EVERGREEN ECONOMICS

# Independent EM&V Audit of the KCP&L-MO PY2016 Program Evaluations

Final Report

December 22, 2017

MichaelsEnergy

# Table of Contents

# 1 Executive Summary

In April 2016, the Missouri Public Service Commission (the PSC) approved Missouri Energy Efficiency Investment Act (MEEIA) Cycle 2 DSM programs for the Great Plains Energy Services Incorporated (GPES) affiliate, Kansas City Power and Light (KCP&L) – KCP&L Missouri Operations Company (KCP&L-MO) (Case No. EO-2015-0240). Of the sixteen Cycle 2 programs approved in the MEEIA, KCP&L implemented fifteen no later than the second quarter of 2016.[1] All fifteen programs will terminate no later than March 31, 2019. The fifteen MEEIA Cycle 2 Programs are:

- **Business EER – Standard –** Offered to KCP&L legacy Missouri C&I customers, this program is designed to offer a diverse set of measures that have standardized measure savings and an incentive process that helps to improve accessibility to the customer. Eligible measures include air conditioning units, lighting and controls, refrigeration, water heating and appliances.
- **Business EER - Custom -** Offered to all KCP&L C&I customers, the program provides incentives for a broad range of projects that do not fit within the Business EER – Standard program. The program delivers rebates to projects that achieve a TRC score of 1.0 or higher.
- **Block Bidding -** Offers incentives to large C&I customers and trade allies to complete large projects that would be capped at $500,000 for the Custom or Standard programs. Customers can reserve financial incentives ranging from $50,000 to $1 million for planned EE projects.
- **Strategic Energy Management –** Provides incentives for C&I customers to implement a continuous energy management improvement process that results in energy savings and reductions in energy intensity for industrial and large commercial clients
- **Small Business Lighting –** Available to small business customers, with an average monthly demand below 100 kW, the program provides energy assessments that includes information on potential energy savings and anticipated payback and offers higher incentives on specific lighting measures than the Standard program to help small business customers overcome financial barriers to adoption.
- **Business Programmable Thermostat** – Incentivizes commercial customers to use a Nest thermostat, and allow KCP&L to remotely operate their HVAC system during peak demand periods by sending a signal to participating thermostats.
- **Demand Response Incentive -** Provides rebates to C&I customers for curtailing their energy usage during system peak demand periods. When KCP&L calls an

[1] The Home Appliance Recycling Rebate (HARR) program had not been implemented by KCP&L at the time of the evaluations. It is not counted as an active program.

event, participants reduce their load toward a pre-defined firm power level to create the demand savings.

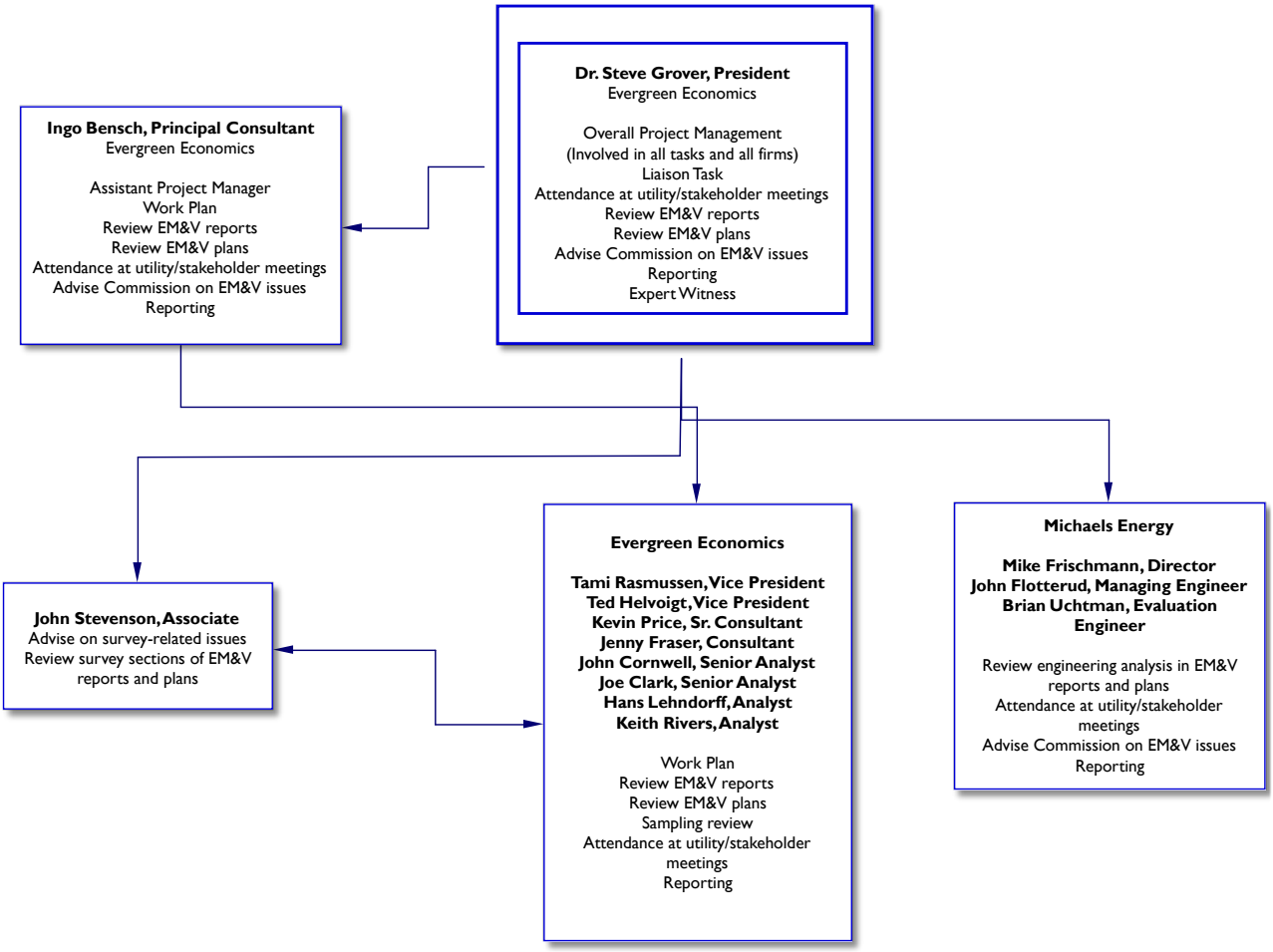
- **Whole House Efficiency –** Promotes home energy audits and comprehensive retrofits to encourage whole house improvements to existing homes. Customers are eligible for this program if they own or rent a residence or are constructing a new residence and can receive assistance based on three tiers: Tier 1: Home Energy Audits and Energy Savings Kits, Tier 2 – Weatherization Measures, and Tier 3 – HVAC Equipment.
- **Home Lighting Rebate –** Offers upstream incentives to partnering manufacturers and retailers in the KCP&L-MO and GMO service territories to discount the shelf-price of LED bulbs.
- **Home Energy Report (HER) Program-** Distributes single-page print reports by mail to educate residential customers about their home energy usage and provide them with information designed to encourage behavior change in energy use.
- **Income-Eligible Home Energy Report (HER) Program** - Identical to the HER program except report messaging focuses on low- or no-cost ways to save energy.
- **Residential Programmable Thermostat** – Incentivizes residential customers to use a Nest thermostat, and allow KCP&L to remotely operate their HVAC system during peak demand periods by sending a signal to participating thermostats.
- **Income-Eligible Multifamily –** Offers efficiency kits installed directly in residences, and installation of efficient lights into multifamily common areas to delivers long-term energy savings and bill reduction to residents in income-eligible multifamily housing.
- **Home Online and Business Online Energy Audit –** Provide access for small business and residential customers to an online tool to track and analyze their energy use and receive educational materials on energy savings for heating, cooling, lighting, and other electrical equipment. No savings are claimed by this program.

To ensure that programs comply with Missouri's rules regarding electric utility resource planning, the PSC has rules requiring annual impact evaluations and process evaluations. Minimum requirements that evaluations must meet are stipulated in 4 CSR 240-22.070(8).

KCP&L-MO contracted with an evaluation team led by Navigant Consulting, Inc. (Navigant) that included Illume Advising LLC (Illume), and NMR GROUP, INC. (NMR). The evaluation team conducted comprehensive impact and process evaluations of KCP&L-MO's energy efficiency portfolio in PY2016. For the purposes of this report the evaluation team will be referred to as "the Navigant team".

In 2017, the Missouri PSC contracted with Evergreen Economics to serve in the capacity of EM&V Auditor. Figure 1 shows the audit team members and organization, the individual team members by firm, and the associated audit responsibilities.

**Figure 1: Evergreen Audit Team Organization**




The audit team is required to review program evaluation activities and provide comments on compliance with 4 CSR 240-22.070(8) and the overall quality, scope and accuracy of the program evaluation reports, as well as recommendations to improve the evaluation and reporting process. Key findings of the Evergreen team's review are summarized below.

## 1.1 Summary of Audit Conclusions and Recommendations

A review of PY2016 evaluation report indicates that the reports and appendices are well written, complete, and meet the minimum requirements for impact and process evaluations stipulated in 4 CSR 240-22.070(8). The evaluation methods and reports are also consistent with the best practices established for the industry. During the course of the audit, we have identified a few areas where we believe that the evaluations can be improved, and these recommendations are detailed throughout this audit report.

The following is a summary of some issues that were discussed as part of the evaluation report review process. These issues were for the most part resolved for the final evaluation report, but are being reported here to maintain a record of the discussion and to serve as a reminder for future evaluation reports.

**Free Ridership**

In Appendix C of the evaluation report, the discussion of free ridership contains the following relating to the trade ally interviews:

> "The trade ally estimates of free ridership are used as a cap on the participant estimates of free ridership…. (p. 104)"

In draft versions of the evaluation report, it was not clear when the trade ally results were used in place of the participant survey results. We recommend that when the trade ally results are used, the report should include a) the trade ally free ridership value, b) the free ridership value based on the participant survey results, and c) a discussion of how the trade ally free ridership rate is calculated along with a justification for its use for that particular program. This issue was resolved in the final evaluation report.

**Use of Illinois TRM Values**

For several measures and programs, the deemed savings values from the Illinois TRM were used rather than available values from the Missouri TRM. This issue was discussed with the evaluation team at length for the Whole House Efficiency program, and in particular with the cooling hours used in the savings calculations for the Energy Star AC measures. In our earlier comments on the draft evaluation reports, we also noted that Illinois values were also used for the Home Lighting Rebate program but did not include adequate explanation.

As noted in our earlier comments, the Missouri TRM has a cooling hour value of 728 hours. In the last two evaluations, Navigant used the following values from Illinois that were adjusted to match Missouri conditions:

- FLH_cooling (PY 2015) 629 Hours: The PY 2015 evaluation used the weighted average value from the IL TRM. This value is the weighted average of Rockford, Chicago, Springfield, Belleville, and Marion, based on number of occupied residential housing units in each zone.
- FLH_cooling (PY2016) 982 Hours: The evaluation report states that the "Effective full load cooling hours = 982 based on normalizing Kansas City's ENERGY STAR cooling hours to correlate with the Illinois TRM Version 5 effective full load cooling hours using cooling degree days."

Although the full load hours calculation method was appropriate, it resulted in an increase of 56 percent in the evaluated full load hours parameter between PY2015 and PY2016. The savings between the two program years also varied accordingly, and this type of volatility makes it difficult for evaluators and other stakeholders to assess the trends of the program over time. In future years, we recommend that a consistent evaluation method be used to help reduce the variation in savings estimates caused by changes in approach.

Similar to the full load hours discussion, the baseline efficiency used for the residential air conditioner replacement measure required additional information from Navigant after the review of the draft report. In the draft evaluation report, the current baseline EER value of 6.82 was also derived from the Illinois TRM but was inconsistent with data that had been presented in the PY2015 evaluation report. Due to employee turnover at Navigant, it was not possible to completely reconcile the differences between the PY2015 and PY2016 baseline efficiency values. The audit team did not find any issues with the current calculation methods, however, but had difficulty in making a comparison with the earlier evaluation results.

The change in baseline efficiency between PY2015 and PY2016 (and the related challenges in documenting these calculations with adequate detail) also illustrates the benefits from using consistent evaluation methods across program years.

**Coordinating primary data collection with Ameren Missouri**

The use of the Illinois TRM values in the current evaluations was due to a lack of Missouri-specific primary data on existing HVAC units. However, the evaluation teams for both Ameren Missouri and KCP&L have collected significant amounts of data on the measured efficiencies of existing air conditioning units. The evaluation teams from both utilities should work together to create a combined statewide dataset that could be used to update the Missouri TRM.

We recommend that the evaluator and KCP&L coordinate with Ameren Missouri for any available primary data from their evaluations. The significant variability in the evaluation results year over year, combined with the lack of available primary data on full load cooling and heating hours in Missouri, should make this collaboration a priority.

We also recommend that KCP&L coordinate with Ameren Missouri to provide a combined statewide dataset for existing air conditioning units. The KCP&L and Ameren Missouri evaluators have gathered significant amounts of primary data related to measured efficiencies of existing air conditioning units. Gathering these data into a combined dataset could provide both utilities with additional data points to fine tune program savings and evaluation estimates. These data would also be very helpful for updating the Missouri TRM with actual primary data from both utility service territories.

**Home Energy Report**

To estimate savings for the Home Energy Report, both a fixed effects and a post-period regression model are estimated to determine impacts. Although both models are estimated, only the results from the post-period regression model are used to determine program savings. We recommend that the impact estimates from both models be reported, along with a justification for why the post-period regression model results are preferred over the fixed effects model. The coefficient estimates and other model diagnostics should also be reported for both models. This information was missing for the draft report but was ultimately included in the final evaluation report.

A separate issue is how participation in other efficiency programs is addressed in the impact analysis. The comparison between the treatment and control groups in the pre-period should include a comparison of participation rates in the other KCP&L/GMO energy efficiency programs. Differences between the groups in program participation in the pre-period can affect the savings estimates in two ways. First, if there are differences in program participation rates, then some of the observed savings from the HER in the post-period should be attributed to the other efficiency programs. Second, the estimate of program uptake in the post-period will also be affected if there are already unequal levels of program participation in the pre-period. The magnitude of both these effects can be estimated by including a variable for program participation in the billing regression, if in fact there are differences in participation rates between treatment and control groups.

Note that there is some discussion of similar participation rates between the treatment and control group in the evaluation report appendix, but it is unclear if this was actually tested for, or merely assumed. More detail on how the issue of cross program participation should be included in future evaluation reports.

# 2 Introduction

The Missouri Energy Efficiency Investment Act (MEEIA) was passed in 2009, launching a new era for energy efficiency programs in Missouri. The Missouri Public Service Commission (the PSC) adopted four administrative rules (4 CSR 240-3.163, 4 CSR 240-3.164, 4 CSR 240-20.093 and 4 CSR 240-20.094) referred to as "MEEIA rules") to implement MEEIA.[2] MEEIA directs the PSC to permit electric corporations to implement Commission-approved demand side management (DSM) programs, with a goal of achieving cost-effective demand-side savings.

In 2009, the State of Missouri and KCP&L-MO reached an agreement that launched KCP&L-MO's suite of residential and commercial energy efficiency programs, which began in 2013 as MEEIA Cycle 1. The MEEIA Cycle 1 programs ended on December 31, 2015, for KCP&L-MO (Case No. EO-2012-0142). In early 2016, the PSC approved MEEIA Cycle 2 DSM programs for KCP&L-MO (Case No. EO-2015-0055). All Cycle 2 programs were implemented no later than the second quarter of 2016, and all will terminate no later than March 31, 2019. The MEEIA Cycle 2 programs are:

- **Business EER – Standard –** Offered to KCP&L legacy Missouri C&I customers, this program is designed to offer a diverse set of measures that have standardized measure savings and an incentive process that helps to improve accessibility to the customer. Eligible measures include air conditioning units, lighting and controls, refrigeration, water heating and appliances.
- **Business EER - Custom -** Offered to all KCP&L C&I customers, the program provides incentives for a broad range of projects that do not fit within the Business EER – Standard program. The program delivers rebates to projects that achieve a TRC score of 1.0 or higher.
- **Block Bidding -** Offers incentives to large C&I customers and trade allies to complete large projects that would be capped at $500,000 for the Custom or Standard programs. Customers can reserve financial incentives ranging from $50,000 to $1 million for planned EE projects.
- **Strategic Energy Management –** Provides incentives for C&I customers to implement a continuous energy management improvement process that results in energy savings and reductions in energy intensity for industrial and large commercial clients
- **Small Business Lighting –** Available to small business customers, with an average monthly demand below 100 kW, the program provides energy assessments that includes information on potential energy savings and anticipated payback and

[2] The PSC is currently in the process of revising the MEEIA rules.

offers higher incentives on specific lighting measures than the Standard program to help small business customers overcome financial barriers to adoption.

- **Business Programmable Thermostat –** Incentivizes commercial customers to use a Nest thermostat, and allow KCP&L to remotely operate their HVAC system during peak demand periods by sending a signal to participating thermostats.
- **Demand Response Incentive -** Provides rebates to C&I customers for curtailing their energy usage during system peak demand periods. When KCP&L calls an event, participants reduce their load toward a pre-defined firm power level to create the demand savings.
- **Whole House Efficiency –** Promotes home energy audits and comprehensive retrofits to encourage whole house improvements to existing homes. Customers are eligible for this program if they own or rent a residence or are constructing a new residence and can receive assistance based on three tiers: Tier 1: Home Energy Audits and Energy Savings Kits, Tier 2 – Weatherization Measures, and Tier 3 – HVAC Equipment.
- **Home Lighting Rebate –** Offers upstream incentives to partnering manufacturers and retailers in the KCP&L-MO and GMO service territories to discount the shelf-price of LED bulbs.
- **Home Energy Report (HER) Program-** Distributes single-page print reports by mail to educate residential customers about their home energy usage and provide them with information designed to encourage behavior change in energy use.
- **Income-Eligible Home Energy Report (HER) Program** - Identical to the HER program except report messaging focuses on low- or no-cost ways to save energy.
- **Residential Programmable Thermostat –** Incentivizes residential customers to use a Nest thermostat, and allow KCP&L to remotely operate their HVAC system during peak demand periods by sending a signal to participating thermostats.
- **Income-Eligible Multifamily –** Offers efficiency kits installed directly in residences, and installation of efficient lights into multifamily common areas to delivers long-term energy savings and bill reduction to residents in income-eligible multifamily housing.
- **Home Online and Business Online Energy Audit –** Provide access for small business and residential customers to an online tool to track and analyze their energy use and receive educational materials on energy savings for heating, cooling, lighting, and other electrical equipment. No savings are claimed by this program.

