Email Customer Support
In addition to call center support, customers also have the option of receiving support via email. The email address, HomeReport@duke-energy.com, is printed on the front of every MyHER report. Email messages are routed to Duke Energy's Customer Prototype Lab (CPL), which has supported the program since its pilot stages in Ohio and South Carolina. CPL handles the program's email support for all Duke Energy service territories. CPL service representatives receive the same training and use the same customer response playbook and Enterprise software system as their counterparts at the call center vendor.

As with the customer call center, weekly email volume depends upon report batch timing. Likewise, email volume tends to drop off after customers have received their fourth or fifth report. Total CPL email volume during a representative week of Feb 18-22, 2013 was 51 emails. During the next week, 88 inquiries were received. Of these, Kentucky customers sent in just four emails. These numbers appear to be consistent with fact that most customers had received multiple reports by February and thus the number of contacts to make corrections was correspondingly lower.

Also, like the call center, the most frequent reason for customer email is to correct comparison criteria (i.e. heating type, square footage, home age) for their home. Other customer emails focus on the following categories, which are not ranked in order of popularity.

- Opt-out (the reason why is captured, see below)
- Opt-in
- General energy efficiency questions
- Billing, service, and credit questions
- Other

When customer requests such as these are processed, the CPL staff use the program vendor's Enterprise system to make the requested change to the customer's account.

Reasons for customer opt-outs include:
- Customers feel they are doing all they can (most popular)
- Not concerned about usage
- Have received the report enough times
- Report is incorrect and they are not patient enough to correct it
- Color commentary similar to "This is a waste of money"
- No reason stated
- Other

Quality Control

Quality assurance is maintained through two levels of monitoring by the CPL director and the response team supervisor. Both conduct weekly reviews of all CPL inbound and outbound communications. They also conduct spot checks of emails specifically for the MyHER program. Because CPL has supported the program for a considerable time, the majority of customer requests or questions are routine. So the quality reviews skim standard exchanges such as square footage corrections and focus more closely on other questions such as, "I've followed all the tips on the reports and I want to save even more. What else can I do?" Even these responses are routine at this point, according to the CPL director, but they are regularly reviewed to maintain quality.

Service Level Agreements

CPL's customer service level agreement provides for MyHER program support between 8 a.m. and 5 p.m., Monday through Friday, and allows two business days for responses to customer queries by U.S. mail, email, fax or social media. These agreements are being met or exceeded. The level of support provided by the CPL is considered to be of high quality by all parties TecMarket Works spoke with.

Customer Paper Mail

Periodically, customers also send in paper mail to the program. Those messages are directed by Duke Energy mail code to the product manager, who reads the message and forwards the message to the call center for processing, unless a personal response from the manager is seen as necessary.

Website

The current program website consists of a limited number of web pages containing static information, such as a primer on how to read the report and a list of frequently asked questions. It also has one interactive feature, a two minute online video featuring an actress who explains more about the reports. The website has generated more than 17,000 web page views according to Google Analytics, which Duke Energy deploys to track website metrics for the My Home Energy Report web pages.

An analysis of overall program website usage between January 1 and December 31, 2012, revealed that the program website generated 4,587 site visits and 8,955 page views from 3,404 unique visitors and an average time on page of 2:06 minutes. In 2012, Kentucky customers visited the site 184 times, averaging 2:07 minutes per visit and 1.99 pages per visit. Comparable numbers for the overall program website between January 1 and June 30, 2013 show 4,514 site visits and 8,766 page views from 3,571 unique visitors with an average visit of 2:09 minutes. During that same time Kentucky customers came to the site 122 times visiting an average of one page per trip.

Social Media

As a service to the program, the Duke Energy Customer Prototype Lab monitors social media for various mentions of the Home Energy Report. Most online commentary is dealt with internally, such as making changes to household characteristics. However, on occasion an online comment requires a different level of handling. For instance, an agent in the CPL discovered a negative customer comment on Twitter complaining about the tone of the report wording (see unintentional sarcasm in Report Messaging above). Per Duke Energy protocol, the comment was forwarded to Duke Energy's social media liaison for products, services, and complaints. The liaison responded promptly to apologize to the customer and explain the wording was intended to be complimentary. In a multipart exchange that followed, the liaison addressed the customer's concern, answered a follow-up question, and noted a feature request for an online version of the reports in the future. The incident is mentioned here to demonstrate Duke Energy's overarching efforts to monitor and respond to customer feedback regarding the program in whatever channels customers prefer to use.

Working Relationships

The Program Vendor

The program vendor and Duke Energy have worked together since the vendor was awarded the contract in 2011. The joint program operations team meets weekly via teleconference and uses email and phone calls as necessary, often on a daily basis. The weekly meetings cover feedback from customers, data quality, new system fixes and upgrades, progress on features being worked on, and the current weekly production cycle. Monthly operational meetings review the previous month's entire production cycle. Separate quarterly governance meetings bring together senior management from both organizations to discuss business forecasts and strategic planning, progress toward goals, issues management, and service level performance, including on time delivery, data quality, and print quality.

Because this program requires billing analysis to determine energy savings, throughout the first year of operations the program has received no feedback about progress toward its energy saving goals. That information will predominantly come from the impact evaluation that will follow this process evaluation. Short of having this information, the program team has focused on enhancing customer experience and improving system functionality to ensure data quality.