To ensure that programs comply with Missouri's rules regarding electric utility resource planning, the PSC has long-term resource planning rules that contain requirements for impact evaluations and process evaluations. The goal of the impact and process evaluations is "to develop the information necessary to evaluate the cost-effectiveness and improve the design of existing and future demand-side programs and demand-side rates,

to improve the forecasts of customer energy consumption and responsiveness to demand-side programs and demand-side rates and to gather data on the implementation costs and load impacts of demand-side programs and demand-side rates for use in future cost-effectiveness screening and integrated resource analysis."[3]

Key requirements of the evaluations as outlined in 4 CSR 240-22.070(8) include the following:

- Utilities are expected to complete annual full process and impact evaluations for each DSM program.
- **At a minimum, impact evaluations should:**
  1. "develop methods of estimating the actual load impacts of each demand-side program" using one or both of the following methods:
     a. "Comparisons of pre-adoption and post-adoption loads of program participants, corrected for the effects of weather and other intertemporal differences"; and
     b. "Comparisons between program participants' loads and those of an appropriate control group over the same time period".
  2. "develop load-impact measurement protocols that are designed to make the most cost-effective use of the following types of measurements, either individually or in combination: monthly billing data, load research data, end-use load metered data, building and equipment simulation models, and survey responses or audit data on appliance and equipment type, size and efficiency levels, household or business characteristics, or energy-related building characteristics".
  3. Develop protocols to collect data regarding demand-side program market potential, participation rates, utility costs, participant costs and total costs.
- **At a minimum, process evaluations should** address the following five questions:
  1. What are the primary market imperfections that are common to the target market segment?
  2. Is the target market segment appropriately defined or should it be further subdivided or merged with other segments?
  3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target segment?

[3] 4 CSR 240-22.070(8) Evaluation of Demand-Side Programs and Demand–Side Rates

4. Are the communication channels and delivery mechanisms appropriate for the target segment?
5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?

KCP&L-MO contracted with Navigant Consulting, Inc. (Navigant) as the Evaluation, Measurement & Verification (EM&V) contractor, to conduct comprehensive impact and process evaluations of KCP&L-MO's energy efficiency portfolio. Navigant conducted evaluations of both the commercial and residential energy efficiency programs.

In 2017, the PSC contracted with Evergreen Economics and Michaels Energy (the Evergreen team) to serve in the capacity of EM&V Auditor to review program evaluation activities and provide comments on compliance with 4 CSR 240-22.070(8) and the overall quality, scope and accuracy of the program evaluation reports. The following report presents Evergreen Economics' review of the KCP&L-MO program evaluations for program year 2016 (PY2016).

To conduct this review, the Evergreen team conducted the following activities:

- Thoroughly read each program's evaluation report in its entirety, summarizing key information on evaluation methodology, findings and recommendations for each program.
- Conducted a thorough review of all evaluation survey instruments and responses where available to confirm the methodologies used were reasonable and consistent with best practices and that reported findings aligned with the data collected.
- Reviewed, where available, specific evaluation tools and methodologies used for calculating program savings, including custom project savings calculations, and survey methods for developing net program impacts.

This report is organized into the following sections to help guide the reader through this summary of the key results:

- Section 3: Impact Evaluation Summary
- Section 4: Summary of Key Findings and Recommendations from the Process Evaluations
- Section 5: Review of Cost-Effectiveness Findings
- Section 6: Evergreen Team's Findings and Recommendations

# 3 Impact Evaluation Summary

This section summarizes the results and key findings and recommendations from the impact evaluations of KCP&L-MO's residential and business energy efficiency program portfolio. Note that the following programs do not have associated energy savings in 2016, and are omitted from exhibits in this section:

- Business Energy Efficiency Rebate – Block Bidding
- Strategic Energy Management
- Home Online Energy Audit
- Business Online Energy Audit

## 3.1 Summary of Impact Evaluation Methods

Navigant followed the Missouri Code of State Regulations 4 CSR-240-22-070 (8), completing impact evaluations for each KCP&L-MO program that reported energy savings in 2016. Missouri regulations state that programs should be evaluated using one or both of the methods and one or both of the protocols detailed below.

### *1) Impact Evaluation Methods*

"At a minimum, comparisons of one or both of the following types shall be used to measure program and rate impacts in a manner that is based on sound statistical principles:

a) Comparisons of pre-adoption and post-adoption loads of program or demand-side rate participants, corrected for the effects of weather and other intertemporal differences.
b) Comparisons between program and demand-side rate participants' loads and those of an appropriate control group over the same time period."

### *2) Load Impact Measurement Protocols*

"The evaluator shall develop load impact measurement protocols designed to make the most cost-effective use of the following types of measurements, either individually or in combination:

a) Monthly billing data, hourly load data, load research data, end-use load metered data, building and equipment simulation models, and survey responses.
b) Audit and survey data on appliance and equipment type, size and efficiency levels, household or business characteristics, or energy-related building characteristics."

Table 1 below summarizes Navigant's methods and protocols, for each. The labels in columns two and three align with the Missouri requirements discussed above.

## Table 1: Impact Evaluation Methods and Protocols

| Program | Impact Method | Impact Protocol | Description |
|---|---|---|---|
| **Commercial and Industrial Programs** | | | |
| Business EER - Standard | Ia | 2a and 2b | • Deemed savings calculation review<br>• Tracking database review<br>• Onsite verification (40 sites) |
| Business EER - Custom | Ia | 2b | • Tracking database review<br>• Engineering desk review (5 of 16 sites) |
| Small Business Lighting | Ia | 2b | • Deemed savings calculation review<br>• Tracking database review<br>• Onsite verification and lighting logger study (40 sites) |
| Business Programmable Thermostat | Ia | 2a and 2b | • Deemed savings calculation review<br>• Tracking database review |
| Demand Response Incentive | Ib | 2b | • Tracking database review<br>• Econometric and customer baseline analysis |
| **Residential Programs** | | | |
| Whole House Efficiency | Ia | 2b | • Deemed savings calculation review<br>• Tracking database review |
| Home Lighting Rebate | Ia | 2b | • Deemed savings calculation review<br>• Tracking database review<br>• Demand elasticity model for net savings |
| Income-Eligible Home Energy Report | Ib | 2a | • Billing Analysis |
| Home Energy Report | Ib | 2a | • Billing Analysis |
| Residential Programmable Thermostat | Ib | 2b | • Deemed savings calculation review<br>• Tracking database review |
| Income-Eligible Multifamily | Ia | 2b | • Deemed savings calculation review<br>• Tracking database review |

### 3.1.1 Net-to-Gross Calculation Methods

Navigant developed net-to-gross (NTG) ratios for selected KCP&L programs to estimate net program savings. Net savings are the portion of total estimated savings that are directly attributable to a specific energy efficiency program. Net savings estimates typically account for one or more of the following:

- **Free Ridership (FR) -** program savings attributable to program participants who would have implemented a program measure or practice in the absence of the program.
- **Participant Spillover (PSO) -** additional energy savings achieved when a program participant installs energy efficiency measures or practices as a result of the program's influence outside the efficiency program.
- **Nonparticipant Spillover (NPSO) -** additional energy savings achieved when a nonparticipant implements energy efficiency measures or practices because of the program's influence (e.g., through exposure to the program).

The net-to-gross ratio for each program adjusts gross program savings to account for the presence of free ridership, participant spillover, and non-participant spillover. The general formula for calculating the net-to-gross ratio is:

NTG Ratio = 1 – FR rate + PSO rate + NPSO rate

Navigant conducted research to develop net-to-gross ratios for four programs, the Business EER Standard, Small Business Lighting, Whole House Efficiency, and Home Lighting Rebate programs. Navigant estimated free ridership, participant spillover, and non-participant spillover for the first three of these programs using a self-report survey method. The approach used surveys designed to assess the likelihood that participants would have installed some or all of the energy efficiency measures incentivized by the program even if the program had not existed. The participant surveys were based on a framework developed by Energy Trust of Oregon.

Navigant used demand elasticity modeling to estimate free ridership Home Lighting Rebate program-specific methodology. This approach used program-tracking information to customer sensitivity to prices, also known as price or demand elasticity. A customer's sensitivity to price changes can be used as a proxy for free ridership. As sensitivity to price increases, the likelihood of free-ridership decreases. This method does not provide estimates for program spillover.

Of the remaining program evaluations, Navigant either used billing analysis to estimate savings, a method that estimates net savings directly, used a deemed net-to-gross ratio of 1, or used a net-to-gross ratio from prior year evaluations. Table 2 below summarizes the method used for each program.

**Table 2: Net Savings Methods***

| Program | Self Report | Billing Analysis | Demand Elasticity Model | Deemed Value (1.00) | Prior Year Value |
|---|---|---|---|---|---|
| **Commercial Programs** | | | | | |
| Business EER - Standard | X | | | | |
| Business EER - Custom | | | | | X |
| Small Business Lighting | X | | | | |
| Business Programmable Thermostat | | X | | | |
| Demand Response Incentive | | X | | | |
| **Residential Programs** | | | | | |
| Whole House Efficiency | X | | | | |
| Home Lighting Rebate | | | X | | |
| Income-Eligible Home Energy Report | | X | | | |
| Home Energy Report | | X | | | |
| Residential Programmable Thermostat | | X | | | |
| Income-Eligible Multifamily | | | | X | |

* Block Bidding and Strategic Energy Management programs were had no reported energy savings in 2016.

## 3.2 Summary of Impact Evaluation Findings

In this section, we provide a summary of the energy savings goals and accomplishments across KCP&L-MO's energy efficiency program portfolio. Table 3 and Table 4 show KCP&L-MO's energy efficiency targets, *ex ante* gross values, *ex post* gross values, the evaluated *ex post* net savings (evaluated) and net achievement compared to the targets for energy savings (kWh) and demand reductions (kW), respectively. To ensure clarity, these terms are defined as follows:

- **Ex *Ante* Gross Savings:** Annualized savings reported by KCP&L-MO, or calculated using tracked program activity to TRM savings values.
- ***Ex Post* Gross Savings:** Annualized savings calculated and provided by the evaluation team.
- **Net Savings *Ex Post*:** *Ex post* savings multiplied by the net-to-gross ratio, accounting for free ridership, spillover effect and market effects.
- **PSC-Approved Targets:** Annualized savings targets for the residential and commercial and industrial (C&I) sectors.

## Table 3: KCP&L-MO Portfolio Energy Savings in PY2016, KWh

| Program | Ex Ante Gross Savings | Ex Post Gross Savings | Gross Realization Rate | NTG Ratio | Net Savings Ex Post | PSC – Approved 3-Year Targets | % of Target Reached |
|---|---|---|---|---|---|---|---|
| Business EER - Standard | 68,130,110 | 42,874,084 | 63% | 96% | 41,159,121 | 58,370,690 | 71% |
| Business EER - Custom | 3,070,840 | 3,040,294 | 99% | 92% | 2,797,070 | 44,361,460 | 6% |
| Block Bidding* | N/A | N/A | N/A | 100% | 0 | 10,059,398 | 0% |
| Strategic Energy* Management | N/A | N/A | N/A | N/A | N/A | 9,027,253 | 0% |
| Small Business Lighting | 2,074,232 | 1,286,782 | 62% | 87% | 1,122,074 | 3,509,634 | 32% |
| Business Programmable Thermostat | 39,732 | 31,866 | 80% | 100% | 31,866 | 98,406 | 32% |
| Demand Response Incentive* | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| ***Total Commercial Portfolio*** | **73,314,914** | **47,233,026** | **64%** | **96%** | **45,110,131** | **125,426,841** | **36%** |
| Whole House Efficiency | 2,802,982 | 3,463,940 | 124% | 82% | 2,840,431 | 17,468,256 | 16% |
| Home Lighting Rebate | 11,724,825 | 10,657,797 | 91% | 84% | 8,877,488 | 24,692,870 | 36% |
| Income-Eligible Home Energy Report | 1,753,762 | 1,451,448 | 83% | 100% | 1,451,448 | 1,682,756 | 86% |
| Home Energy Report | 17,189,331 | 17,089,133 | 99% | **100%** | 17,089,133 | 13,861,941 | 123% |
| Residential Programmable Thermostat | 2,396,856 | 2,143,668 | 89% | **100%** | 2,143,668 | 4,388,076 | 49% |
| ***Total Residential Portfolio*** | **35,867,756** | **34,805,986** | **97%** | **93%** | **32,402,168** | **62,093,899** | **52%** |
| Income-Eligible Multifamily | 2,267,398 | 1,840,226 | 81% | 100% | 1,840,226 | 10,577,132 | 17% |
| ***Total Multifamily Portfolio*** | **2,267,398** | **1,840,226** | **81%** | **100%** | **1,840,226** | **10,577,132** | **17%** |
| **Total**** | **111,450,068** | **83,879,238** | **75%** | **95%** | **79,352,525** | **198,097,872** | **40%** |

* The Block Bidding and Strategic Energy Management programs were not active in 2016 and had no reported energy savings. The Demand Response Incentive program does not report energy savings, only demand savings.
**Totals may not sum due to rounding

Overall, in PY2016, year one of the three-year cycle, the portfolio saw gross evaluated savings of an estimated 83,879,238 kWh, a gross realization rate of 75%. Total portfolio net savings were estimated at 79,352,525 kWh. The portfolio achieved approximately 40% the three-year MEEIA Cycle 2 energy target, which is a cumulative 3-year target, indicating the programs in aggregate, are progressing toward meeting the MEEIA Cycle 2 targets.

The residential portfolio achieved 52 percent of the three-year target net savings goal in 2016. The Home Energy Report program contributed the highest savings and had the highest savings relative to its target, with 123 percent of its three-year goal achieved in 2016. The Home Lighting Rebate was the next highest contributor to the overall residential savings with 8,877,488 kWh, which is 36 percent of the 3-year target.

The 2016 C&I portfolio had higher overall savings than the residential portfolio with 45,110,131 kWh net savings. Compared to the residential program, the C&I portfolio was less successful in terms of reaching the three-year goals with 36 percent of the goal achieved. This still places the C&I portfolio as a whole on track to meet the goal of three years. The Business EER – Standard program saw the largest savings in terms of total savings and as a proportion of the three-year savings goal, achieving net savings of 41,159,121 kWh or 71 percent of the three-year goal. The Block Bidding and Strategic Energy Management programs did not see savings in 2016, but are likely to have savings in subsequent years.

Table 4 displays the KCP&L results for demand savings. In PY2016, year one of the three-year cycle, the portfolio saw gross evaluated demand savings of an estimated 33,116 kW kWh, a gross realization rate of 91%. Total portfolio net demand savings were estimated at 32,263 kW. The portfolio achieved approximately 49% the three-year MEEIA Cycle 2 demand savings target, which is a cumulative 3-year target, indicating the programs are in aggregate progressing toward meeting the targets.

## Table 4: KCP&L-MO Portfolio Demand Savings in PY2016, KW

| Program | Ex Ante Gross Savings | Ex Post Gross Savings | Gross Realization Rate | NTG Ratio | Net Savings Ex Post | PSC – Approved Targets | % of Target Reached |
|---|---|---|---|---|---|---|---|
| Business EER - Standard | 12,225 | 6,855 | 56% | 96% | 6,581 | 10,934 | 60% |
| Business EER - Custom | 438 | 526 | 120% | 92% | 484 | 12,128 | 4% |
| Block Bidding | 0 | 0 | 0% | N/A | 0 | 1,744 | 0% |
| Strategic Energy Management | 0 | 0 | 0% | N/A | 0 | 2,021 | 0% |
| Small Business Lighting | 359 | 202 | 56% | 87% | 176 | 562 | 31% |
| Business Programmable Thermostat | 108 | 84 | 78% | 100% | 84 | 268 | 31% |
| Demand Response Incentive | 10,034 | 13200 | 132% | 1 | 13,200 | 15000 | 88% |
| ***Total Commercial Portfolio*** | **23,164** | **20,867** | **90%** | **98%** | **20,525** | **42,657** | **48%** |
| Whole House Efficiency | 1,172 | 1,690 | 144% | 82% | 1,386 | 4,322 | 32% |
| Home Lighting Rebate | 1,174 | 1,241 | 106% | 84% | 1,034 | 2,498 | 41% |
| Income-Eligible Home Energy Report | 316 | 262 | 83% | 100% | 262 | 474 | 55% |
| Home Energy Report | 3,869 | 3,847 | 99% | **100%** | 3,847 | 2,866 | 134% |
| Residential Programmable Thermostat | 6,558 | 5,017 | 77% | **100%** | 5,017 | 11,967 | 42% |
| ***Total Residential Portfolio*** | **13,089** | **12,057** | **92%** | **96%** | **11,546** | **22,127** | **52%** |
| Income-Eligible Multifamily | 230 | 192 | 83% | 100% | 192 | 1,543 | 12% |
| ***Total Multifamily Portfolio*** | **230** | **192** | **83%** | **100%** | **192** | **1,543** | **12%** |
| **Total**** | **36,483** | **33,116** | **91%** | **97%** | **32,263** | **66,327** | **49%** |

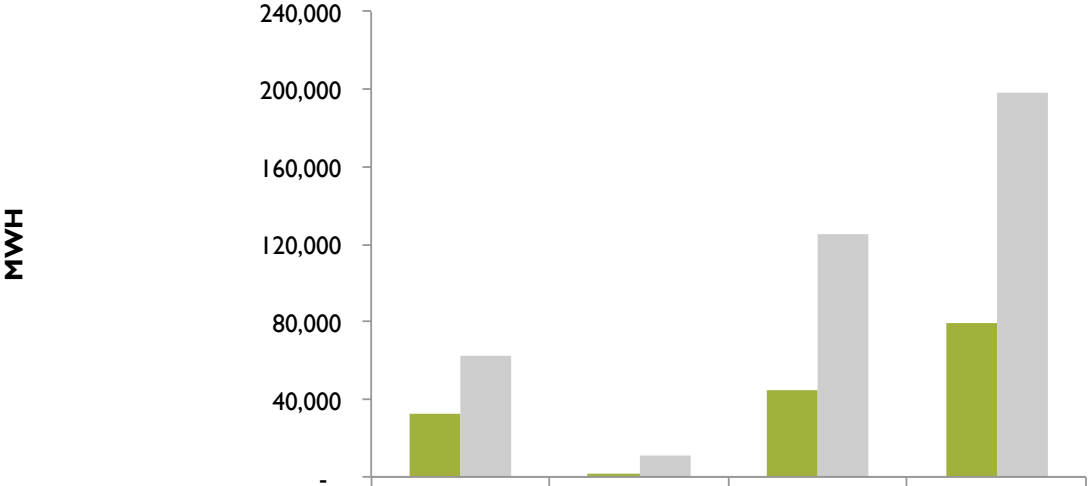
Table 5 shows estimated free ridership, spillover, and non-participant spillover rates along with the final net-to-gross ratios across the KCP&L 2016 program portfolio.