Since the program vendor was awarded the contract in 2011, the vendor and Duke Energy have worked closely to engineer a largely automated mechanism for generating more than one million customized energy reports each monthly cycle. With a program as highly customized as

MyHER, myriad changes needed to be made to ensure that all the complexities of report generation work smoothly. During the development process and first nine months of full commercial operation, the two companies experienced periodic friction regarding quality control issues and change requests. These came to a head in December of 2012 when they disagreed about the display of the date printed at the top of the monthly reports (Figure 4).
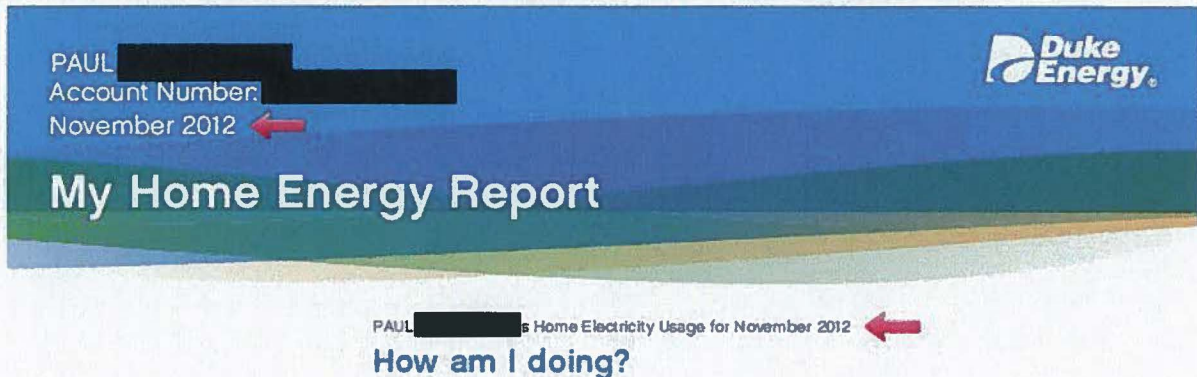

Figure 4. Production Issue Example

Duke Energy's quality assurance measures revealed that the program vendor was generating reports with inconsistent dates for the customer's energy usage on a percentage of reports whose billing periods crossed months (e.g., Nov. 8 – Dec. 5). The problem arose because the program vendor was generating the report month based on the end date of the customer's billing cycle, so the report dates would be consistent with the customer's bill date, rather than creating a monthly header that is consistent across all reports for the monthly cycle as specified by Duke Energy in order to help customers draw a distinction between the bills and the reports. There was a misunderstanding in the business requirements written in the contract that led to this incongruence.

As of July 2013, all members of the team (both Duke Energy and the program vendor) reported that day-to-day communications and normal operations are now functioning smoothly and effectively. With time to reflect upon the matter, they have concluded that the difficulties arose because the parties' expectations were not in alignment regarding quality assurance requirements, service level agreements, and business exigencies.

TecMarket Works' investigation finds that this misalignment was likely caused by shifting operational conditions and changes in personnel on both sides. As discussed in the Program Development section above, the program underwent two significant changes in a matter of months. First came the shift from pilot program to full commercialization using Duke Energy production. Then came the transition from Duke Energy to external operations handled by the program vendor. During approximately this same time frame, Duke Energy shifted program oversight from its new product development group to its ongoing program management team. Likewise, staffing also shifted at the program vendor. These changes in both operating conditions and personnel meant that while the operating agreement between the two companies remained unchanged, its interpretation by the original individuals was not the same as that of their successors on either side.

Since then, Duke Energy has established clearer parameters about the thresholds for data quality, print quality, and customer feedback that will be permitted before fixes and improvements become necessary. These clarified requirements were enforced after the data quality and report delivery service level violations in June of 2013. Despite the penalty, working relations representatives from both parties indicated that working relationships remain positive and they expressed a commitment to a continuing strengthening of their partnership.

With up to one million reports being generated each month, it is important to carefully consider the scale of the program, the complexity of the change, and the resulting costs and consequences of making that change. Continuous process improvement is fundamental to Duke Energy's brand and business model. Indeed, it is this spirit of innovation and customer focus that makes the utility a standout in the industry. However, it remains commonsensical to ask if it is appropriate to make changes based upon a small number of errors or customer comments. The answer may well and appropriately be yes, but the threshold for change—and the impacts of doing so—should be clearly understood by all parties.

With these parameters in mind, the program team members from both companies will be better assured of enjoying a shared set of expectations and a clear imperative to make the program as effective as possible.

The Call Center Vendor
The call center vendor works with Duke Energy to provide call center services for a number of the utility's energy efficiency programs. The MyHER program represents one facet of this larger relationship. All parties indicate that working relationships are positive, professional, and productive.

Customer Prototype Lab
The Customer Prototype Lab is a department within Duke Energy that worked on the pilot program and continues to provide email support for the commercialized version of the MyHER program. As such, members of this group work closely and effectively with their Duke Energy counterparts.

Program Changes Interviewees Would Like to See

Messaging
The program vendor's system ostensibly tracks which tips the customer has previously seen and which programs the customer has previously participated in. But program vendor's software engineers have not yet devised a method for cross-checking whether the tips written by program vendor and presented on the front page are similar to those written by Duke Energy and shown on the second page. The task is fairly easy for humans who can naturally grasp the degrees of relative similarity or difference between lighting messages, for instance. But it is more complicated for a computer that requires hard coded distinctions. Until this matter is resolved, closely similar messages remain possible. Such an upgrade was said to be on the program improvement to-do list, but it had not risen in priority enough to be implemented yet.

Another challenge involves the ability to deliver two Duke Energy program promotions each month, rather than one as is the norm. Because this functionality was not envisioned from the start, it was not available and could not be swiftly implemented when the opportunity arose in March of 2013. This too is a planned upgrade.