**Table 5: KCP&L-MO Portfolio Estimated Free Ridership, Spillover and NTG Ratio**

| Program | Free Ridership | Participant Spillover | Non-participant Spillover | NTG Ratio |
|---|---|---|---|---|
| Business EER - Standard | 0.05 | 0.002 | 0.004 | 0.96 |
| Business EER - Custom | 0.12 | 0.04 | 0 | 0.92 |
| Block Bidding | N/A | N/A | N/A | 1.00 |
| Strategic Energy Management | N/A | N/A | N/A | 1.00 |
| Small Business Lighting | 0.14 | 0.002 | 0.01 | 0.87 |
| Business Programmable Thermostat | N/A | N/A | N/A | 1.00 |
| Demand Response Incentive | N/A | N/A | N/A | 1.00 |
| Whole House Efficiency | 0.33 | 0.02 | 0.14 | 0.82 |
| Home Lighting Rebate | 0.16 | N/A | N/A | 0.84 |
| Income-Eligible Home Energy Report | N/A | N/A | N/A | 1.00 |
| Home Energy Report | N/A | N/A | N/A | 1.00 |
| Residential Programmable Thermostat | N/A | N/A | N/A | 1.00 |
| Income-Eligible Multifamily | N/A | N/A | N/A | 1.00 |

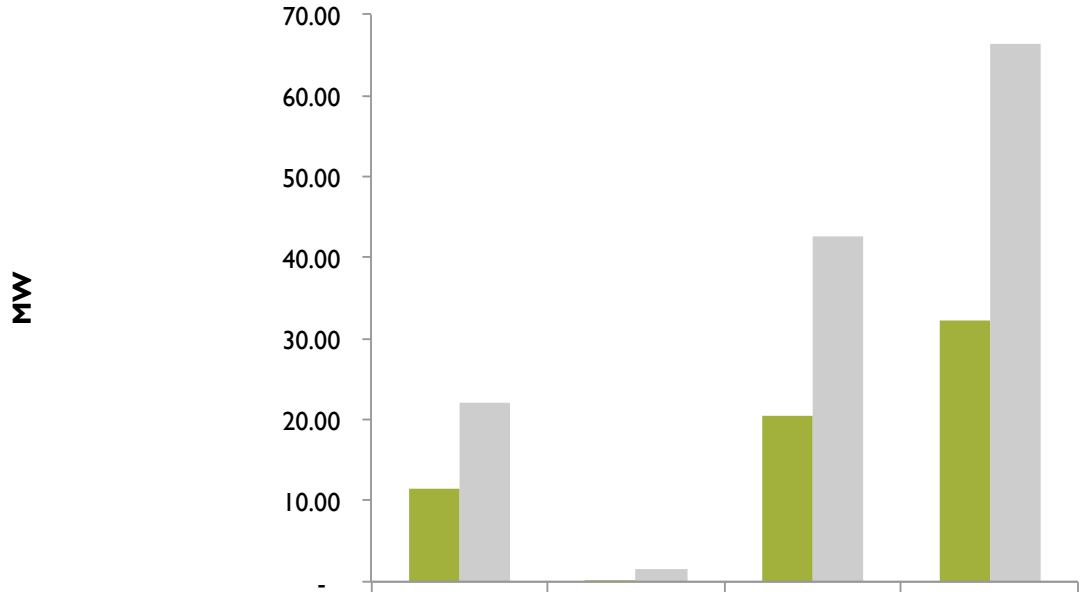
The following figures present summaries of 2016 net program savings compared to the three-year (2016-2018) MEEIA Cycle 2 program goals. Figure 2 and Figure 3 display the PY2016 net energy and demand savings targets and ex-post achievements by sector, as reported by evaluators. The residential and commercial portfolios, as well as the portfolio as a whole, are on track to meet or exceed the three year MEEIA Cycle 2 goals. The multifamily program did underperform in 2016, and is not on track to meet the three year MEEIA Cycle 2 goals. One reasons for this is Navigant adjusted ISR, HOU and CF values downward for the CFL lighting measure, which accounts for a large portion of the program savings. Navigant sourced these values from the Illinois TRM, with values of 83% for the ISR, 847 hours and a CF of 8.1%, compared with the deemed values from KCP&L of 938 hours and a CF of 10.0%.

## Figure 2: Energy Savings and Achievements by Sector: PY2016 MWh




| | Residential | Multifamily | C&I | Total |
|---|---|---|---|---|
| MWH 2016 ExPost Net Savings | 32,402 | 1,840 | 45,110 | 79,353 |
| MWH 2016-2018 Target Savings | 62,094 | 10,577 | 125,427 | 198,098 |

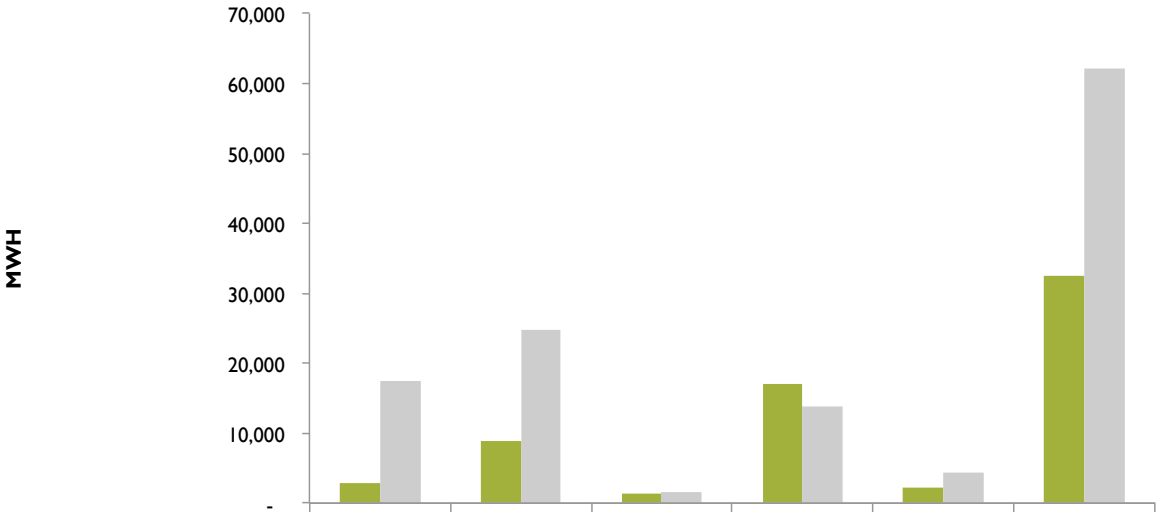
## Figure 3: Demand Savings Targets and Achievements by Sector: PY2016 MW




| | Residential | Multifamily | C&I | Total |
|---|---|---|---|---|
| MW 2016 ExPost Net Savings | 11.55 | 0.19 | 20.53 | 32.26 |
| MW 2016-2018 Target Savings | 22.13 | 1.54 | 42.66 | 66.33 |

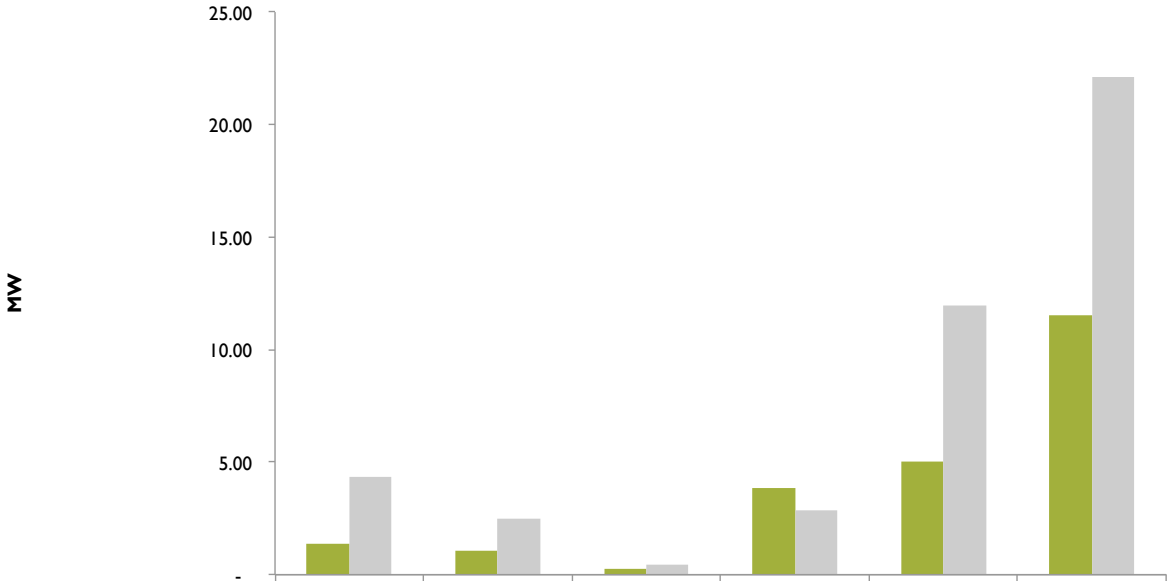
Figure 4 and Figure 5 present the findings for the 2016 energy target and demand savings goals and accomplishments across all six residential programs.

**Figure 4: Residential Programs Planned and Evaluated Savings: PY2016 MWh**




| | Whole House Efficiency | Home Lighting Rebate | Income-Eligible Home Energy Report | Home Energy Report | Residential Programmable Thermostat | Total Residential |
|---|---|---|---|---|---|---|
| MWH 2016 ExPost Net Savings | 2,840 | 8,877 | 1,451 | 17,089 | 2,144 | 32,402 |
| MWH 2016-2018 Target Savings | 17,468 | 24,693 | 1,683 | 13,862 | 4,388 | 62,094 |

**Figure 5: Residential Programs Planned and Evaluated Savings: PY2016 MW**




| | Whole House Efficiency | Home Lighting Rebate | Income-Eligible Home Energy Report | Home Energy Report | Residential Programmable Thermostat | Total Residential |
|---|---|---|---|---|---|---|
| MW 2016 ExPost Net Savings | 1.39 | 1.03 | 0.26 | 3.85 | 5.02 | 11.55 |
| MW 2016-2018 Target Savings | 4.32 | 2.50 | 0.47 | 2.87 | 11.97 | 22.13 |

At the portfolio level, the residential sector portfolio is on track to meet the MEEIA Cycle 2 energy and demand savings goals, achieving 52 percent of the net energy savings target of 62,094 MWh, and 52 percent of its net demand savings target of 22.13 MW. The Home Energy Report programs and Residential Programmable Thermostat program contributed the most savings to the residential portfolio.

The 2016 Whole House Efficiency saw a gross realization rate of 124%, achieving 3,463 MWh of verified gross energy savings. The program achieved 2,840 MWh of verified net energy savings, 16% of the three year MEEIA Cycle 2 target. The program achieved 1.39 MW of verified net coincident demand savings, 32% of the PY2016-PY2018 MEEIA target.

The Home Lighting Rebate Program achieved 10,657 MWh of verified gross energy savings at the customer meter in PY2016, for a realization rate of 91%. The results represent the combined savings from standard and specialty LEDs, with standard LEDs accounting for 72% of the savings. Net energy savings totaled 8,877 MWh, or 36% of the three-year MEEIA Cycle 2 target. The program achieved 1,241 kW of verified gross demand savings at the customer meter in PY2016, for a realization rate of 106%. Standard LEDs accounted for 74% of the savings. The net demand savings totaled 1,034 kW, or 41% of the three-year MEEIA target.

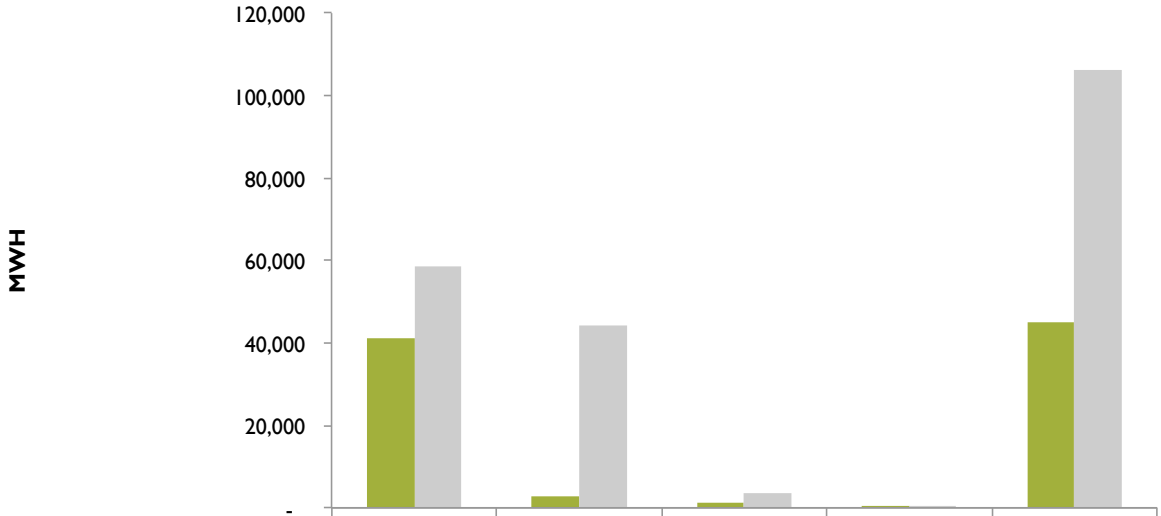
The Home Energy Report (HER) programs are on track or have exceeded the three year MEEIA Cycle 2 targets. The combined savings from the three waves of HER program customers amounted to 17,089,133 kWh energy savings at the customer meter in PY2016 for a realization rate of 99%. The program achieved 123% of the three year MEEIA Cycle 2 target. The standard HER program achieved 3,847 kW demand savings at the customer meter in PY2016 for a realization rate of 99%. The program achieved 134% of the three-year MEEIA Cycle 2 target.

The Income Eligible HER program achieved 1,451,448 kWh energy savings at the customer meter in PY2016 for a realization rate of 83%. The program achieved 86% of the three-year MEEIA Cycle 2 target. The Income Eligible HER program achieved 262 kW demand savings at the customer meter in PY2016 for a realization rate of 83%. The program achieved 55% of the 3-year Cycle 2 MEEIA target.

The Residential Programmable Thermostat program also performed well against the 3-year Cycle 2 MEEIA target. The program saved an estimated 2,143,668 kWh at the customer meter in PY2016 for a realization rate of 89% and 49% of the 3-year Cycle 2 MEEIA target. The program achieved 5,017 kW of demand impact in PY2016 for a realization rate of 77%, meeting 42% of the 3-year MEEIA target.

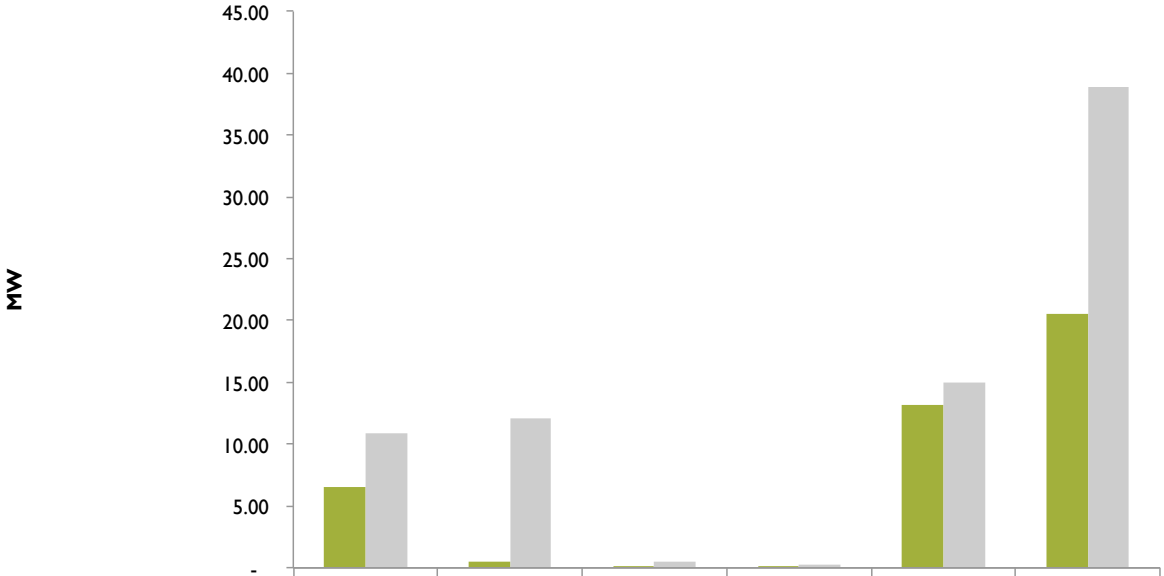
Figure 6 and Figure 7 summarize the 3-year Cycle 2 MEEIA target savings and evaluated savings for each Commercial sector program for the 2016 program year.

**Figure 6: Planned and Evaluated Savings: PY2016 MWh**




| | Business EER - Standard | Business EER - Custom | Small Business Lighting | Business Programmable Thermostat | Total Residential |
|---|---|---|---|---|---|
| MWH 2016 ExPost Net Savings | 41,159 | 2,797 | 1,122 | 32 | 45,110 |
| MWH 2016-2018 Target Savings | 58,371 | 44,361 | 3,510 | 98 | 106,340 |

**Figure 7: C&I Program Planned and Evaluated Savings: PY2016 MW***




| | Business EER - Standard | Business EER - Custom | Small Business Lighting | Business Programmable Thermostat | Demand Response Incentive | Total Residential |
|---|---|---|---|---|---|---|
| MW 2016 ExPost Net Savings | 6.58 | 0.48 | 0.18 | 0.08 | 13.20 | 20.53 |
| MW 2016-2018 Target Savings | 10.93 | 12.13 | 0.56 | 0.27 | 15.00 | 38.89 |

At the portfolio level, the commercial sector program portfolio is on track to meet the MEEIA Cycle 2 energy and demand savings goals, achieving 42 percent of the net energy savings target of 106,340 MWh, and 52 percent of its net demand savings target of 38.89 MW.[4] The Business EER – Standard program contributed the majority of savings to the portfolio.

The PY2016 Business EER – Standard program had 515 projects achieving 42,874 MW of verified gross savings and 12.25 MW verified gross demand savings. This represents a 63% realization rate for energy savings and a 56% realization rate for demand savings. The program achieved 41,159 MWh of verified net energy savings, meeting 70% of the three year MEEIA Cycle 2 target. The program achieved 6.58 MW of verified net demand savings, 60% of the PY2016-PY2018 MEEIA target. Lighting projects represented 99 percent of the program savings with HVAC, motors, drives and compressors and compressed air upgrades contributing the remaining 1 percent. Among lighting projects high-bay LED lighting upgrades contributed 78 percent of savings.