So far the MyHER program's ability to customize messages is based primarily on static household characteristics (age, square footage, location) and program participation data. However, those we interviewed envision even more customization in the future, whereby suggestions are further targeted based upon how efficient customers' homes are compared to their neighbors. "We'd like to be able to suggest buying new equipment when that makes more sense than trying to squeeze more efficiency via lots of efforts with relatively small yields," said one interviewee. Plans to develop models for this were under exploration, but no details were yet available.

Also on the drawing board were sequential follow-up tips based on earlier actions. For instance, currently customers may see a message about installing a programmable thermostat, but that would be the only tip of that type that they see. With follow-up tips, customers might see sequential messages explaining: 1) how to actually program the thermostat, so it doesn't blink like a VCR clock; 2) how to program it differently for weekdays and weekends; 3) how to change it when you go on vacation; and, 4) the difference between hold and temporary settings. Whether presented once per monthly report, or made available all at once on the program website, such a sequence of tips would serve to deepen customer engagement and maximize the energy savings potential for each measure.

Data Transfer
Successful report production depends upon successful data integration and generation. This, in turn, depends upon a highly effective data transfer between Duke Energy's computer system and those at program vendor. While no specific suggestions for improvement were indicated during our interviews, all parties expressed a general eagerness for these data transfers to be continually refined in an ongoing effort to eliminate errors, reduce processing time, and improve report production capabilities.

Website
Interviewees expressed a desire to increase the level of interactivity on the website to provide more reasons for customers to visit and more opportunities to deepen customer engagement. Examples of potential website additions might include interactive energy saving tips (e.g. click the button to reveal a hidden tip), demonstration videos, and customer testimonials.

Conclusions
The My Home Energy Report program provides Duke Energy residential customers with a meaningful look at their homes' energy use compared to other homes similar to theirs. Overall, the program is well-designed and well run, but its implementation has been troubled by on-going software coding limitations and data quality concerns. Some challenges are to be expected due the high volume of data and the complex nature of the dynamic report production process. Yet other issues are the result of mistakes made by the implementation contractor.

Participation numbers are on target and customer opt-outs represent a fraction of one percent of participating customers.

TecMarket Works considers the reports to be well designed for at-a-glance reading. Data is clearly presented and easily understood. Messages are crisp and actionable. Low call and email volume from customers attests to the above. The top reason why customers reach out is to correct household information, which is understandable given the data's third party origin.

The program vendor's platform is not yet as functional or as stable as the team would like. Report production has been hampered by data quality concerns, many of which have arisen as a result of increasing software coding demands to add more functionality. Most data quality concerns have been caught and fixed prior to mailing. Report delivery was delayed during one month, although it may have gone unnoticed by customers due to fact that reports are not sent every month. Print quality has also been an issue, but recent steps toward resolution appear to be successful.

Call center operations and email support from the Customer Prototype Lab are operating smoothly and those teams interface effectively with the program management team. Duke Energy – the program vendor working relations are operationally functional and productive. Tensions from disagreements regarding data quality issues and change requests were an issue, but appear to be resolved now that clear expectations and performance parameters are established.

Overall the program appears to be well designed and well run. Despite continuing technical challenges, the MyHER program represents a noteworthy contribution to Duke Energy's efficiency portfolio and an ambitious behavior change program for residential customers.

Recommendations for Program Improvements
TecMarket Works presents the following recommendations for improvements.

Clustering

1. The dynamic clustering used to generate the peer groups for energy use comparisons ensures that customers' homes are compared to others that are most closely similar to their own. This method increases the accuracy of the comparisons, but is dynamic in nature and does not allow for customers to remain in one static group over time. However, this upside is offset by the downside of comparing customers to a different group each month, rather than comparing usage to a consistent or static group over time as was done previously when Duke Energy produced the reports. Both methods have their advantages.

   Some members of the Duke Energy team wondered about the potential for confusion on the part of customers who may not understand why the sizes of their comparison groups are changing each month. That this confusion does not appear to be widespread is evidenced by the fact that the call center vendor and CPL do not have records indicating these concerns in their customer contact databases. However, it remains unclear whether

changing customer cluster assignments is influencing customer behavior and thus energy savings.

RECOMMENDATION: If this concern persists, consider investigating the impact of customers' knowledge of changing cluster sizes on energy savings by removing cluster size information from the monthly reports for a test group of customers to be compared to a control group who receive that information on their reports. This would give additional validity to the notion that customer knowledge of cluster size influences their usage. Alternatively, add an answer to the MyHER frequently asked questions to explain why cluster sizes change over time and why customers may find themselves compared to different size clusters on different reports.

2. The current minimum cluster size for peer group comparisons has been set by Duke Energy at 10 homes. If a customer's home does not have at least nine other homes that match its characteristics (square footage, age, heat fuel type, location, etc.), then that home does not receive a report. Duke Energy is considering raising the minimum to more than 10 homes, but says the advantages of increasing the cluster size minimum must outweigh the disadvantages of making fewer homes eligible to receive reports.

    One notable advantage of increasing the cluster size is that Duke Energy will be able to demonstrate statistical validity of the comparisons made on the reports. Without a sufficiently large n-size for the comparison group, the average and quartile rankings are subject to a lack of statistical power, and thus the generalizability of the data to the homes in the cluster might be questioned.

    RECOMMENDATION: Consider conducting a longitudinal analysis of existing data (plus or minus one year) to determine whether the energy savings observed from homes in small clusters is similar to energy savings from homes in larger clusters.

Data Presentation

3. Starting in August of 2013 Duke Energy and the program vendor plan to change MyHER reports from presenting monthly and annual energy usage numbers in dollars to kWh. This seems likely to provide three advantages: 1) report usage numbers will be similar to bill amounts; 2) kWh numbers will provide a more accurate metric of usage; and 3) presenting kWh will build customer familiarity with the measure as vehicle fuel standards have built familiarity with miles per gallon. However, as is the case with any change made to the reports, the effect it will have on overall behavior driven energy savings remains open to question.

    RECOMMENDATION: Isolating the specific influence of such a change on overall annual energy savings is not realistically feasible with a program involving as many variables as the MyHER program. However, pre- and post-change customer feedback may be helpful in determining how the shift in metrics from dollars to kWh affects participants. At the least, establish specific parameters to capture any comments about the

change as communicated by participants via the call center vendor, CPL, mail, social media or other forms of correspondence.

Tips and Messages

4. When quality control revealed that the same energy saving tip had been presented two months in a row and no quick fix was possible, Duke Energy faced a choice between repeating more tips and thereby risking reader disinterest or shifting to a universal tip assignment system that ensures unique tips, albeit ones that are somewhat less optimized for individual customer energy savings. TecMarket Works concurs with Duke Energy's decision to opt for the second choice as it is the one that maintains long-term reader credibility and thus more persistent energy savings over time. Nonetheless, it must be noted that the program vendor's ability to dynamically present customers with those energy savings tips that are most likely to save them money is a fundamental element of the behavior change component of the program. The longer this remains nonoperational, the greater the likelihood will be for lower annual kWh yields per customer.

   RECOMMENDATION: Resume dynamic tip messaging as soon as feasible to maximize behavior change potential.

5. As noted earlier in this document, a small number of customers have complained about interpreting the reports as sarcastic when they read "Nice work. You used X more than the efficient home." The confusion might be eliminated with a simple wording change to something like: "Nice work, you're doing better than the average home! But keep in mind you used X more than the efficient home. So you can still save even more." Such a wording change might help customers to more clearly distinguish between the praise and the encouragement to improve.

   RECOMMENDATION: Efforts to reword potentially ambiguous statements on the reports may help mitigate customer misinterpretations.

6. Customers have asked to see on each report an explanation of what the "average" and "efficient" home references represents. Without this, customers do not know what their energy usage is being compared with. The definitions appeared regularly on early iterations of the report, but were removed and transferred to the welcome letter and FAQ section of the website to save space. The customers making this request did not recall the definitions from the welcome letter, so, seeking clarification, they called the toll-free number rather than visiting the website.

   RECOMMENDATION: While there is insufficient room for all FAQs on the reports, returning an explanation of average and efficient to the report would provide clarity about the report comparisons and preempt the need for participant phone calls.

7. The energy saving messages on the front and back of the report are necessarily short, crisp, and simple because space is limited. As a result the advice tends to be directed to readers who are less familiar with the range of energy saving options available to them.

Given the goal of maximizing program impacts for a mass audience this approach makes sense, but it comes at the expense of being less engaging to more advanced readers who may already be familiar with the basic information. Fortunately, this need not be an either/or situation, since the reports can be customized to the individual reader. With this in mind, it may be possible to change the software coding, so that customers performing better than average see more advanced tips than those customers performing worse than average. Another possibility for creating an opportunity for extended engagement would be to provide a link to a web page that gives more detailed advice in written form or via video.

RECOMMENDATION: Whether the specific suggestions noted above are adopted or not we encourage Duke Energy to investigate ways to engage advanced customers on a deeper level in order to derive even more savings.

8. Sending energy reports to customers eight times per year on an ongoing basis presents an inherent challenge to keep the reports interesting to readers. While new monthly energy usage comparisons will always be timely and relevant, the other messages in the report may lead to reader disinterest if they appear to be repetitive. One possible option might be to consider including an energy facts section to the reports, somewhat like the fast facts box used prior to the switch to the two-page format. Such a box could enable Duke Energy to share energy-related trivia and questions to spur reader thinking, such as: "If you added up the size of all the little gaps in your homes windows, doors, floors, and ceiling, how big do think they would be? A. The size of a golf ball. B. The size of a softball. C. The size of a basketball. D. The diameter of a hula hoop. Answer: Every home is different, but a typical home has enough gaps to equal at least the size of a basketball. That's a lot of air moving in and out of your house. Sealing these…"

RECOMMENDATION: Take steps to ensure that energy saving suggestions remain fresh and interesting.

Data Quality

9. Spot checking of data quality in advance of report generation and full data file checking after the reports were mailed has been demonstrated to be insufficient to catch errors that affect accurate data presentation to customers, in some cases on a virtually statewide basis.

RECOMMENDATION: Ensure the implementation of newly developed quality control measures in advance of all customer mailings and monitor closely.

Overall

10. With a program of this magnitude that involves the generation of more than one million reports each month, it is important to carefully consider the above mentioned recommendations—and any other changes that may be contemplated—in light of the

overall the scale of the program, the complexity of the change, and the resulting costs and consequences of making such a change.

RECOMMENDATION: Consider if it is appropriate to make changes based upon a small number of errors or customer comments. The answer may well and appropriately be yes, but the threshold for change—and the impacts of doing so—should be clearly understood by all parties.

Results from MyHER Customer Surveys

Introduction
TecMarket Works completed telephone surveys with 249 randomly selected program participants in the state of Kentucky from April 3 to May 6, 2013. This section presents the results from the surveys. The survey instrument can be found in Appendix C: MyHER Customer Survey Instrument.