The PY2016 Business EER – Custom program had 16 projects achieving 3,040 MW of verified gross savings and 0.5 MW verified gross demand savings. This represents a 99% realization rate for energy savings and a 120% realization rate for demand savings. The program achieved 2,797 MWh of verified net energy savings, meeting 6% of the three-year MEEIA Cycle 2 target. The program achieved 0.5 MW of verified net demand savings, 4% of the three-year MEEIA Cycle 2 target. Savings are low compared to the targets due to shifting of LED lighting projects from the Custom program to the Standard program and limited awareness of non-lighting opportunities. Despite the shift of LED lighting projects, lighting still accounted for 41 percent of program savings, followed by building optimization projects (25%) motors, drives and compressors (21%), new construction (7%), and other miscellaneous projects including HVAC (5%).

The Small Business Lighting Program achieved 1,287 MWh of verified gross energy savings at the customer meter in PY2016, for a realization rate of 62%. Net energy savings totaled 1,122 MWh, or 32 percent of the three-year MEEIA Cycle 2 target. The program achieved 202 kW of verified gross demand savings at the customer meter in PY2016, for a realization rate of 56%. The net demand savings totaled 176 kW, or 31% of the three-year MEEIA Cycle 2 target. The difference in the gross realization rate was due to adjustments based on Navigant's engineering analysis and onsite verification work.

The Business Programmable Thermostat program saved an estimated 31,866 kWh of energy savings at the customer meter in PY2016 for a realization rate of 80%. The program achieved 32% of the three-year MEEIA Cycle 2 target. The program achieved 84 kW of

[4] This excludes the Block Bidding and Strategic Energy Management programs which did not claim savings in PY2016.

demand impact in PY2016 for a realization rate of 78%, meeting 31% of the three-year MEEIA Cycle 2 target.

Lastly, the Demand Response Incentive program achieved 88 percent of the three-year MEEIA Cycle 2 target. The program saw 13,200 kW in demand impacts in PY2016 for a realization rate of 132%. Reported and verified demand impacts are based on the amount of electricity curtailed, not whether customers met their FPL. Navigant did not calculate energy savings as KCP&L does not claim energy savings for the Demand Response Incentive program.

## 3.3 Summary of Key Impact Evaluation Recommendations

### 3.3.1 Recommendation Adoption Tracking

The Navigant 2015 KCP&L EM&V report provided impact evaluation recommendations for the Cycle 1 program portfolio. This section reviews the adoption status of these recommendations. Because there were program changes between Cycle 1 and Cycle 2, we only include recommendations for the following programs that were continued in Cycle 2:

- **Business Energy Efficiency Program – Standard**
- **Business Energy Efficiency Program – Custom**
- **Home Lighting Rebate**
- **Home Energy Report and Income Eligible Home Energy Report**
- **Programmable Thermostat**

The Navigant 2016 2015 KCP&L EM&V report does not explicitly provide information of the status of the 2015 recommendations. Consequently, the Evergreen team cannot provide information on whether the 2015 recommendations were adopted in all cases. A list of PY2015 recommendations and adoption status is included in Table 6.

**Table 6: PY2015 Impact Evaluation Recommendation Tracking**

| Program | EM&V PY2015 Recommendation | Program Response |
|---|---|---|
| Business Energy Efficiency Program – Standard | Align savings values in program-tracking database with calculations in the project files. | Not adopted – remains a recommendation in 2016 |
| | Specify the measure types by end use (Lighting, HVAC, etc.) for all the measures. | Adopted |

| Program | EM&V PY2015 Recommendation | Program Response |
|---|---|---|
| | Standardize the project files. To address issue where Custom Program applications are included in the Standard Program. | Adopted - not reported as an issue in 2016 |
| | Capture baseline conditions in the project files, if possible. | Adoption - status unknown |
| | Use a well defined deemed measure savings list that includes a baseline case and corresponding efficient case | Not adopted – remains a recommendation in 2016 |
| | Include a spreadsheet or document showing how the reported savings were calculated. | Adopted - not reported as an issue in 2016 |
| Business Energy Efficiency Program – Custom | Align savings values in program-tracking database with calculations in the project files. | Not adopted – remains a recommendation in 2016 |
| | Include the total quantity installed value in the program-tracking database. | Not adopted – remains a recommendation in 2016 |
| | Store and track all project-related documentation, including revised savings calculations and energy models, to facilitate evaluation and tracking of savings. | Adopted - not reported as an issue in 2016 |
| | Improve calculations by including Waste Heat Factors for the lighting projects, which have conditioned spaces and site specific Coincident Demand Factor for the lighting projects. | Adopted - not reported as an issue in 2016 |
| Home Lighting Rebate | Incorporate bulb wattage and style directly into the tracking database to reduce the likelihood of mismatches as products are cycled in and out of the program. | Unknown |
| | Include key parameters, such a gross savings and the expected NTG ratio for each record. | Unknown |
| | Update per-unit savings values based on current bulb mix and verified savings estimates. | Unknown |
| | Update per-unit savings based on cross-sector and cross-jurisdiction leakage | Not adopted – remains a recommendation in 2016 |
| Home Energy Report | KCP&L-MO should consider measuring savings persistence experimentally in MEEIA Cycle 2. | Not Adopted |

| Program | EM&V PY2015 Recommendation | Program Response |
|---|---|---|
| | KCP&L-MO should meet with the program implementer, Opower, to discuss how the income- eligible cohort was selected, and how the messaging in their reports was targeted | Unknown |
| Programmable Thermostat | No Recommendations | |

### 3.3.2 PY2016 Recommendations

Navigant provided recommendations from the PY2016 program evaluations that seek to guide and improve future impact evaluations. Table 7 presents the evaluator recommendations by program

**Table 7: PY2016 Impact Evaluation Recommendations**

| Program | EM&V PY2015 Recommendation |
|---|---|
| Business Energy Efficiency Program – Standard | During the tracking data review, the evaluation team found that the IC's project files had a difference in quantity and savings versus KCP&L's electronic tracking database. Navigant suggests KCP&L consider adding quality control (QC) steps to make sure these two data sources match. |
| | Account for actual building types to accurately predict the savings. Currently, all tracked savings assume performance variables that reflect operation of an office building. |
| | Use a single data source for all lighting measure inputs |
| | Account for low in-service rates due to lights in storage or inability to locate fixtures |
| Business Energy Efficiency Rebate - Custom Program | Maintain the International Energy Conservation Code (IECC) 2012 baseline for lighting power density based on the building area approach. |
| | Include the total quantity installed value in the program tracking database especially for lighting projects |
| | Provide a column in the tracking database that has a brief narrative describing the installed energy efficient measures or equipment |
| | Ensure alignment between the electronic program tracking database and project files. |

| | |
|---|---|
| | Align the peak demand calculations with the GMO C&I peak time period. If zero peak demand savings are claimed please indicate reason why. |
| | For lighting projects collect and record information on whether the space is conditioned and custom lighting operating hours |
| | For lighting projects ensure CFs, lighting controls, WHF, and peak demand are correctly employed |
| | For lighting projects, collect both pre-and post-retrofit trending data to improve verification and avoid using assumptions or a prescriptive approach |
| | For new construction lighting projects use the Building Area or Space-by-Space method rather than using a representative baseline of fixtures |
| | For new construction projects, use zero for the baseline incremental cost |
| Small Business Lighting Program | Include incremental cost in the tracking database. |
| | Ensure alignment between the electronic program tracking database and project files. |
| | Include a primary key code that will link directly to the KCP&L deemed measure savings database used to support the MEEIA Cycle 2 reported savings filed for the program |
| | Use a single authoritative reference to look up the various values used in the calculations (for example, WHFs, CFs, etc.). The evaluation team recognizes MO is currently working on a TRM, but it is not the active reference for the state. Until that time, Navigant suggests using the Illinois TRM to ensure a consistent reference source. |
| | Navigant recommends accounting for actual building types to accurately predict the savings. |
| | Navigant recommends using an ISR of 99% while calculating the reported savings. |
| | Navigant used an ISR of 99% based on findings from the onsite verification. This was mainly due to lights in storage or an inability to locate the fixtures. |
| Business Programmable Thermostat | Reconcile data collected by Nest and CLEAResult so the Nexant system records the following data: Account Number, Premise Number, Thermostat Serial Number, Installation Date, Rush Hour Rewards Activation Date, and Seasonal Savings Enrollment Date. |
| | Maintain a list of active device serial numbers during each event. This would allow Navigant to verify program participation and DR impact by event more accurately. |
| Demand Response Incentive | No Recommendations |

| | |
|---|---|
| Whole House Efficiency Program | Confirm that tracking database includes parameters that were excluded in PY2016, including heating capacity for heat pumps, HSPF, Baseline and efficient EER and SEER values, number of floors in residence, home age, and equipment age. |
| | Amend processes used to calculate the program's reported savings to align with the algorithms and sources used by the evaluation team. |
| Home Lighting Rebate Program | Revise energy and demand savings calculations to account for leakage, assumed to be 12% of HLR LED bulb sales (KCP&L-MO currently makes no adjustment for leakage). |
| | Assume a lifetime ISR of 94.2% for all HLR LED bulb sales (KCP&L-MO currently makes no adjustment for ISR) |
| | Estimate net savings separately for standard and specialty LEDs rather than using a program- wide NTG ratio, as the mix of standard and specialty LEDs could vary from year to year |
| | Assume a NTG ratio of 85.8% for standard LEDs and 76.2% for specialty LEDs |
| | Reduce annual HOU from 938 hours to 840 hours for HLR LED bulb sales installed in residential settings |
| | Reduce peak CF from 0.095 to 0.08 for HLR LEDs bulb sales installed in residential settings |
| | Account for 4% C&I cross-sector sales contribution of HLR LED bulb sales by applying HOU and CF values of 3,306 and 0.6, respectively |
| Home Energy Report | Continue to use Oracle-reported savings for tracking purposes. |
| | KCP&L-MO should meet with the program implementer, Opower, to discuss how the income- eligible cohort was selected, and how the messaging in their reports was targeted |
| Income-Eligible Multifamily Program | Include more detailed information on inputs used and baseline values for DI measures, particularly for low-flow showerheads and aerators as these had differing realization rates; this indicates input assumptions are not fully matching those used in verification |

# 4 Process Evaluation Summary

This section summarizes key methods and findings from the PY2016 process evaluations of KCP&L-MO's residential and business energy efficiency program portfolio. The first subsection summarizes the process evaluation methods used by the Navigant evaluation team, and includes an assessment of how the process evaluation aligns with the minimum requirements for demand-side process evaluations set forth by the Missouri Code of State Regulations (CSR). The second subsection reviews the status of the program evaluation recommendations from the PY2015 evaluations.

## 4.1 Summary of Process Evaluation Methods and Alignment with Missouri CSR Minimum Requirements

The residential and commercial program evaluations adopted a wide range of process evaluation methods. Table 8 below summarizes the process evaluation methods applied for each program.

## Table 8: Process Evaluation Method Summary

| Program | Methods | Description |
|---|---|---|
| Business EER - Standard | • Program Staff Interviews<br>• Participant Web Survey<br>• Trade ally web survey | The evaluation team completed 29 web surveys among participants and trade allies from the KCP&L-MO territory. |
| Business EER - Custom | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor |
| Block Bidding | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor |
| Strategic Energy Management | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor. |
| Small Business Lighting | • Program Staff Interviews<br>• Participant Web Survey<br>• Trade ally web survey<br>• Ride Along Visits | Two staff interviews with the program manager and implementation contractor. Interviews with 12 trade allies. Three ride along visits. Unknown number of participants in survey. |
| Business Programmable Thermostat | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor. |
| Demand Response Incentive | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor. |
| Whole House Efficiency | • Program Staff Interviews<br>• Participant Web Survey<br>• Trade ally web survey | Two staff interviews with the program manager and implementation contractor. Interview with 23 trade allies. 120 participants in survey. |
| Home Lighting Rebate | • Program Staff Interviews<br>• Consumer Survey<br>• Supplier Interviews<br>• Onsite Saturation Survey | Two staff interviews with the program manager and implementation contractor. Eight supplier interviews. 40 onsite saturation surveys. |
| Home Energy Reports | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor. |
| Residential Programmable Thermostat | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor. |
| Income-Eligible Multifamily | • Program Staff Interviews<br>• Program Material Review | Two staff interviews with the program manager and implementation contractor. |
| Home and Business Online Energy Audits | • Program Staff Interviews<br>• Program Material Review<br>• Customer Survey | Two staff interviews with the program manager and implementation contractor. |

The Department of Economic Development set forth minimum requirements for demand-side program process evaluations, in 4 CSR 240-22.070(9).[5] At a minimum, process evaluations should answer the following five key questions:

- **Question 1:** What are the primary market imperfections common to the target market segment?
- **Question 2:** Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?
- **Question 3:** Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?
- **Question 4:** Are the communication channels and delivery mechanisms appropriate for the target market segment?
- **Question 5:** What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?

Each program evaluation provided a response to all five questions. The full text response to these questions is provided as Appendix A to this report. Evergreen reviewed each text response to determine if the process evaluations provided a substantive response to each question. Across the program evaluations, we found that most provided a thoughtful, substantive response to each question, although in some cases the response was largely similar or identical to previous year evaluations. Table 9 below presents an assessment of the responses to the five key questions across the program evaluations. For each question, we assign a score of 1, 2 or 3:

- **1** indicates an updated, substantive response clearly linked to process evaluation findings.
- **2** indicates a response that is different from the previous program year evaluation but is not linked to process evaluation findings or is not substantive in nature.
- **3** indicates that the response has not changed at all from the previous year process evaluation.

The evaluations provide substantive, updated responses to the five key questions that are clearly linked to the most recent evaluation findings.

[5] *Rules of Department of Economic Development, Division 240 - Public Service Commission, Chapter 22 - Electric Utility Resource Planning*. 2011. https://www.sos.mo.gov/cmsimages/adrules/csr/current/4csr/4c240-22.pdf

## Table 9: Assessment of Response to Minimum Required Process Evaluation Questions

| Program | Question 1: Primary Market Imperfections | Question 2: Target Market Segment | Question 3: Diversity of End-Use Needs | Question 4: Communication Channels and Delivery Mechanisms | Question 5: Overcoming Market Imperfections |
|---|---|---|---|---|---|
| Business EER - Standard | 1 | 1 | 1 | 1 | 1 |
| Business EER - Custom | 1 | 1 | 1 | 1 | 1 |
| Block Bidding | 1 | 1 | 1 | 1 | 1 |
| Strategic Energy Management | 1 | 1 | 1 | 1 | 1 |
| Small Business Lighting | 1 | 1 | 1 | 1 | 1 |
| Business Programmable Thermostat | 1 | 1 | 1 | 1 | 1 |
| Demand Response Incentive | 1 | 1 | 1 | 1 | 1 |
| Whole House Efficiency | 1 | 1 | 1 | 1 | 1 |
| Home Lighting Rebate | 1 | 1 | 1 | 1 | 1 |
| Income-Eligible Home Energy Report | 1 | 1 | 1 | 1 | 1 |
| Home Energy Report | 1 | 1 | 1 | 1 | 1 |
| Residential Programmable Thermostat | 1 | 1 | 1 | 1 | 1 |
| Income-Eligible Multifamily | 1 | 1 | 1 | 1 | 1 |
| Online Energy Audit for Homes and Businesses | 1 | 1 | 1 | 1 | 1 |

* **1 =** Updated, substantive linked to process evaluation findings. **2** = Different from the previous program year evaluation but is not linked to process evaluation or not substantive in nature. **3** = Response has not changed at all from the previous year process evaluation.

## 4.2 PY2016 Process Evaluation Findings and Recommendations

This subsection presents overall program process evaluation findings and evaluator recommendations.

### 4.2.1 Process Evaluation Findings

Navigant presented the process evaluation findings for each program in terms of responses to key evaluation research questions, and responses to the five required process evaluation questions set forth in 4 CSR 240-22.070(9). Overall, the process evaluation findings are complete and thorough and respond to the mandated questions. However, limiting the findings strictly to responses to the research questions and required questions may lead to omission of important information and findings that might fall outside the topics covered by these questions. For future evaluations we recommend that the evaluator include any additional findings beyond responses to the required process evaluation questions in a separate section.

In the following sections we summarize key process evaluation findings across five topic areas, customer satisfaction, program participation, program marketing, program delivery and program implementation changes.

#### 4.2.1.1 Customer and Trade Ally Satisfaction

KCP&L programs appear to be performing to customer and trade ally satisfaction. Navigant evaluated customer or trade ally satisfaction for eight programs. Across these programs, in general customer and trade ally satisfaction is high. Dissatisfaction arises around the amount of the rebate and marketing assistance. The satisfaction results reported indicate that the programs are well-run and meeting needs of customers and trade allies. Table 10 below presents a summary of satisfaction results across the eight programs where satisfaction research was conducted.

## Table 10: Customer and Trade Ally Satisfaction Findings Summary

| Program | Process Evaluation Findings Summary |
|---|---|
| Business EER - Standard | Customer satisfaction is high with 89% of participants surveyed rating the program a 4 or 5 on a 5-point scale. This is an increase of 13% from PY2015. Trade allies were also very satisfied with the program, giving an average satisfaction score of 4.7 out of 5.0. |
| Business EER - Custom | Customer and trade ally satisfaction were not directly researched in this evaluation. Customer satisfaction research is planned for 2017. Customer satisfaction was high in 2015. |
| Small Business Lighting | 100% of participant survey respondents indicated that they were satisfied with the SBL program. 76% were very satisfied; 24% were somewhat satisfied.<br>9 out of 12 trade ally survey respondents indicated that they were satisfied with the SBL program. |
| Programmable Thermostat Programs | Direct satisfaction research was not conducted, but monthly surveys from the implementation call center indicate high satisfaction with the DI process and customer call center. |
| Whole House Efficiency | Participants and trade allies are generally very satisfied with each of the three program tiers. Participant's satisfaction with the three rebate options ranged from and average of 4.1 to 4.7 on a 5-point scale. Dissatisfaction with rebate amounts and participation requirements drove air sealing participants' relative dissatisfaction. Trade allies indicated lower levels of program satisfaction than participants. Primary concerns are rebate amounts and the marketing support. Navigant notes that these concerns are often heard from trade and Navigant's review of marketing materials indicated that the program does a high level of marketing. |
| Home Lighting Rebate | The evaluation reports high satisfaction levels among manufacturers. 6 manufacturers gave an average satisfaction score of 7.8 out of 10. Two retailers gave an average score of 8.5 out of 10. Dissatisfaction was primarily related to a perception that HLR incentives are slightly lower than other programs. |
| Home Energy Report | Navigant reviewed the customer engagement tracker survey and found that 78% of customers responding agree or strongly agree that they like the reports. |
| Online Energy Audit | Navigant reviewed the customer engagement tracker survey for the HER. More than 77% of customers surveyed who have used the tool agreed the tool helps them make better decisions about their energy use at home. |

* No customer satisfaction research was conducted for the Block Bidding, SEM, Demand Response, and IE Multifamily programs.

### 4.2.1.2 Program Participation

The Navigant evaluation found that across all programs, in general, program participation met expectations, particularly as several new programs began in PY2016. The Evergreen team noted that participation information was not included for several programs. We recommend more information on participation numbers be provided in future evaluations. Table 11 below provides a summary of participation findings from the evaluation.

**Table 11: Program Participation Findings Summary**

| Program | Process Evaluation Findings Summary |
|---|---|
| Business EER - Standard | The program had 515 projects in PY2016 across all three of KCP&L's C&I customer classes. |
| Business EER - Custom | The program had 16 projects in PY2016. The program had more customers from the Tier 1 industrial and large commercial sectors due to their ability to implement larger projects with end uses not captured in the Standard program. |
| Block Bidding | No participation in KCP&L territory. |
| Strategic Energy Management | The program recruited 16 participants in the PY2016 pilot year. |
| Small Business Lighting | While explicit participation numbers were not provided, the evaluation notes that the program had high participation for a first year program |
| Programmable Thermostat Programs | The programs surpassed enrollment goals for PY2016 and have developed a plan to improve installation rates for DIY customers. |
| Demand Response Incentive | In PY2016, the program had 1471 Tier 1 participants. In PY2017 and PY2018 the target market will need to expand to include customers with smaller loads as the list of Tier 1 customers will have been exhausted after PY2016. |
| Whole House Efficiency | Specific participation data were not provided in the evaluation. Few participants are taking a true whole house approach and participating in more than one program tier. |
| Home Lighting Rebate | No specific participation information was provided. Over 300,000 incentivized bulbs were sold. |
| Home Energy Reports | In PY2016 the program targeted 145,000 customers with home energy reports. 95% of customers who recalled receiving the home energy reports stated that they read some or all of the report. 29% of customers who recalled receiving the home energy reports reported that they took an action after reading the report. |
| IE Multifamily | No specific participation information was provided |
| Online Energy Audit | In PY2016, more than 27,000 customers in the combined KCP&L-MO and GMO territories completed the online WUM audit. |

### 4.2.1.3 Program Marketing and Awareness

Across the programs, Navigant found that most programs have good customer awareness, and that KCP&L is employing appropriate marketing approaches. The Evergreen team found that reporting on marketing and program awareness in the Navigant evaluation is satisfactory, and the results are summarized in Table 12.

**Table 12: Program Marketing and Awareness Findings Summary**

| Program | Process Evaluation Findings Summary |
|---|---|
| Business EER - Standard | Contractors (68% of respondents) and the KCP&L website (11% of respondents) are the primary sources for learning about the Standard program's measures. KCP&L is successfully engaging smaller C&I customers; the participant survey indicated that 78% of participants had less than 100 employees. High participant satisfaction suggests the program's communication channels and delivery mechanisms are generally appropriate for the target market segment. |
| Business EER - Custom | In PY2016, there was an increase in the program's outreach efforts. The marketing or recruitment of the Custom program was conducted through face-to-face interactions with customers, trade allies, energy consultants, and design firms, with the focus to increase participant awareness of the program in the early stages of a project. |
| Block Bidding | The Block Bidding program's target market is KCP&L's largest customers. Direct contact to these customers is the primary and most appropriate marketing mechanism. |
| Strategic Energy Management | SEM team works with its key accounts team to identify high energy usage customers with approximately 20 MWh of annual consumption and then validates whether these customers have the savings potential to participate in the program by conducting onsite visits. |
| Small Business Lighting | Communication channels and delivery mechanisms are working for the program although there are opportunities for further improvement. Trade ally survey participants identified opportunities for potential marketing and communication improvements, with only 50% indicating they were aware of and had received program marketing materials suggesting an opportunity to provide additional training and marketing materials to the trade ally network toward boosting awareness. |
| Programmable Thermostat Programs | Marketing has been successful, as KCP&L exceeded its initial PY target of 1,000 thermostats for the KCP&L-MO territory for PY2016. Implementation contractors market the program via email to customers and cross-promotion with other programs. |
| Demand Response Incentive | The implementation contractor directly recruits C&I customers for participation and targets commercial customers that can reduce their demand to at least 25 kW below estimated peak usage. Navigant found that the communication channels and delivery mechanisms are intermittent. While communication with program participants takes place at the start of the season, the program could benefit from more continuous communication throughout the DR season. |

| Program | Process Evaluation Findings Summary |
|---|---|
| Whole House Efficiency | Current marketing channels were not discussed in the report, however, trade allies expressed the opinion that the program could do more marketing directly to customers (cited by 39% of trade allies), and provide more marketing support for trade allies (21%). Weatherization trade allies perceive that the program has not provided the same level of marketing support to them as it provided to the HVAC trade allies. Navigant's review of the marketing materials provided by KCP&L supports that perception. |
| Home Lighting Rebate | KCP&L-MO and the IC market the program widely through mass media (including the Internet) and within retail stores, but there is room for improvement. Awareness of products under the program is high. Nearly all consumer survey respondents were very or somewhat familiar with CFLs (90%), but only about three-quarters (77%) were very or somewhat familiar with LEDs. While most consumers know what an LED bulb is, nearly one-quarter of consumers have limited to no awareness of LEDs.<br>Navigant notes that marketing materials do not consistently reference ENERGY STAR lighting. There are opportunities to improve marketing targeted at HTR populations. |
| Home Energy Report | Beyond mailing home energy reports, no additional marketing is used for the program. |
| Income-Eligible Multifamily | Communication channels and delivery are appropriate given the direct interaction with the end- user (tenant |
| Online Energy Audit | Both communication channels and delivery mechanisms are appropriate for the target market segments. In 2016, the program used banner ads on the KCP&L website and messaging on home energy reports to direct residential customers to the tools, particularly the WUM section. |

### 4.2.1.4 Program Operations and Delivery

The Navigant evaluation provides adequate and appropriate information on program operations and delivery. The evaluation found that overall, the KCP&L programs are operating as designed and being delivered to the target market effectively, with few significant challenges. Table 13 below provides a summary of key findings for each program.

**Table 13: Program Operations and Delivery Findings Summary**

| Program | Process Evaluation Findings Summary |
|---|---|
| Business EER - Standard | Program operations and program delivery are working well, with high program satisfaction. The Standard program is complementary other Business EER programs by providing rebates for the more typical capital projects. Almost three-quarters of trade allies surveyed stated with no additional measures suggested. For those suggesting measures (two out of 19), there was no clear overlap in suggestions, with one suggesting only including lighting controls (dimmers) and the other suggesting low volume HVAC measures for consideration. |
| Business EER - Custom | Program operations and program delivery are working well, with high program satisfaction. The Custom program now serves new construction projects. Beginning in PY2016, LED retrofit lighting projects were moved from the Custom program to the Standard program. The Custom program still serves new construction LED lighting projects. |
| Block Bidding | No projects under this program to date. |
| Strategic Energy Management | The program is designed in a manner consistent with other SEM programs. While participants are in the early stages of the program operations and program delivery are working well, |
| Small Business Lighting | Navigant's findings indicate the SBL program is operating well in the territory, surpassing the PY2016 MEEIA targets for Year 1 of Cycle 2. Navigant's process research indicates that even though the program is new to KCP&L customers, it is working well and is well-received by customers. |
| Programmable Thermostat Programs | KCP&L redesigned the program from PY2015 to PY2016. A new thermostat provider, Nest, took over from Honeywell, and the program introduced a range of installation and corresponding incentive options to customers (DIY, DI, and BYON). Surveys indicate high satisfaction with experiences relating to the DI process and customer call center, which indicates that the processes for the revamped program are meeting customer expectations. |
| Demand Response Incentive | Program operations and program delivery are working well, most customers were under their contracted expected peak demand during event periods on days with a similar temperature to the event days. KCP&L has identified recruitment of customers with smaller demand savings potential as an area for improvement. |
| Whole House Efficiency | Navigant's process evaluation research found that participants and trade allies are generally very satisfied and program operations and delivery are working well. One |

| Program | Process Evaluation Findings Summary |
|---|---|
| | key finding is that relatively few participants are taking a true whole house approach and participating in more than one program tier. Program staff indicated that a major goal for the next PY is to encourage Home Energy Audit and Energy Savings Kit participants to pursue deeper energy savings through one of the rebate program tiers. |
| Home Lighting Rebate | Program operations and program delivery are working well, with high program satisfaction among suppliers and customers. The program has made strong progress offering incentives that reduce the shelf price of LEDs, diversifying the retail channels and venues through which consumers can buy supported LEDs, and engaging in marketing and educational campaigns that explain the benefits of energy efficient lighting. In PY2016 the program dropped CFLs in keeping with market trends and conditions. |
| Home Energy Report | In PY2016 the program upgraded its format and launched a new wave of customers. The new changes and general program operations appear to be working well as there is high engagement reported by customers |
| Income-Eligible Multifamily | Navigant found that communication channels and delivery are appropriate given the direct interaction with the end- user (tenant), and the program includes appropriate measures for its current targets. |

### 4.2.1.5 Program Implementation Challenges

Table 14 provides a summary of key findings for each program that relate to program implementation challenges.

**Table 14:Program Implementation Challenges Findings Summary**

| Program | Process Evaluation Findings Summary |
|---|---|
| Business EER - Standard | The primary implementation challenge noted by Navigant is low participant awareness of program non- lighting measures. Non-lighting measures made up 11% of rebate activity. Having such reliance on one market area leaves the Standard program vulnerable to market shifts and changes. Navigant recommends activities such as training and trade ally engagement to increase non-lighting measure adoption |
| Business EER - Custom | The primary implementation challenge noted by Navigant is low participant awareness of program non- lighting measures and projects that qualify for Custom incentives. KCP&L-MO acted on the need to increase awareness of the Custom program through increased meetings and information sessions with trade allies and design professionals. |
| Block Bidding | While there have been no projects under this program, Navigant note that a potential challenge could be that while a participant may win a bid, they may not be able to implement energy efficient projects. In PY2016 for the KPC&L GMO program there were three winning bids out of five auctions. However, only one customer successfully implemented their project. |
| Strategic Energy Management | While this is a new program with limited participation to date, Navigant noted that the primary implementation challenge is that C&I customers often do not have the time or resources needed to oversee or facilitate an effort such as SEM. However, the program needs more time to complete training and other activities before Navigant can appropriately identify if this is a serious challenge. |
| Small Business Lighting | In general, the SBL program is running well and as intended. However, Navigant found that due to the SBL incentive cap of 70% of projects costs, trade allies will utilize the Standard program if that is more financially beneficial to the customer. To eliminate this self-correcting of the two program's rebates, KCP&L could raise the cap of the SBL rebates to 100% of project costs. |
| Programmable Thermostat Programs | Navigant identified customer installation rates after receiving a thermostat as the primary challenge facing this program. In PY2017, the utility plans to increase reminders to DIY customers who delay installing their thermostat. |
| Demand Response Incentive | The primary implementation challenge is that many businesses do not have automatic load curtailment. This limits the ability of these businesses to participate in DR programs like DRI that require them to reduce a significant amount of load with minimal notice. |

| Program | Process Evaluation Findings Summary |
|---|---|
| Whole House Efficiency | One of the primary findings of the process evaluation is that few participants in the Energy Savings Kit went on to perform more substantial energy efficiency upgrades through the rebate programs, even though over half of the tier's participants expressed an intent to do more efficiency upgrades in the future. Most customers learn about the rebate programs through the trade allies rather than through KCP&L-sponsored marketing, particularly HVAC Equipment participants. Trade allies are motivated to promote rebates for measures that they offer; however, they have little incentive to promote participation in other KCP&L offerings. |
| Home Lighting Rebate | Navigant found that suppliers, program staff, and implementation staff believe that non-ENERGY STAR LEDs available in the market could damage the perception of LEDs among consumers who may reject LEDs if they have a bad experience with an inferior non-ENERGY STAR model. |
| Home Energy Report | The primary challenge for the program is that many customers do not read the home energy reports; 16% of CET survey respondents either did not recall receiving the report or did not read the report. |
| Income-Eligible Multifamily | The primary difficulty in this market is Tenants are often not allowed to make significant alterations, and property owners and landlords have little incentive to increase efficiency because they usually do not pay—directly or indirectly, for utilities. |

## 4.3 Summary of Key Process Evaluation Recommendations

Based on the evaluation findings, Navigant provided overall evaluation conclusions and recommendations. Navigant provided a total of 70 program specific recommendations that are detailed in Appendix B of the evaluation report. In addition, Navigant provided six overarching recommendations that they term, "the most impactful findings and recommendations resulting from Navigant's process evaluation activities for PY2016"(PY2016 Evaluation Report, p. xxvii). These recommendations are:

- Consider the continuation of education and awareness efforts, particularly with new trade allies entering the programs.
- Continue the process of understanding customer needs and potential end-use measures relatable to their needs through dedicated events or specific program outreach.
- Continue to develop and periodically review best practices of the current outreach efforts to maintain and increase current program engagement.
- Consider providing turn-key marketing assets that trade allies and partners can use to create their own promotional outreach efforts.

- Encourage trade allies to cross-promote other KCP&L programs. One potential option could be offering trade allies a small bonus for encouraging their customers to participate in other KCP&L programs.
- Monitor savings targets and enrollment goals to ensure the cost-effectiveness of each program. This is a key consideration for programs that have a low participation target that may be quickly surpassed.

While the process evaluation recommendations are thorough, they are not always linked directly to the evaluation conclusions or findings. We recommend that future evaluation reports make a clearer link between the recommendations and the supporting evaluation research.

## 4.4 Status Of 2015 Process Evaluation Recommendations

The evaluators tracked and reported KCP&L-MO's response to process evaluation recommendations made in the 2015 evaluation reports. This section reviews the adoption status of these recommendations. Because there were program changes between Cycle 1 and Cycle 2, we only include recommendations for the following programs that were continued in Cycle 2:

- **Business Energy Efficiency Program – Standard**
- **Business Energy Efficiency Program – Custom**
- **Home Lighting Rebate**
- **Home Energy Report and Income Eligible Home Energy Report**
- **Home Online Energy Audits**

Upon review, we find that there were 20 recommendations for these programs in the 2015 evaluation. Ten of eleven recommendations across all programs have been adopted. Table 15 below presents the PY2015 process evaluation recommendations by project and the evaluators' assessment of KCP&L-MO's response.

## Table 15: PY2015 Process Evaluation Recommendation Tracking

| Program | Recommendation | Adopted |
|---|---|---|
| Business EER - Standard | Continue current customer engagement processes. | Y |
| | KCP&L-MO could consider offering additional training for customers on the applications. | N |
| | KCP&L-MO could consider adjusting the incentive design between the two programs for consistency. | Y |
| | KCP&L-MO could increase outreach to end-use customers and create additional key performance indicators (KPIs) to track this effort. | Y |
| Business EER - Custom | Continue current customer engagement processes. | Y |
| | KCP&L-MO could consider offering additional training for customers on the applications. | Y |
| | KCP&L-MO should redesign incentive structures to ensure similar measures receive similar incentives across programs. | Y |
| | KCP&L-MO could increase outreach to end-use customers and create additional KPIs to track this effort. | N |
| Home Lighting Rebate | The IC could improve performance by ensuring that its program manager has access to all relevant information to share with KCP&L-MO and that information is not bottlenecked at higher levels in the organization. | Y |
| | The program should consider adding the same retailers to its network of HLR program retailers in the KCP&L-MO territory to provide a similar diversity of retailers suited to all customer segments. | Y |
| | The program should continue to provide strong support to retailers with in-store information and consider increasing the frequency of in-store promotional events. | Y |
| Home Energy Reports | KCP&L-MO should continue expanding the HER program to more customers. However, given that the IE-HER group is not achieving savings, more research on the segment is needed before expanding that program. | Y |
| | KCP&L-MO should continue to emphasize the energy-saving benefits of behavioral measures but offer more segment-specific messaging to IE-HER participants. | Y |
| | Consider additional promotion of KCP&L-MO programs in the HER program, especially through the program's marketing modules. | Y |
| | KCP&L-MO should consider more prominent messaging on the report around the information available on the Energy Audit web portal. | Y |

| Program | Recommendation | Adopted |
|---|---|---|
| Online Energy Audit | Complete development of a tool for small businesses and for medium and large businesses. | Y |
| | Establish targets for audit completions and track against actual completions. | Y |
| | Track participation in other EE programs. | Y |
| | Estimate behavioral savings through a survey. | N |
| | Conduct marketing campaigns to maintain customer engagement. Use similar campaigns for small businesses when the tool is ready. | Y |

# 5 Review of Cost-Effectiveness

Navigant calculated the cost-effectiveness for the individual KCP&L-GMO energy efficiency and demand response programs, as well as the cost-effectiveness of the portfolios of energy efficiency and demand response programs. Navigant calculated cost-effectiveness using the five standard benefit-cost ratios that calculate cost-effectiveness from the vantage points of different stakeholder groups:

- **Total Resource Cost (TRC) Test –** compares the benefits and costs from the perspective of all utility customers, including energy program participants and nonparticipants.
- **Societal Cost Test (SCT)** - compares the benefits and costs to all stakeholders in the utility service territory, state, or nation as a whole
- **Utility Cost Test (UCT)–** compares the benefits and costs to the utility implementing the program
- **Participant Cost Test (PCT)–** compares the benefits and costs from the perspective of the customer installing the measure
- **Ratepayer Impact Measure (RIM) Test –** compares the benefits and costs from the perspective on non-participating ratepayers, and the impact of energy programs on customer rates.

Navigant conducted these tests in a manner consistent with the 2001 California Standard Practice Manual (SPM).[6] For this evaluation audit, Navigant provided output files that included measure specific cost and benefit inputs, detailed load shapes, electricity avoided costs, program administration costs, electricity rates, and other assumptions including discount rates.