When the customer was successfully contacted, the surveyor asked that customer if they were familiar with the MyHER mailings. If not, the surveyor provided a short description of the MyHER mailings they have been receiving: *This program provided information on how much electricity you used in the previous month and in the previous 12 months compared to your neighbors and provided tips on how you could lower your electricity use and costs in becoming more energy efficient."*

If the customer still did not recall the MyHER, they were thanked for their time and the call was terminated (N=57, or 18.4% of those contacted, did not recall the program reports). If they did recall the MyHER, the survey continued regardless of whether they read the MyHER. There were 253 customers out of 310 contacted (81.6%) who recalled receiving the MyHER report and 249 recipients completed the entire survey (four incomplete surveys are not included in this report aside from their awareness of MyHER and whether or not they read the reports).

Customers Who Read the MyHER and Why
Almost all of the surveyed customers report that they read the MyHER when they receive it; 96.4% (240 out of 249) of the customers surveyed who remembered receiving the reports are reading them (or in two cases, someone else in the household is reading them). If the full number of contacted customers are included in this calculation (N=310 including partially completed surveys, as noted above), and it is assumed that those who do not remember receiving the MyHER reports, or don't recall reading them, are throwing them away, this brings the percent of customers reading the MyHER down to 78.7% (244[4] out of 310) of the targeted customers. Table 3 below shows the percent of surveyed customers that read the MyHER when they receive it.

Table 3. Customers That Read MyHER

	Count	Percent of total
All customers contacted	310	100.0%
Recalled receiving MyHER	253	81.6%
Customer read MyHER	244	78.7%
Recall receiving but threw MyHER away	9	2.9%
Do not recall receiving MyHER	57	18.4%

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[4] In addition to 240 out of 249 customers who completed the entire survey, all four of the customers who only partially completed the survey said that they read the MyHER report.

Duke Energy provided recent actual MyHER scores for surveyed customers; most customers who recalled the report read it regardless of their score, as seen in Table 4. There are no significant differences in the rate of customers reading the reports between groups with different recent MyHER scores.

Table 4. Customers That Read MyHER by Recent MyHER Score

	Less than efficient home (N=61)	Less than average, but more than efficient home (N=86)	More than average home (N=95)
Read MyHER	96.7%	95.3%	97.9%
Throw MyHER away	3.3%	4.7%	2.1%

Note: seven surveyed recipients do not have recent MyHER scores and are necessarily not included in this table, although these recipients are included in our analysis elsewhere where recency is not a factor.

TecMarket Works next asked customers who read MyHER why they read it. Most customers surveyed (62.5% or 150 out of 240 who read the report) said they read MyHER because they were interested in learning about how their household uses energy, with comparisons to other households (27.1% or 65 out of 240) and learning about saving energy (27.1% or 65 out of 240) being the next most-mentioned responses.

Table 5. Why Customers Read MyHER

	Count	Percent (out of N=240 who read the reports)
Interested in learning how my household uses energy	150	62.5%
Interested in comparison with other households	65	27.1%
Interested in learning more about how to save energy	65	27.1%
It is from Duke Energy	37	15.4%
Avoid increases in power costs or lower rates	28	11.7%
To see how my household usage changes over time	21	8.8%
Interested in learning more about climate change or environmental reasons	8	3.3%
To save money on my energy bills	8	3.3%
Don't know / just curious / no reason	6	2.5%
Unique responses (listed below)	5	2.1%
Read everything that comes in the mail	4	1.7%
For the tips and suggestions	2	0.8%
Someone else in the household reads the reports	1	0.4%
"I only glance at the reports."	1	0.4%

Percentages total to more than 100% because respondents could give multiple responses.

Five recipients gave unique reasons for why they read MyHER, which are listed below.

- *I am on a budget and I want to make sure that I am doing the right thing. I am also concerned about overpopulation and energy waste.*
- *I check it against my meter readings.*

- *I look at the details and the graphs.*
- *The headlines made me interested.*
- *I enjoy reading graphs.*

The nine surveyed customers (4.8% out of 249) who reported that they throw MyHER away provided the following reasons for not reading the report:

- *Too low a priority for me.* (N=3 or 33.3% of 9)
- *It is too confusing.* (N=2 or 22.2% of 9)
- *I am already doing the best I can.* (N=1 or 11.1% of 9)
- *I am too busy/don't have time.* (N=1 or 11.1% of 9)
- *I don't use very much energy.* (N=1 or 11.1% of 9)
- Other reasons (not specified[5]) (N=4 or 44.4% of 9)

Percentages total to more than 100% because respondents could give multiple responses.

Of the nine customers surveyed who threw out MyHER, four (44.4% of 9) said that they did read them at one time, but have since stopped, while two (22.2% of 9) said that they never read the reports, another two (22.2% of 9) were not sure, while one recipient (11.1% of 9) glances briefly at the reports before throwing them away ("*I glance at it before I throw it away. I don't really understand it.*") Of those who used to read the reports, but have stopped, all four were able to tell us how many reports they read before they stopped; these four customers read an average of 2.8 reports apiece in the nine months[6] since the program began, during which time these customers received an average of six Home Energy Reports apiece.

Customer Perceptions of Their Efforts Regarding Energy Efficiency

TecMarket Works asked MyHER customers how they thought their efforts to decrease energy consumption compared to what others typically do to save energy, both currently and before joining the MyHER program. The wording of the first question was: *When you consider the efforts you and your household are currently making to decrease your energy consumption at your home, do you feel that on average your efforts are less than what others typically do, about the same as what others typically do, or more than what others typically do?* The results are presented below in Figure 5.

Of customers that read the Home Energy Report, nearly half (49.6% or 119 out of 240) believe that they are currently doing more than the average household, while 40.0% (96 out of 240) believe that they do about the same as others do to be more energy efficient. Only 3.8% (9 out of 240) believe that they do less than others, while another 6.7% (16 out of 240) are not sure how they compare to others.