The Evergreen team reviewed residential and commercial summary findings from the portfolio reports and the output files for each program and at the portfolio level to confirm that calculations were performed correctly. The specific audit tasks undertaken were to:

- Confirmed summary values included in the final evaluation report matched the values in the results file; and
- Confirmed that the reported costs matched the costs input into the cost-effectiveness input files, including administrative costs, incentive costs, and participant incremental equipment costs;

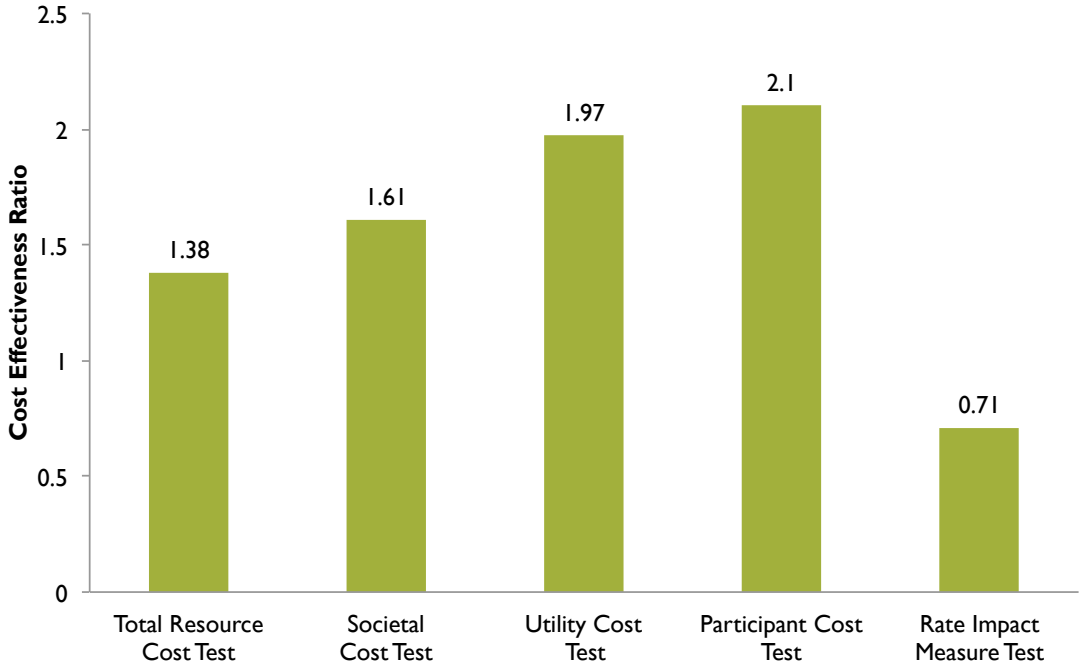
[6] California Public Utilities Commission. October 2001. "California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects." http://www.cpuc.ca.gov/NR/rdonlyres/004ABF9D-027C-4BE1-9AE1- CE56ADF8DADC/0/CPUC_STANDARD_PRACTICE_MANUAL.pdf

- Reviewed avoided cost of energy and demand values and confirmed Navigant used appropriate values to calculated program level benefits;
- Confirm that measures received appropriate cost-effectiveness input values, from appropriate sources, consistent with the sources used in the Navigant evaluation reports (i.e., kWh savings, expected usable life (EUL), incremental cost);
- Confirmed that discount rates were appropriate, although as this is the first program year of Cycle 2, there was no discounting of benefits or costs.

## 5.1 Cost-Effectiveness Results

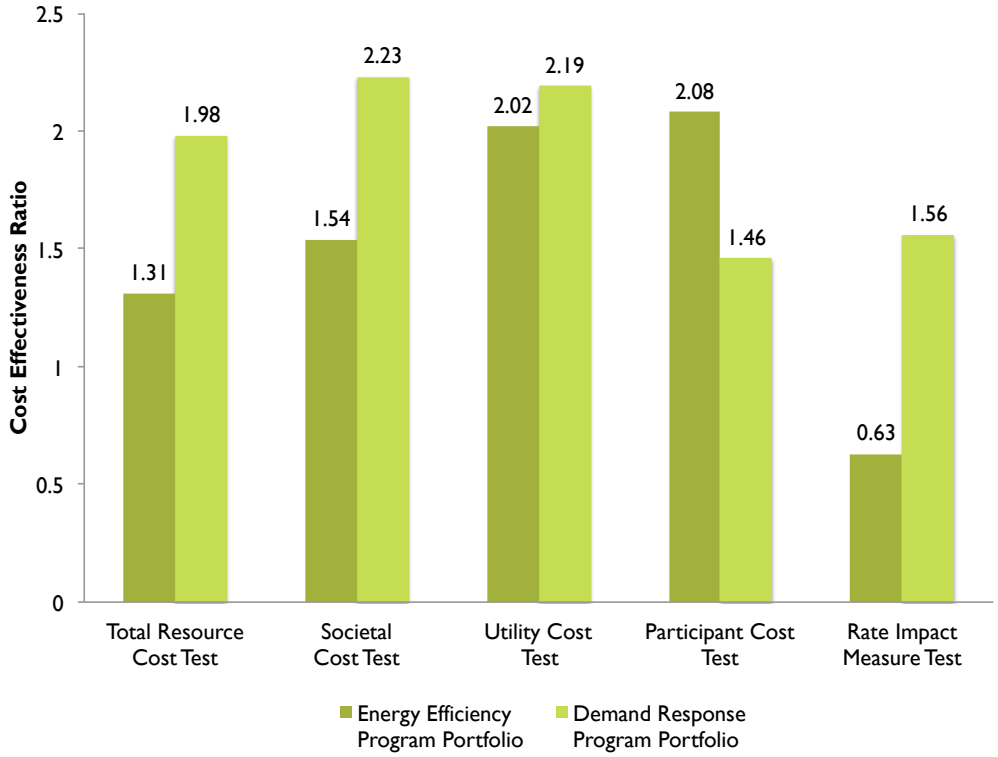
The overall KCP&L-GMO program portfolio is cost-effective for the first year of MEEIA Cycle 2, PY2016. As Figure 8 shows, GMO's overall energy efficiency and DR portfolio is cost-effective for all tests except the Rate Impact Test; the Rate Impact Test is the most conservative cost-effectiveness test. Because this is the beginning of the MEEIA Cycle 2 program period, we do not compare the portfolio with the 2015 portfolio, however, overall cost-effectiveness is comparable between the periods. The 2015 portfolio level TRC test was 1.14, while the Rate Impact Measure Test was 0.69.

**Figure 8: KCP&L GMO Portfolio Level Cost-Effectiveness Test Results**




Looking at the energy efficiency and demand response portfolios separately, Navigant reported similar results to the overall program. Figure 9 presents the results of the cost-effectiveness tests for the KCP&L-GMO's energy efficiency and demand response portfolios. The energy efficiency portfolio is cost-effective across all tests except the Rate Impact Measure Test, while the demand response portfolio is cost-effective across all tests.

**Figure 9: KCP&L GMO Cost-Effectiveness Test Results – Energy Efficiency and Demand Response Portfolios**




While the portfolio was cost-effective in PY2016, individual program cost- effectiveness varied. Table 16 on the following page presents the program specific cost-effectiveness test results. For programs that were also offered in MEEIA Cycle 1, we also present the cost-effectiveness results for PY2015 for comparison.

## Table 16: Cost-Effectiveness Test Results

| Program | TRC | | SCT | | UCT | | PCT | | RIM | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2015 | 2016 | 2015 | 2016 | 2015 | 2016 | 2015 | 2016 |
| Business EER - Standard | 1.40 | 1.45 | 1.87 | 1.68 | 3.83 | 2.48 | 1.52 | 1.93 | 0.87 | 0.7 |
| Business EER - Custom | 1.28 | 1.05 | 1.74 | 1.35 | 12.94 | 1.44 | 1.14 | 2.19 | 1.01 | 0.61 |
| Small Business Lighting* | - | 0.73 | - | 0.83 | - | 0.84 | - | 1.63 | - | 0.45 |
| Business Programmable Thermostat* | - | 2.07 | - | 2.4 | - | 2.8 | - | 0.97 | - | 1.95 |
| Demand Response Incentive* | - | 13.56 | - | 13.56 | - | 3.02 | - | 433.33 | - | 3.02 |
| Whole House Efficiency* | - | 0.77 | - | 0.97 | N/A | 1.23 | - | 1.15 | - | 0.61 |
| Home Lighting Rebate | 1.71 | 1.67 | 1.92 | 1.95 | 2.77 | 2.02 | 4.96 | 4.26 | 0.43 | 0.5 |
| Income-Eligible Home Energy Report* | - | 0.57 | - | 0.57 | N/A | 0.57 | - | INF** | - | 0.33 |
| Home Energy Report | 3.10 | 1.99 | 3.10 | 1.99 | 3.10 | 1.99 | INF** | INF** | 0.48 | 0.52 |
| Residential Programmable Thermostat* | 1.23 | 2.04 | 1.58 | 1.6 | 1.23 | 1.86 | INF** | 2.03 | 1.23 | 1.21 |
| Income-Eligible Multifamily* | - | 0.84 | - | 0.94 | - | 0.84 | - | INF** | - | 0.35 |

* Programs are new in PY2016
** Ratios are infinite because there are positive benefits and no participant costs.

Using the PCT test, all programs are cost-effective from the participant perspective, except the Business Programmable Thermostat Program. Eight programs are not cost-effective under the RIM test.

Navigant provided rationale to explain the low cost-effectiveness test results for some programs. The Small Business Lighting and Whole House Efficiency programs were not cost-effective in PY2016 as this is the first year of operation for these programs. Navigant expects the cost-effectiveness to improve in PY2017 as more projects apply and spread out the allocation of administrative program costs (PY2016 Evaluation Report, p. 44).

# 6 Audit Conclusions

A review of PY2016 evaluation report indicates that the reports and appendices are well written, complete, and meet the minimum requirements for impact and process evaluations stipulated in 4 CSR 240-22.070(8). The evaluation methods and reports are also consistent with the best practices established for the industry. During the course of the audit, we have identified a few areas where we believe that the evaluations can be improved, and these recommendations are detailed throughout this audit report.

The following is a summary of some issues that were discussed as part of the evaluation report review process. These issues were for the most part resolved for the final evaluation report, but are being reported here to maintain a record of the discussion and to serve as a reminder for future evaluation reports.

**Free Ridership**

In Appendix C of the evaluation report, the discussion of free ridership contains the following relating to the trade ally interviews:

> "The trade ally estimates of free ridership are used as a cap on the participant estimates of free ridership…. (p. 104)"

In draft versions of the evaluation report, it was not clear when the trade ally results were used in place of the participant survey results. We recommend that when the trade ally results are used, the report should include a) the trade ally free ridership value, b) the free ridership value based on the participant survey results, and c) a discussion of how the trade ally free ridership rate is calculated along with a justification for its use for that particular program. This issue was resolved in the final evaluation report.

**Use of Illinois TRM Values**

For several measures and programs, the deemed savings values from the Illinois TRM were used rather than available values from the Missouri TRM. This issue was discussed with the evaluation team at length for the Whole House Efficiency program, and in particular with the cooling hours used in the savings calculations for the Energy Star AC measures. In our earlier comments on the draft evaluation reports, we also noted that Illinois values were also used for the Home Lighting Rebate program but did not include adequate explanation.

As noted in our earlier comments, the Missouri TRM has a cooling hour value of 728 hours. In the last two evaluations, Navigant used the following values from Illinois that were adjusted to match Missouri conditions:

- FLH_cooling (PY 2015) 629 Hours: The PY 2015 evaluation used the weighted average value from the IL TRM. This value is the weighted average of Rockford, Chicago, Springfield, Belleville, and Marion, based on number of occupied residential housing units in each zone.

- FLH_cooling (PY2016) 982 Hours: The evaluation report states that the "Effective full load cooling hours = 982 based on normalizing Kansas City's ENERGY STAR cooling hours to correlate with the Illinois TRM Version 5 effective full load cooling hours using cooling degree days."

Although the full load hours calculation method was appropriate, it resulted in an increase of 56 percent in the evaluated full load hours parameter between PY2015 and PY2016. The savings between the two program years also varied accordingly, and this type of volatility makes it difficult for evaluators and other stakeholders to assess the trends of the program over time. In future years, we recommend that a consistent evaluation method be used to help reduce the variation in savings estimates caused by changes in approach.

Similar to the full load hours discussion, the baseline efficiency used for the residential air conditioner replacement measure required additional information from Navigant after the review of the draft report. In the draft evaluation report, the current baseline EER value of 6.82 was also derived from the Illinois TRM but was inconsistent with data that had been presented in the PY2015 evaluation report. Due to employee turnover at Navigant, it was not possible to completely reconcile the differences between the PY2015 and PY2016 baseline efficiency values. The audit team did not find any issues with the current calculation methods, however, but had difficulty in making a comparison with the earlier evaluation results.

The change in baseline efficiency between PY2015 and PY2016 (and the related challenges in documenting these calculations with adequate detail) also illustrates the benefits from using consistent evaluation methods across program years.

**Coordinating primary data collection with Ameren Missouri**

The use of the Illinois TRM values in the current evaluations was due to a lack of Missouri-specific primary data on existing HVAC units. However, the evaluation teams for both Ameren Missouri and KCP&L have collected significant amounts of data on the measured efficiencies of existing air conditioning units. The evaluation teams from both utilities should work together to create a combined statewide dataset that could be used to update the Missouri TRM.

We recommend that the evaluator and KCP&L coordinate with Ameren Missouri for any available primary data from their evaluations. The significant variability in the evaluation

results year over year, combined with the lack of available primary data on full load cooling and heating hours in Missouri, should make this collaboration a priority.

We also recommend that KCP&L coordinate with Ameren Missouri to provide a combined statewide dataset for existing air conditioning units. The KCP&L and Ameren Missouri evaluators have gathered significant amounts of primary data related to measured efficiencies of existing air conditioning units. Gathering these data into a combined dataset could provide both utilities with additional data points to fine tune program savings and evaluation estimates. These data would also be very helpful for updating the Missouri TRM with actual primary data from both utility service territories.

**Home Energy Report**

To estimate savings for the Home Energy Report, both a fixed effects and a post-period regression model are estimated to determine impacts. Although both models are estimated, only the results from the post-period regression model are used to determine program savings. We recommend that the impact estimates from both models be reported, along with a justification for why the post-period regression model results are preferred over the fixed effects model. The coefficient estimates and other model diagnostics should also be reported for both models. This information was missing for the draft report but was ultimately included in the final evaluation report.

A separate issue is how participation in other efficiency programs is addressed in the impact analysis. The comparison between the treatment and control groups in the pre-period should include a comparison of participation rates in the other KCP&L/GMO energy efficiency programs. Differences between the groups in program participation in the pre-period can affect the savings estimates in two ways. First, if there are differences in program participation rates, then some of the observed savings from the HER in the post-period should be attributed to the other efficiency programs. Second, the estimate of program uptake in the post-period will also be affected if there are already unequal levels of program participation in the pre-period. The magnitude of both these effects can be estimated by including a variable for program participation in the billing regression, if in fact there are differences in participation rates between treatment and control groups.

Note that there is some discussion of similar participation rates between the treatment and control group in the evaluation report appendix, but it is unclear if this was actually tested for, or merely assumed. More detail on how the issue of cross program participation should be included in future evaluation reports.

# Appendix A: Full Process Evaluation Responses to Minimum Question Requirements

The following appendix provides a summary of the detailed responses to minimum process evaluation requirement questions.

**Table 17: Minimum Process Evaluation Questions**

| Issue Number | Question |
|---|---|
| Issue 1 | What are the primary market imperfections common to the target market segment? |
| Issue 2 | Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments? |
| Issue 3 | Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment? |
| Issue 4 | Are the communication channels and delivery mechanisms appropriate for the target market segment? |
| Issue 5 | What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program? |