Among the nine customers surveyed who say that they throw out the Home Energy Report, about half (55.6% or 5 out of 9) say they do more than others, while two say they do about the same as

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[5] Due to a programming error, these four respondents were not asked to specify the "other" reasons why they throw the reports away.

[6] Customers in Kentucky began receiving MyHER in August of 2012, and this survey was conducted in April and May of 2013.

others (22.2% of 9) and two say they do less than others (22.2% of 9). These results are not significantly different from the pattern for customers who read the reports.

These results suggest that most customers still believe they are doing the same or more than others with regard to efficiency and few believe they are doing less. These results also suggest that customers who have participated in another efficiency program will make ideal candidates to receive reports in the future.
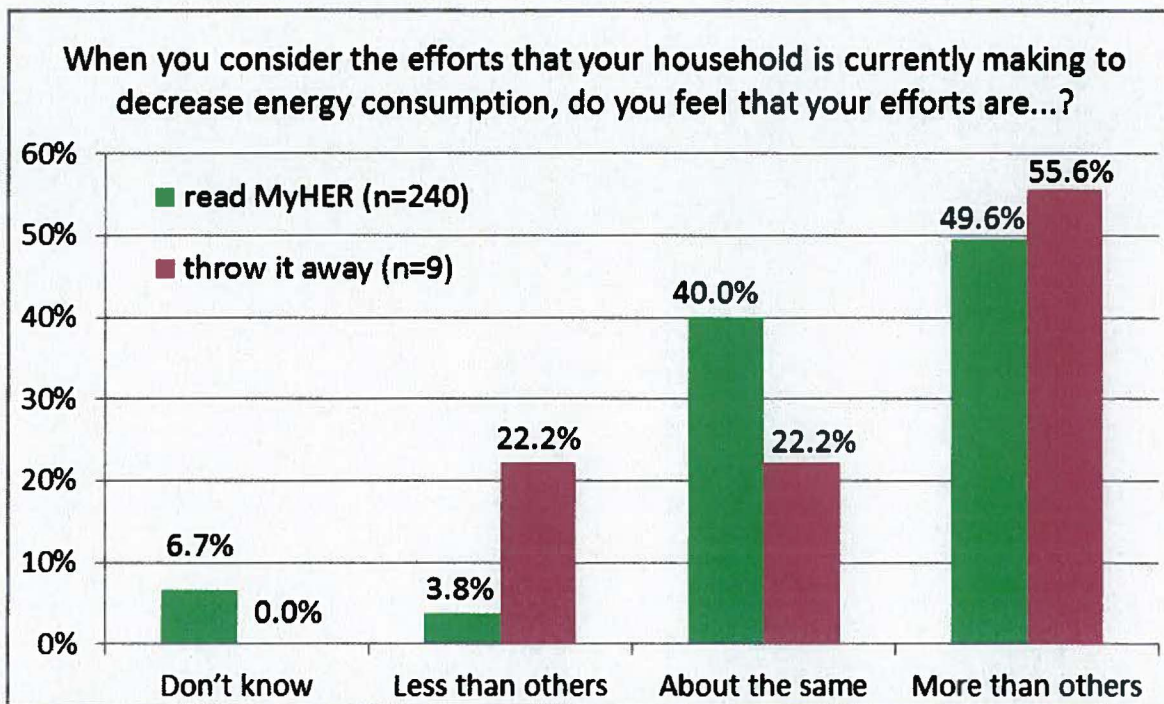
When you consider the efforts that your household is currently making to decrease energy consumption, do you feel that your efforts are...?

- read MyHER (n=240)
- throw it away (n=9)

Don't know	Less than others	About the same	More than others
6.7%	3.8%	40.0%	49.6%
0.0%	22.2%	22.2%	55.6%

Figure 5. Current Effort to Reduce Energy Consumption Compared to Others

TecMarket Works asked MyHER customers how they thought their efforts to decrease energy consumption before they began receiving the reports compared to what others typically do. The exact wording for this question was: *Now think back to the time before you began receiving the Home Energy Report. At that time, would you say your efforts to decrease energy consumption were less than what others were typically doing, about the same, or more than what others were typically doing?* The results are presented in Figure 6.

Compared to current efforts, surveyed customers who read the Home Energy Report indicated that they were more likely to have been doing "less than others" (9.2% or 22 out of 240) or "about the same as others" (49.6% or 119 out of 240), but less likely to have been doing "more than others" (35.8% or 86 out of 240) before receiving the MyHER program. These differences between "current" and "before the program" efforts are all significant at $p<.05$ using student's t-test for customers who read the report.

Among the nine customers who do not read the reports, there was one customer who said that they did "less than others" before receiving MyHER, but "more than others" afterwards, and another customer who said they did "more than others" before but "less than others" afterwards;