## Table 18: Issue 1 - What are the primary market imperfections common to the target market segment?

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business EER - Standard | The C&I Standard and Custom Programs address several market imperfections of the target market of all commercial and industrial customers.: 1) first cost barrier; 2) limited customer awareness; and 3) prioritization of energy efficiency. | The C&I customer—and especially the smaller customer—has limited resources, including time and money, to devote to researching and implementing energy conservation.<br>• The Standard program is successfully building market awareness of energy efficiency options. 76% of survey respondents were not originally planning to implement energy efficient measures, and 87% indicated that without the program they would have chosen less efficient options. Further, almost half (48%) of respondents indicated they went on to purchase additional energy efficient measures due to program participation and rebates.<br>• KCP&L is successfully engaging the smaller C&I customers; the participant survey indicated that 78% of participants had less than 100 employees. The participant survey also indicated that many customers rely on the trade ally's advice regarding energy efficiency as 68% of customers heard about the rebate through their contractor. And finally, 76% of the customers had not selected the purchased equipment prior to learning about the program.<br>• The Standard program has influenced the trade allies: 53% of respondents showed that they now offer higher efficiency equipment as their first recommendation to their customers, and 63% of the respondents are adding new high efficiency products to their offerings. |
| Business EER - Custom | The C&I Standard and Custom Programs address several market imperfections of the target market of all commercial and industrial customers.: 1) first cost barrier; 2) limited customer awareness; and 3) prioritization of energy efficiency. | Customers have a limited awareness of the breadth of end uses and projects that qualify for Custom incentives. |
| Block Bidding | N/A | The caps for the Standard and Custom programs create a barrier for large customers whose projects could be into the millions of dollars. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| SEM | N/A | The primary market imperfections are that customers have a limited amount of time and money to devote to energy conservation.<br>• There are number of factors that are cost- or time-prohibitive for many C&I customers:<br>• The cost of having an outside expert perform an extensive onsite assessment<br>• The cost and time to submit a report outlining identified measures<br>• The cost and time to develop the onsite expertise on how to implement the recommended measures<br>In addition, many C&I customers do not have the time needed to oversee or facilitate an effort such as SEM. |
| Small Business Lighting | N/A | The primary market imperfection common to the target market for this program is that most SBL customers have less resources and money to pursue the EE projects.<br>• Typically, small business customers tend to be on fixed tight budget and cannot afford to spend extra resources, time, and money on energy efficiency projects. Participant survey results support this, as 70% of the survey respondents suggested that they would have either not installed efficient lights or would have postponed the installation by at least a year in the absence of the program. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business Programmable Thermostat | The primary market imperfection the PT program addresses is that customers have little incentive to reduce usage during peak periods given the price structures in place at many utilities. As a result, utilities use DLC programs to obtain needed demand flexibility using opt-in designs...DR is a form of negative generation and can be called on during periods of high demand in the same manner as a peaking power plant might be built and brought online to serve the same end, but at lower cost. | The primary market imperfection the PT programs address is that residential and small commercial customers have little incentive to reduce electricity usage during peak periods given the rate structures in place at most utilities. As a result, utilities use thermostat programs to obtain needed demand reductions using opt-in designs.<br>• KCP&L can call curtailment events during which Nest cycles participants' HVAC systems to achieve aggregate demand reductions. If DR resources are large enough, they can offset enough demand to delay or avoid the need to purchase power at spot market prices or invest in new sources of generation to meet peak summer demand. DR is a form of negative generation and can be called on during periods of high demand in the same manner as a peaking power plant might be built and brought online to serve the same end, but at a lower cost.<br>• In addition, the Nest learning thermostat adjusts to customer behavior year-round enabling energy savings throughout the year—not only during event hours. Unlike the previous Honeywell thermostats, customers can remotely control their Nest devices, which also enables year-round energy savings. |
| Demand Response Incentive | | A barrier to participating in the DRI program is that businesses do not have automatic load curtailment.<br>• Manual load shedding limits the ability of these businesses to participate in DR programs like DRI that require them to reduce a significant amount of load with minimal notice. Securing automated load reduction technologies is not currently cost-effective for many customers and cannot be accomplished using the financial incentives provided by the DRI program alone. As such, a subset of businesses is not able to participate in this program. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Whole House Efficiency | | The program operations manual identifies lack of education for both end-use consumers and trade allies as a primary barrier to residential energy efficiency upgrades, along with high upfront costs—particularly for HVAC purchases. Surveyed participants and trade allies alike support that view.<br>• Some participants in the Home Energy Audit and Energy Savings Kit program track indicated a desire for more detailed information than is provided in the home assessment report, particularly on measure costs.<br>• The surveyed HVAC trade allies indicated that the primary barriers to residential customers upgrading to high efficiency HVAC equipment are cost and an unwillingness to replace equipment that is still functioning.<br>o As shown in Figure 7-1, while nearly all (83%) trade allies stated that the high cost was one of the top three barriers, most trade allies rated the unwillingness to do an early replacement project as the most significant barrier (42% vs. 21% for high cost).<br>Trade allies also indicated that the program had a significant effect on their customers' willingness to replace still-functioning equipment, indicating that the program is having some success in addressing this barrier. |
| Home Lighting Rebate | There are three primary market imperfections common to the efficient home lighting market: 1. Relatively high upfront costs of efficient CFL and LED bulbs relative to incandescent and halogen bulbs 2. Longer payback period for LEDs and a lack of understanding of the payback period by consumers for both CFLs and LEDs; 3. Lack of consumer awareness of the benefits, characteristics and functioning of modern CFL and LED bulb technologies and their potential to reduce energy use and save customers money over time. | The program seeks to address imperfections of price, availability, and consumer knowledge of efficient lighting choices. The program has made strong progress on each, offering incentives that reduce the shelf price of LEDs, diversifying the retail channels and venues through which consumers can buy supported LEDs, and engaging in marketing and educational campaigns that explain the benefits of energy efficient lighting. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Income-Eligible Home Energy Report | The HER and IE-HER Programs address two market imperfections fundamental to residential customers: 1) the information asymmetry between the energy end user and the energy provider regarding how end-use behaviors contribute to the monthly bill. 2) awareness of cost-effective strategies to reduce energy use in the home. | Some residential customers do not understand how their behaviors, appliances, and electronic devices can affect their energy use and contribute to their monthly bills. Customers are also unaware of cost-effective strategies to reduce energy in their home.<br>• The PY2016 program targeted over 125,000 customers for the HER program and over 20,000 for the IE-HER program to receive reports.<br>• Based on responses to the CET survey, 71% of treatment customers agree that KCP&L provides tools to help customers learn about energy use.<br>• While more customers cite the similar homes comparison as a feature they like about the home energy reports, a small number of customers question the accuracy of the similar homes comparison. |
| Home Energy Report | The HER and IE-HER Programs address two market imperfections fundamental to residential customers: 1) the information asymmetry between the energy end user and the energy provider regarding how end-use behaviors contribute to the monthly bill. 2) awareness of cost-effective strategies to reduce energy use in the home. | Some residential customers do not understand how their behaviors, appliances, and electronic devices can affect their energy use and contribute to their monthly bills. Customers are also unaware of cost-effective strategies to reduce energy in their home.<br>• The PY2016 program targeted over 125,000 customers for the HER program and over 20,000 for the IE-HER program to receive reports.<br>• Based on responses to the CET survey, 71% of treatment customers agree that KCP&L provides tools to help customers learn about energy use.<br>• While more customers cite the similar homes comparison as a feature they like about the home energy reports, a small number of customers question the accuracy of the similar homes comparison. |
| Residential Programmable Thermostat | The primary market imperfection the PT program addresses is that customers have little incentive to reduce usage during peak periods given the price structures in place at many utilities. As a result, utilities use DLC programs to obtain needed demand flexibility using opt-in designs...DR is a form of negative generation and can be called on during periods of high demand in the same manner as a peaking power plant might be built and brought online to serve the same end, but at lower cost. | he primary market imperfection the PT programs address is that residential and small commercial customers have little incentive to reduce electricity usage during peak periods given the rate structures in place at most utilities. As a result, utilities use thermostat programs to obtain needed demand reductions using opt-in designs. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Income-Eligible Multifamily | | The target market for this program is low-income, multifamily residents, targeting both owners and tenants. This market has limited capital availability and low awareness of EE options.<br>• The primary difficulty in this market is the inability of income-eligible tenants to afford EE measures, as well as the limited incentive for the owners to increase EE when the tenants pay the utility bills.<br>Another obstacle to this market is lack of knowledge—many customers may not be aware of the extent to which increasing EE could lower their energy use and their energy bills. |

## Table 19: Issue #2 - Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business EER - Standard | The target market for these two programs is all C&I customers within KCP&L-MO territory, regardless of size or rate class. In general, this is similar to what is done in similar programs at other utilities and is considered to be an appropriate target market. The presence of the Custom Program in addition to the Standard Program ensures that larger customers with more complex systems and energy efficiency needs are able to participate in the KCP&L-MO program offerings. | KCP&L has a well-defined target market (C&I) for the Standard program. No further subdivisions appear necessary given current program participation.<br>• All three of KCP&L's C&I customer classes have participated in the Standard program.<br>• KCP&L has made a concerted effort to engage trade allies, as this group interacts with the customer in the early stages of a new project. Engaging the customer early in the process has been a key goal for all the C&I programs.<br>• Contractors (68%) and the KCP&L website (11%) are the primary sources from which participants are learning about the Standard program's measures. These resources and self-outreach are promising, though they indicate there is a potential opportunity to increase cross-program promotion (4%) as a way for customers to gain awareness about the program |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business EER - Custom | The target market for these two programs is all C&I customers within KCP&L-MO territory, regardless of size or rate class. In general, this is similar to what is done in similar programs at other utilities and is considered to be an appropriate target market. The presence of the Custom Program in addition to the Standard Program ensures that larger customers with more complex systems and energy efficiency needs are able to participate in the KCP&L-MO program offerings. | KCP&L-MO has a well-defined target market for the Custom program.<br>• All three of KCP&L-MO's C&I customer classes have participated in the Custom program. The program does tend to have more participants from the Tier 1 industrial and large commercial sectors due to their ability to implement larger projects with end uses not captured in the Standard program.<br>• KCP&L-MO has made a concerted effort to engage trade allies and design professionals as these two groups interact with the customer in the early stages of new construction or facility expansion. Engaging the customer as early in their design process as possible has been a key goal for the C&I programs.<br>• KCP&L-MO has been identifying the four greatest vertical sectors for opportunities; these are data centers, manufacturing, K-12 schools, and municipalities. |
| Block Bidding | | While a participant may win a bid, they may not be able to implement energy efficient projects.<br>• In PY2016 there were three winning bids out of five auctions. However, only one customer successfully implemented their project.<br>• Navigant recommends monitoring customer participation for PY2017. If the initial bidding processes do result in the level of kilowatt-hour savings anticipated, KCP&L could expand the marketing of this program to the medium-sized customer. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| SEM | | KCP&L has a well-defined target market for the SEM program. KCP&L's SEM team works with its key accounts team to identify high energy usage customers with approximately 20 MWh of annual consumption and then validates whether these customers have the savings potential to participate in the program by conducting onsite visits.<br>• To achieve this ideal megawatt-hour threshold, KCP&L targets customers from the industrial sector and commercial customers from the public sector (customers with multiple sites that have shared knowledge and experiences between their sites, which includes healthcare, municipalities, and schools).<br>• This limited market fits well with the program structure; it also helps facilitate group training and the ability for sites to interact at a similar level during the training. In the future, the program may have to target smaller customers with a more diverse mixture of building types and operations. As this occurs, the program should carefully construct the cohorts so that customers with similar operations are grouped together. This way training can be targeted to meet the needs of these customers and peer interaction will be more valuable for the participants. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Small Business Lighting | | KCP&L has a well-defined target market for the SBL program.<br>The SBL program targets small business customers who have a peak demand of 100 kW or lower at a single site31. Targeting customers with this lower demand identifies the small business owner who characteristically has limited resources in time and money. The SBL program removes these obstacles to encourage participation.<br>Additionally, when a trade ally applies for an incentive through the SBL program, their application goes through a pre-approval process where the program team checks the eligibility of the project. This way the program team makes sure the projects coming through are eligible for the SBL program.<br>Continue current efforts as they are showing traction with both trade allies and participants. |
| Demand Response Incentive | | The target market segment is defined as all commercial customers that can reduce their demand to at least 25 kW below estimated peak usage when a curtailment event is called between June 1 and September 30 of a given year.<br>To date, the program has focused on customers with the highest savings potential to maintain a cost-effective program. There is still an opportunity to recruit as the program is cost-effective.<br>In PY2016, the program had eight Tier 1 participants. In PY2017 and PY2018 the target market will need to expand to include customers with smaller loads as the list of Tier 1 customers will have been exhausted after PY2016. KCP&L is working with CLEAResult on methods to accomplish this task. When the program expands, Navigant suggests focusing on reaching high impact customers first to best maintain cost-effectiveness. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Whole House Efficiency | | KCP&L's primary target audience for this program is broadly defined as owners of single-family homes, although 2-4 unit residences and renters are also eligible.<br>KCP&L's product manager indicated that the program is especially interested in engaging homeowners with older heat pumps because of the high potential for electricity savings.<br>Surveyed trade allies note that the customers that participate in energy efficiency programs tend to be higher income households in the suburbs. When asked if there are customer types who would benefit from the program but are not currently participating, one trade ally specifically noted neighborhoods with many older homes as a good target for weatherization measures (Brookside, Waldo) and downtown.<br>Consider geotargeting online advertising or mailings to neighborhoods with a high density of older homes. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Home Lighting Rebate | The program market segment is appropriately defined as all KCP&L-MO residential customers buying light bulbs.... The program's portfolio of stores is diverse in that it includes mass merchants, home improvement stores, economy retailers, and food banks... Additionally, the online store delivers the program to customers who are far from participating stores and to those who need or prefer the convenience of shopping from home. Small businesses and landlords of multi-family units may also be purchasing bulbs from retailers through the program, however, and KCP&L-MO is aware that their program may serve a broader market than the implied residential-only target market. | The program appropriately defines the target market as all residential customers, although the evaluation results suggest that targeted marketing may help recruit additional hard- to-reach (HTR) customers (i.e., income-eligible households, renters, non-English speaking households, bargain store shoppers). The evaluation found that HTR shoppers are less familiar with LEDs and less likely to report buying LEDs in the past 6 months.<br>Based on consumer survey responses, it appears that HTR customers have less familiarity and experience with energy efficient lighting, especially LEDs. For example: o Income-eligible and renter respondents were significantly less likely than their counterparts (non-income-eligible and homeowner) to be somewhat or very familiar with LEDs. o Less than one-third of frequent bargain store shoppers reported purchasing LEDs in the past 6 months, while roughly three-fifths of non/infrequent bargain stores shoppers (61%) reported doing so.<br>Navigant suggests that the program consider sharpening its educational and marketing efforts geared toward HTR customers. Continue to partner with bargain stores, and, if possible, offer less expensive ENERGY STAR LEDs that exceed the life and light quality of CFLs at bargain stores. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Income-Eligible Home Energy Report and Home Energy Report | The target market segment for the HER Program is appropriately defined as residential customers with the highest energy consumption. The focus on residential customers is appropriate because residential customers often lack awareness of their actual energy usage and the available alternatives for saving energy. The focus on high-end users is appropriate because, since their consumption is higher than average, they have greater opportunities to save and should save more energy, on average, than others. In future program years, the program can be expanded to include additional residential customers. The target market segment for the IE- HER program is appropriately defined as low-income residential customers. | The target market segment is appropriately defined as residential customers in single family homes.<br>The initial waves included the highest energy users. As the program adds waves, the new waves include customers beyond the highest energy users.<br>In 2014, KCP&L-MO added the IE-HER program to the portfolio to expand the reports to additional customer segments. |
| Residential and Business Programmable Thermostats | The target market is all residential and small commercial KCP&L-MO customers with peak demand less than 200 kW and having HVAC systems accessible through installation of a communicating, programmable thermostat. This represents a very large segment of KCP&L-MO's total residential and small commercial customer markets. There is no need to expand this market, as large commercial customers are better served by the Demand Response Incentive (DRI) program. There is also no reason to further subdivide this target market, as both residential and small commercial customers are well-served in a similar manner by the program. Some large C&I and institutional customers are also eligible for inclusion in the Innovari DR pilot. | The target market is residential and small commercial customers. It is appropriately defined because large C&I customers have the Demand Response Incentive program.<br>This program, which addresses both residential and C&I customers, is well accepted by the market.<br>Currently the target market does not need to be further subdivided as it is meeting and exceeding program targets.<br>In the coming PY consider targeting Honeywell replacements for customers with large HVAC loads per thermostat. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Income-Eligible Multifamily | | The market for income-eligible multifamily is well-defined and does not need to be consolidated or expanded because the program explicitly defines the population using Federal Poverty Guidelines.<br>• KCP&L-MO defines the target market of income-eligible customers as multifamily properties that are either subsidized or occupied by more than 50% tenants who have household incomes below 200% of the Federal Poverty Income Guidelines, which translates to less than $23,760 per year for a single person or $48,600 per year for a family of four. |

## Table 20: Issue 3 - Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business EER - Standard | The end-use mix provided by the Standard Program is sufficient. The Standard Program offers a wide mix of end-use measures... This is typical among programs in markets that have a lot of low-hanging fruit. Despite the variety of end uses included in the Standard Program, participants chose Custom over Standard, even for lighting. In sum, Navigant finds the end-use mix of the Standard Program sufficient and recognizes the greater diversity of end uses that the Custom Program offers. However, ... the Custom Program achieved significant lighting savings suggests that there may be barriers specific to the Standard Program that divert participation to the Custom Program. KCP&L-MO is aware of the differing incentive levels in the Custom program and is moving to a $/kWh rate and is shifting measures from Custom to Standard in MEEIA 2. | While the Standard program addresses a participant's HVAC, lighting, and refrigeration energy end-uses, 89% of the rebate activity in PY2016 was for lighting measures.<br>• The Standard program complements the other Business EER programs by providing rebates for the more typical capital projects.<br>• Almost three-quarters of trade allies surveyed (72%) replied with no additional measures suggested. For those suggesting measures (two out of 19), there was no clear overlap in suggestions, with one suggesting only including lighting controls (dimmers) and the other suggesting low volume HVAC measures for consideration. |
| Business EER - Custom | The end-use mix provided by the Standard Program is sufficient. The Standard Program offers a wide mix of end-use measures... This is typical among programs in markets that have a lot of low-hanging fruit. Despite the variety of end uses included in the Standard Program, participants chose Custom over Standard, even for lighting. In sum, Navigant finds the end-use mix of the Standard Program sufficient and recognizes the greater diversity of end uses that the Custom Program offers. However, ... the Custom Program achieved significant lighting savings suggests that there may be barriers specific to the Standard Program that divert participation to the Custom Program. KCP&L-MO is aware of the differing incentive levels in the Custom program and is moving to a $/kWh rate and is shifting measures from Custom to Standard in MEEIA 2. | The Custom program addresses the participant's energy end uses that do not fall under KCP&L-MO's other C&I programs. |

| | | |
|---|---|---|
| Block Bidding | N/A | The Block Bidding program addresses participant energy end uses for energy efficient projects that exceed the financial caps of KCP&L's other C&I programs. The Block Bidding program encompasses all end uses and addresses projects saving more than 1 million kWh per year. These projects could possibly go across multiple buildings or properties to allow for greater savings.<br>For PY2017, projects that are over the Custom program's rebate cap of $100,000 or the Standard program's rebate cap of $400,000 will be eligible to participate in the Block Bidding program.<br>Navigant recommends monitoring the balance between programs to ensure goals are continuously being met. The Block Bidding program is a complement to KCP&L's Business EER – Custom and Standard programs. As a combination, these three programs will address the EE needs of the large C&I customer. KCP&L could monitor the end uses and the quantity of savings in these three programs to ensure the program is capturing a new market. |

| | | |
|---|---|---|
| SEM | N/A | The SEM program addresses all the major energy end-uses for a participant.<br>The SEM program focuses on behavior-based and no-cost/low-cost measures that may fall under any major end use. For the SEM program, it is difficult to answer this question as the measures implemented are on a case-by-case basis.<br>Overall, the SEM program can address any end use at a facility if there are possible behavior- based, no-cost/low-cost measures available. Other Business EER programs like Standard and Custom are available to address non-behavior-based needs.<br>several end uses may need special attention to maintain the program savings realized. Navigant suggests that KCP&L consider creating a program that could address measures that require regular maintenance or upkeep to realize savings. These measures include air compressor leak detection and repair and boiler tune ups. These measures have significant effects on the site's energy usage; however, due to their short measure life, they need to be maintained on a regular basis. |
| Small Business Lighting | N/A | The SBL program provides lighting measures for small business customers. with 62% of the trade ally survey respondents indicating they were happy with the program offerings.<br>• For trade allies providing suggestions for other measures, there was not a clear, consistent suggestion. Suggestions included breaking out exterior to more detailed measures, specifically targeting plug-in CFLs, and allowing all linear replacement lengths instead of the current limited categories.<br>Continue with lighting as the only end use at this time as it is a significant end use for small businesses. Continue to monitor trade ally feedback for potential additional measures that should be considered for program inclusion. |

| | | |
|---|---|---|
| Demand Response Incentive | N/A | The mix of end-use measures included in the program appropriately reflects the diversity of end-use energy service needs and existing end-use technologies within the target segment.<br>Participants control how they meet their demand reduction obligations through curtailing or rescheduling end uses, using backup generators, or both.<br>End-use options that can be chosen include but are not limited to: rescheduling use to off-peak time; temporarily shutting down factory production lines; reducing motor, process, lighting, and cooling loads; and turning off or lowering water heater set points.<br>For DRI customers that produce their own onsite electricity, it would be useful for KCP&L-MO to develop a method to include their net power received in the interval data. |