the other seven customers not reading the report all gave the same answer to both of the before and after questions.
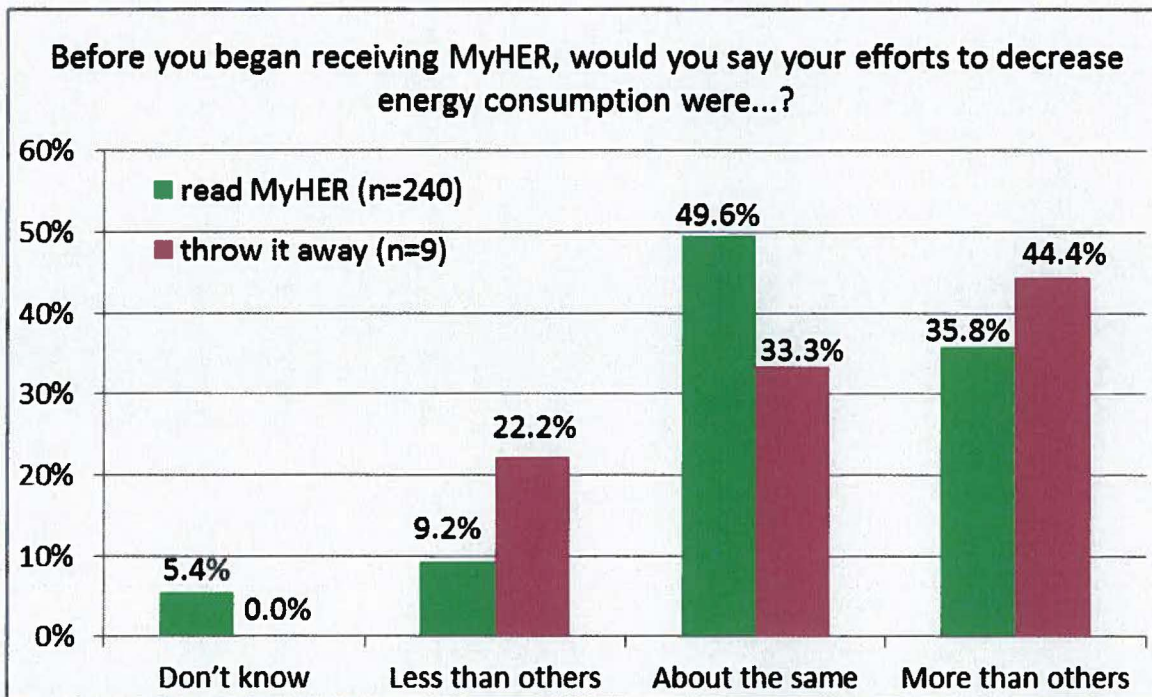

Figure 6. Effort to Reduce Energy Consumption Compared to Others Before MyHER

Finally, TecMarket Works asked MyHER recipients which of four statements best described the difference between their earlier efforts before MyHER and their current efforts after they started to receive MyHER; these responses are shown in Figure 7. More than half of recipients report that they are doing "about the same" as before and after receiving MyHER (57.1% or 137 out of 240 for customers who read the report and 66.7% or 6 out of 9 among those who did not read the report). Most of the remaining customers surveyed report that they either "used to do less and now do more" or "were already doing more than most, but are doing even more now" (37.5% or 90 out of 240 for customers who read the report and 22.2% or 2 out of 9 among those who did not read the report). Only ten customers surveyed (3.8% or 9 out of 240 who read the report and 11.1% or 1 out of 9 who don't read the report) said they are doing less now than they were before. None of the differences between customers who read the reports and those who don't are significant in Figure 7.
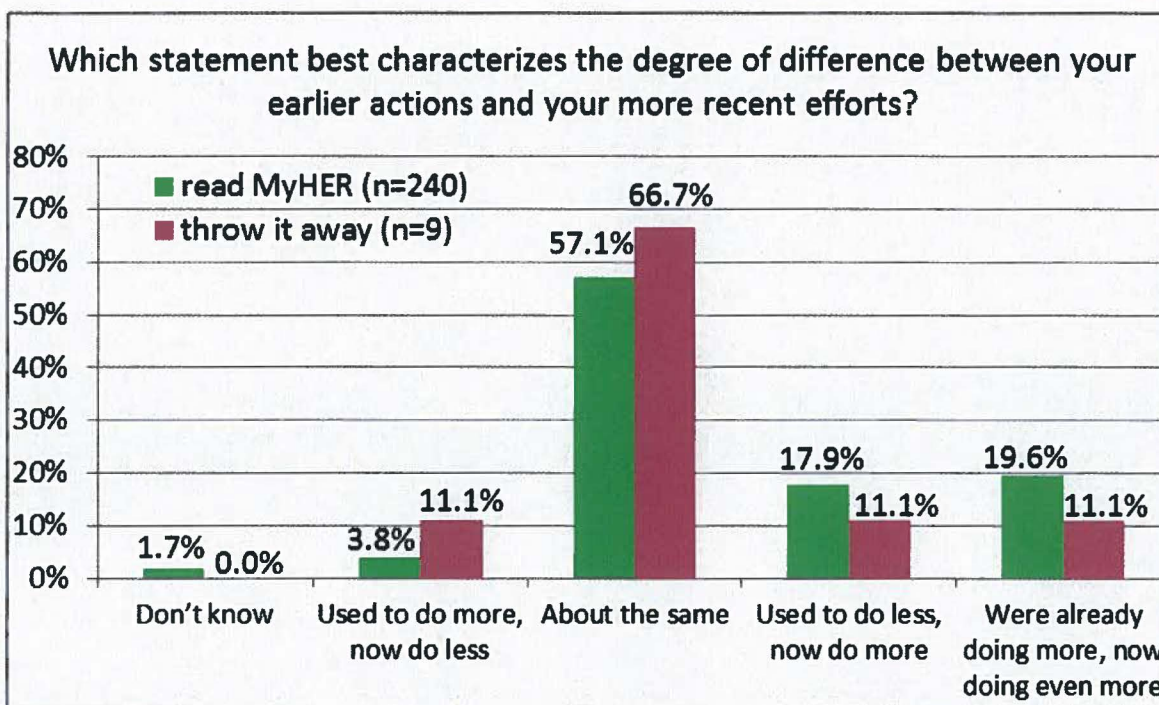
Figure 7. Difference Between Earlier and Current Efforts to Reduce Energy Consumption

Customer Perceptions Compared to Recent MyHER Scores

Duke Energy provided actual recent MyHER scores[7] for surveyed customers, which are used to categorize customers into three groups: those whose energy usage is "less than the efficient home", "less than average, but more than the efficient home", or "more than the average home".[8] These scores can be compared to customer's perceptions of how energy efficient they are compared to others. As Figure 8 shows, there is not much relationship between self-perception and actual performance (as measured by a recent MyHER score). There are many customers who think they do more than others but actually use more energy than average, or they think their efforts are average when the results are not.

Regardless of actual MyHER scores, very few customers describe their efforts as being "less than others," which is consistent with the theory of social norming (people don't want to be seen as being below the norm). In fact, 34.7% (33 out of 95) of MyHER recipients whose usage was "more than the average home" on their recent report say that they do "about the same as others" and an even larger 54.7% (52 out of 95) actually say they do "more than others" for energy

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[7] Most of the scores used in this analysis (234 out of 249) are from the March, 2013 MyHER reports, with another 8 scores taken from February, 2013 reports. Since each report is a "snapshot" of energy usage for a particular month, customers' scores may change over time or vary throughout the year. In other words, a customer using less energy than average on their March, 2013 MyHER may not be below average on other reports.

[8] There were seven surveyed MyHER participants for whom recent MyHER scores were not available, because these customers became ineligible for the program after receiving one or more reports (due to changes in billing status, renter status, or their service address did not match their billing address). These seven customers are not included or reported in analyses that show responses categorized by recent MyHER scores.

efficiency. Even among customers whose recent MyHER scores show their usage is "less than the efficient home," only 41.0% (25 out of 61) believe they are doing "more than others" for energy efficiency.

The differences in self-described energy efficiency efforts between those with "less than efficient" and "less than average, but more than efficient" scores are not statistically significant. Customers with "more than average" recent usage scores are significantly more likely to say they do "more than others" and less likely to say they do "about the same than others" or "less than others", compared to the groups that use less than the average home (p<.10 using student's t-test).
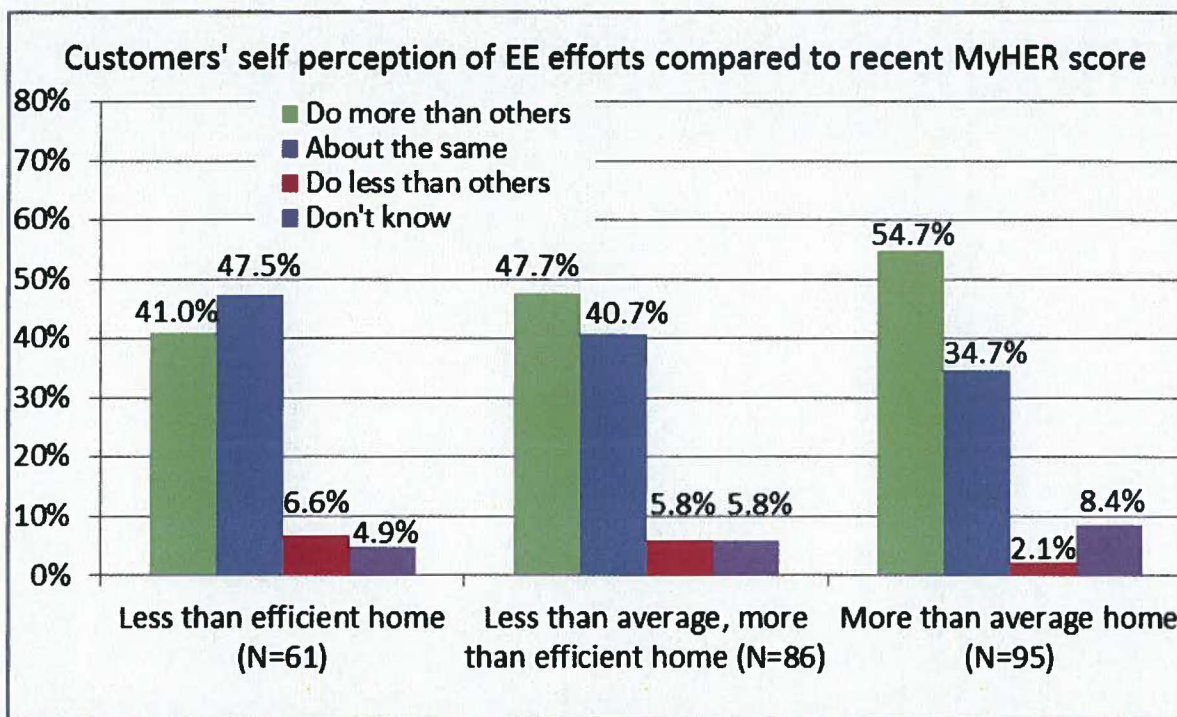

Figure 8. Comparing Customers' Actual Recent MyHER Scores to Self Perception
Note: seven surveyed recipients do not have recent MyHER scores and are not included in this chart.

What Energy Efficiency Means to Customers
We asked all surveyed customers to define in their own words "what it means to be energy efficient". The responses are categorized below in Table 6. More than half of customers defined energy efficiency to include "using less energy / using the least amount of energy necessary / not wasting energy" (54.2% or 135 out of 249) and about a third (32.9% or 82 out of 249) mentioned "saving money / being cost effective / keeping rates down." All other responses were mentioned by fewer than 10% of respondents surveyed.

Customers throw their MyHER away were significantly more likely to mention "saving money" (66.7% or 6 out of 9, compared to 31.7% or 76 out of 240 among those who read the reports) and significantly less likely to mention "use less energy / don't waste" (22.2% or 2 out of 9 compared to