| | | |
|---|---|---|
| | | cross the three program tiers, the program offers measures that cover most of the common energy end uses in residential homes. However, most energy savings and participation comes from AC units and heat pumps, with little participation in the heat pump water heater, air sealing, or insulation measures.<br>Weatherization trade allies perceive that the program has not provided the same level of marketing support to them as it provided to the HVAC trade allies. Navigant's review of the marketing materials provided by KCP&L supports that perception.<br>Weatherization trade allies expressed a desire to see the windows incentive reinstated. A few participants also mentioned that the program would improve by adding incentives for windows<br>and appliances. Navigant recognizes that KCP&L dropped the windows incentives due to cost- effectiveness problems in previous PYs. |
| Whole House Efficiency | N/A | • In anticipation of the program possibly adding an HVAC tune-up measure, Navigant asked HVAC trade allies a question about the barriers facing customers regarding HVAC tune-ups. The clear majority of trade allies agreed that the primary barriers are lack of customer awareness of the need for tune-ups and the perception that their HVAC equipment is still functioning properly.<br>Explore whether additional advertising or trade ally marketing support could increase participation in less popular measures.<br>Explore ways to highlight the synergies of the program's different tiers to achieve a better overall result for customers. One example could be identifying the level of weatherization improvement that would allow the selection of a lower SEER/Heating Seasonal Performance Factor (HSPF) HVAC unit. While the HVAC unit would be less efficient, the improved weatherization could allow a similar experience for the customer at a reduced total cost.<br>Explore whether a rebate for the comprehensive energy audit would increase participation in Insulation and Air Sealing Rebate. |

| | | |
|---|---|---|
| Home Lighting Rebate | The mix of CFL and LED bulbs generally available for rebates under the program appropriately reflects the diversity of bulb options within the efficient home lighting market. The program offers discounts on standard CFL and LED bulbs, as well as specialty products such as flame and globe shaped bulbs and 3-Way bulbs. Many brands and models of CFL and LED bulbs are included in the rebate program, and the mix of bulbs is continually monitored and updated by the IC to reflect market realities. However, in reaction to higher than anticipated sales volume in KCP&L-MO during PY2015, the program curtailed all incented sales of CFLs for the last five months of the year, limiting the variety of bulbs available to KCP&L-MO customers. | The program appropriately supports LED bulbs only, having dropped CFLs in PY2016 in keeping with market trends and conditions. The evaluation results suggest that adding LED downlights, retrofit kits, and integrated fixtures could diversity the end-uses for this technology.<br>• While interviewees believed that the program should continue supporting LED bulbs, suppliers suggested adding LED downlight and retrofit kits and fixtures.<br>If possible, work with the IC to determine if adding LED downlight and retrofit kits and integrated fixtures to the program would further program goals to achieve savings and increase adoption. |
| Home Energy Report and Income-Eligible Home Energy Report | The program recommends steps to reduce energy use that span the typical end uses of residential customers. This program is considered a behavioral program because customers install no equipment or measures directly rebated by the program. The energy reports communicate household energy consumption and compare customers to similar households in order to increase awareness and motivate the recipients to take action to reduce consumption. Every report includes three recommendations for ways to reduce energy use that are selected based on the customer's demographics and any conservation steps taken (as self-reported through the program website). | Home energy reports provide a diverse set of suggestions that target all residential end uses. The focus of the report is to modify behaviors; therefore, the program does not offer rebates for specific measures but does promote rebates provided through other KCP&L programs.<br>These tips include many low- and no-cost actions as well as suggestions to buy efficient equipment and appliances. The IE-HER program highlights more low- and no-cost ways to save energy.<br>The tips cover the main residential electricity end uses: lighting, HVAC, electronics, water heating, appliances, and pools.<br>The program should continue to keep abreast of new ways to use and save energy to provide up-to-date tips. The program should also monitor trends in prices that may affect the affordability of tips. |

| | | |
|---|---|---|
| Residential and Business Programmable Thermostat | N/A | The program aligns with the overall diversity of end-use energy service needs and existing technologies by using the cooling end-use for DR purposes. This is appropriate as it is the highest contributor to peak demand in the residential and small C&I sector.<br>If the program does not meet participant goals, KCP&L could consider researching if including more thermostat options would reduce a possible barrier to participation.<br>In the future, competition among PT vendors and evolving technological developments could lead to the market shifting from one vendor toward another. Navigant suggests KCP&L monitor the market to avoid missing market trends. The mix of end-use measures included in the program (i.e., PTs) meets the needs of the existing market. However, there are other vendors of similar solutions that could be benchmarked toward the ability to handle multiple thermostat vendors and additional program functionality. |
| Income-Eligible Multifamily | N/A | Navigant found that the program includes appropriate measures for its current targets.<br>• The program includes the following end-use measures: aerators, low-flow showerheads, water pipe insulation, lighting, and smart power strips. Common area measures include lighting and an option for custom measures for those measures deemed to be appropriate for that property. The custom program encompasses all end-uses, and therefore addresses all EE potential in the target market segment. |

## Table 21: Are the communication channels and delivery mechanisms appropriate for the target market segment?

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business EER - Standard | The C&I Standard and Custom Programs use communication channels and delivery mechanisms that are appropriate for the target market. The C&I Standard and Custom Programs have a good presence on the KCP&L-MO website. The C&I Standard and Custom Programs have hired a trade ally manager focused on trade ally outreach and program awareness in 2014. Trade allies report high satisfaction with the amount and type of communications from KCP&L... KCP&L program staff reported an uptick in the municipalities, universities, schools, and hospitals (MUSH) market participation when compared to 2014. This is a market where KCP&L completed additional outreach activities. | The Standard program primarily marketed to and recruited customers through one-on- one conversations with the larger customers and working with the trade ally network for medium to smaller customers. High participant satisfaction is one indication that the program's communication channels and delivery mechanisms are generally appropriate for the target market segment.<br>Of the trade ally respondents, 60% were somewhat to extremely satisfied with the marketing materials they received, 72% were satisfied with the training they received, and 82% felt the training was of the right length (not too long or too short). |
| Business EER - Custom | The C&I Standard and Custom Programs use communication channels and delivery mechanisms that are appropriate for the target market. The C&I Standard and Custom Programs have a good presence on the KCP&L-MO website. The C&I Standard and Custom Programs have hired a trade ally manager focused on trade ally outreach and program awareness in 2014. Trade allies report high satisfaction with the amount and type of communications from KCP&L... KCP&L program staff reported an uptick in the municipalities, universities, schools, and hospitals (MUSH) market participation when compared to 2014. This is a market where KCP&L completed additional outreach activities. | In PY2016, there was an increase in the program's outreach efforts. The marketing or recruitment of the Custom program was conducted through face-to-face interactions with customers, trade allies, energy consultants, and design firms, with the focus to increase participant awareness of the program in the early stages of a project. As mentioned above, PY2016 was a transition year for the Custom program; therefore, it is unclear if the low actual savings were caused by this transition or the marketing efforts. Navigant recognizes that KCP&L-MO creates a custom express application process for certain straightforward and replicable measures. KCP&L-MO also focuses on smoothing the application process through outreach and training efforts. Navigant recommends continuing these efforts with more customers and contractors, especially non-lighting |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | | contractors. |
| Block Bidding | N/A | Commercial customers with identified savings of 1 GWh or more per year prefer a direct marketing approach. An auction house conducted the marketing and recruitment of the Block Bidding program; this is consistent with other similar programs nationally.<br>The Block Bidding program defines the program eligibility to KCP&L's commercial customers, trade allies, or ESCOs who have identified savings of 1 GWh or more per year. As such, Overlay's direct contact to these market segments was an appropriate delivery mechanism.<br>The main communication channel for the Block Bidding program is direct contact with the large customer by KCP&L, its IC, or the auctioneer. Navigant feels this is appropriate given the diversity and needs of the large customer base, and suggests periodic reviews with customers to ensure participants indicate this is the best communication pathway. |
| SEM | N/A | KCP&L directly markets the SEM program to its customers through key accounts. This is appropriate as these accounts prefer a personalized approach in place of a broad-focused marketing effort.<br>Larger energy consumers prefer a personalized approach where the benefits of the program to their specific facility are discussed.<br>KCP&L's passive approach for the program has been successful in recruiting 16 participants for the 2016 pilot year.<br>No participant interviews were slated for the SEM program for PY2016 evaluation. However, this will be a focus of the |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | | team's PY2017 process evaluation activities.<br>Marketing for this program is extremely limited, and the current model of account mangers introducing the customers to the program has worked well with these large clients. When the program considers expanding to a larger number of customers, a more proactive approach may need to be considered to meet program goals. |
| Small Business Lighting | N/A | Communication channels and delivery mechanisms are working for the program as-is though there are opportunities for further improvement.<br>Over 90% of participants surveyed indicated no other methods of learning about the program were needed. However, trade ally survey participants identified opportunities for potential marketing and communication improvements, with only 50% indicating they were aware of and had received program marketing materials.<br>Five out of 12 trade ally survey respondents suggested that there should be more direct marketing to customers. Another five (out of 12) respondents suggested that more marketing support should be provided to trade allies and contractors.<br>This is a typical finding in a process evaluation—trade allies almost always recommend additional marketing efforts. Further, all participant respondents except one said that they do not think that any improvements are needed. However, with only 50% of the trade allies aware of the marketing materials, KCP&L has an opportunity to provide additional training and marketing materials to the trade ally network toward boosting awareness.<br>Navigant suggests monitoring marketing efforts by trade allies and consider opportunities for further encouraging co- |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | | promotion to amplify marketing messages during targeted promotional periods to drive responses. |
| Demand Response Incentive | N/A | Navigant found that the communication channels and delivery mechanisms are intermittent. While communication with program participants takes place at the start of the season, the program could benefit from more continuous communication throughout the DR season.<br>CLEAResult leverages KCP&L's energy consultant's one-on-one relationships with customers who have high savings opportunities (referred to as Tier 1 customers) for recruiting purposes.<br>KCP&L cross promotes DRI with the Business EER program.<br>While methods of communication are sufficient at current program size, Navigant recommends more continuous communication with customers throughout the DR season. Assuming the program continues to grow, more methods of communication may be needed for individualized program assistance. In addition, Navigant encourages continued partnership with internal programs such as the current partnership with the Business EER program to cross-promote programs. |
| Whole House Efficiency | N/A | Participating customers report a high level of overall satisfaction with the program, with some variations based on the program track in which they participated. High participant satisfaction is one indication that the program's communication channels and delivery mechanisms are generally appropriate for the target market segment.<br>Given the substantial role that trade allies play in delivering this program, trade ally satisfaction is another important indicator. Trade allies indicate somewhat lower levels |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | | (though ratings are within expected values) of program satisfaction than participants do, particularly regarding rebate amounts and the marketing support provided by the program.<br>When trade allies were asked how the program could improve, the most common answer was "more marketing directly to customers" (cited by 39% of trade allies), followed by "more marketing support for contractors/trade allies" (21%). These are common responses from trade allies in program evaluation surveys; trade allies frequently perceive that the program can do more marketing and advertising than individual trade allies are capable of funding.<br>Consider a more comprehensive energy audit rather than Energy Savings Kit for customers with a higher level of EE knowledge.<br>Consider offering Energy Auditor /Insulation and Air Sealing trade allies additional training and easy-to-understand program information that they can leave behind with customers so that customers understand the program process from start to finish.<br>If the program chooses to reinstate the HVAC tune-up rebate, consider developing an awareness campaign or educational materials that would assist trade allies in persuading their customers of the need for tune- ups. |
| Home Lighting Rebate | In-depth interviews with program staff and the implementers suggest that both communication channels and delivery mechanisms are appropriate for the target market segment: potential purchasers of standard socket light bulb. In PY2015 the utility recognized that television and internet mass marketing of the program is not | KCP&L-MO and the IC market the program widely through mass media (including the Internet) and within retail stores, but there is room for improvement.<br>KCP&L-MO marketing aligned with the portfolio-level "We're great at energy efficiency" campaign, but the marketing material reviewers observed that materials did not consistently reference ENERGY STAR lighting. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | necessary. Participation was higher than expected even in advance of the planned mass-marketing campaign, thus KCP&L-MO cancelled the campaign for the HLR program and reallocated advertising funds to programs with lower participation rates. The IC markets to potential customers through in-store events, placement of in-store marketing materials and signage, training of retail staff, in-person advice and guidance to retail shoppers on efficient lighting from field representatives in the store, as well as community outreach events. The program incentive is an instant rebate, which streamlines participation. Low-income customers receive free CFL bulbs through the food bank component of the program. | There are opportunities to improve marketing targeted at HTR populations. Except for one retailer, point of purchase materials had Spanish translations only in fine print as opposed to being in full-sized font. Additionally, during the consumer survey, none of the 14 frequent bargain store respondents reported seeing any marketing or displays; on the other hand, more than two- fifths of other shoppers (42%) reported seeing marketing or displays.<br>The team emphasizes that promotional efforts carry a consistent portfolio theme. The program could possibly shift to a system of consistently referencing and highlighting ENERGY STAR and using the ENERGY STAR logo whenever possible to differentiate from non-ENERGY STAR models. |
| Home Energy Report and Income-Eligible Home Energy Report | The HER Program uses two primary communication channels: monthly emails and paper mailers every other month. The timing and frequency of messaging through these channels is appropriate given the need to provide information through multiple mediums over time so participants can monitor the impact of any efficiency and consumption changes they make. A sample mailer is provided in Appendix D. The program also provides a web portal so users can receive more tips and commit to implementing them, KCP&L-MO staff noted that participation in the web portal increased in 2015. | The HER program uses two primary communication channels: paper mailed reports and emails.<br>All treatment customers received five paper reports in PY2016.<br>Customers with email addresses on file also received monthly email reports.<br>Customers could also access an online portal to monitor energy use through the Home Online Energy Audit.<br>The timing and frequency of messaging through these channels is appropriate given the need to provide information through multiple mediums over time so participants can monitor the effect of any efficiency and consumption changes they make.<br>The program may want to consider signing up more customers for email reports so that customers can receive messaging from both channels. Navigant notes that this |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | | would require capturing and sharing more customer emails with Opower, which may or may not be feasible given the program resources. |
| Residential and Business Programmable Thermostat | Both communication channels and delivery mechanisms are appropriate for the target market segment. Honeywell handles all communication issues and delivery mechanisms for the PT program...Honeywell actively markets the program to KCP&L-MO customers using a direct mail and telemarketing approach. Honeywell communicates with the participating customer's device during a curtailment event. Honeywell handles all aspects of program delivery...Program delivery consists of a Honeywell field representative visiting the customer's site to install the communicating and programmable thermostat and connect it to the HVAC system. The only requirement for the customer is to be present to allow the Honeywell representative on site to install the device. Delivery during a curtailment event consists of Honeywell's systems interacting directly with participating customers' communicating thermostats, without the need for any action on the part of the customer. | Marketing has been successful, as KCP&L exceeded its initial PY target of 1,000 thermostats for the KCP&L-MO territory for PY2016.<br>CLEAResult handles marketing via email to customers that were previously in the thermostat program.<br>In addition, the CLEAResult technicians cross-promote the Residential PT program with the WHE's Energy Savings Kit program and in the HER program mailers. |
| Income-Eligible Multifamily | N/A | Communication channels were initially not appropriate for the program, but the delivery system for the tenant measures is appropriate.<br>Communication channels and delivery are appropriate given the direct interaction with the end- user (tenant). The program is DI for the tenants, and they are not required to fill out any paperwork as a part of the program. |

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| | | KCP&L identified property owners as the most promising points of contact for recruiting program participants. Compared to property managers, property owners have the authority and capital to make decisions and commit to larger projects with deeper energy savings. Further, this opened up additional opportunities with the same property owner, as owners often have more than one property.<br>During the interview, the program manager at KCP&L indicated that there was not sufficient information on the website for property owners and managers to pursue participation in the program in an efficient manner.<br>Working with the property owners directly is an appropriate communication mechanism. Navigant recommends including high frequency custom measures in a prescriptive manner in future PYs to ease implementation. |

**Table 22: What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?**

| Program | 2015 Summary Response | 2016 Summary Response |
|---|---|---|
| Business EER - Standard | Navigant's research indicates that the following would be useful in helping to overcome identified market imperfections: Creating a set of increased incentives targeted at small commercial customers can help the segment overcome the first cost barrier of energy efficient technologies. Increasing outreach efforts to contractors (through industry events, newsletters, or emails) can increase trade ally participation. Providing marketing materials for participating trade allies to give to their customers can address barriers of limited customer awareness. KCP&L-MO is planning to address these market barriers in MEEIA 2 by increasing outreach to trade allies and establishing performance levels for specific marketing efforts. The program should also consider creating a type of financing program for all C&I customers. This would allow participants the opportunity to undertake more expensive and extensive energy efficiency projects that they would not be able to otherwise, thus increasing the program savings. | KCP&L's success with lighting within the Standard program is strong. The effect from other end uses was 11%, which could indicate an opportunity to further expand non-lighting measure usage through follow-ups with trade allies to identify measures to consider for a marketing and education push.<br>Of the 19 trade allies surveyed, 17 respondents had lighting as their primary measure. Consider trade ally training specifically for the non-lighting end uses such as HVAC, motors, and building controls. Increasing trade ally awareness of the other measures in the Standard program could increase the number of trade allies that specializes in non-lighting equipment.<br>Consider establishing an online tracking system for customers and trade allies to monitor the status of the application and rebate check. |

| | | |
|---|---|---|
| Business EER - Custom | Navigant's research indicates that the following would be useful in helping to overcome identified market imperfections: Creating a set of increased incentives targeted at small commercial customers can help the segment overcome the first cost barrier of energy efficient technologies. Increasing outreach efforts to contractors (through industry events, newsletters, or emails) can increase trade ally participation. Providing marketing materials for participating trade allies to give to their customers can address barriers of limited customer awareness. KCP&L-MO is planning to address these market barriers in MEEIA 2 by increasing outreach to trade allies and establishing performance levels for specific marketing efforts. The program should also consider creating a type of financing program for all C&I customers. This would allow participants the opportunity to undertake more expensive and extensive energy efficiency projects that they would not be able to otherwise, thus increasing the program savings. | This will be a focus for 2017 as participation ramps up. Low participation due to carryover from MEEIA Cycle 1 did not provide sufficient information to draw conclusions for this question.<br>Navigant recommends continuing to develop and periodically review best practices of the current outreach efforts to maintain momentum. |

| | | |
|---|---|---|
| Block Bidding | N/A | The Block Bidding program's pilot year in PY2016 provided a winning bid and valuable insight into the needed characteristics of a successful auction. The research planned for 2017, as participation builds, will focus on identifying the effectiveness of the programs ability to overcome the market imperfections noted in Question 1.<br>Navigant recommends remaining in communication with customers on the appropriate amount of notification time needed for their participation. Block Bidding participants tend to have larger projects with a high capital investment and long lead times. As such, it is difficult for these customers to react quickly to offerings. In PY2017, KCP&L lowered the incentive caps for Custom to $100,000 and Standard to $400,000, which may increase the participation for Block Bidding. KCP&L may consider a mid-year review to see how effective this change is on Block Bidding and adjust the caps accordingly. |
| SEM | N/A | The program needs more time to complete training and other activities before Navigant can appropriately answer this question.<br>The processes and approaches are consistent with other programs evaluated by Navigant. However, because savings have yet to be reported, the evaluation team is waiting to collect more data before providing input on this issue. This will be the focus for PY2017 research. |