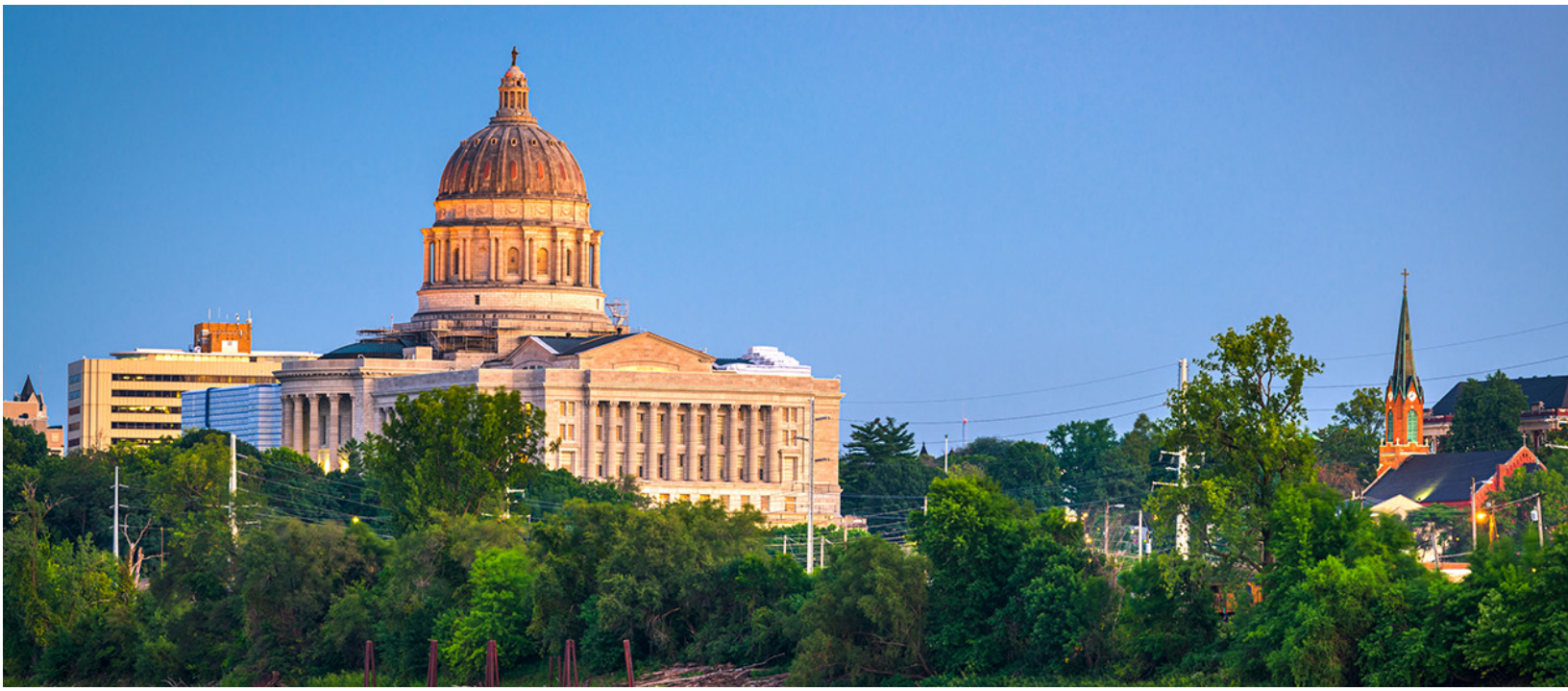
Independent EM&V Audit of the Evergy PY2020 Program Evaluations



Final Report

Submitted by Evergreen Economics

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MichaelsEnergy

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1 Executive Summary

In January 2020, Evergy (formerly Kansas City Power and Light, KCPL), implemented its Missouri Energy Efficiency Investment Act (MEEIA) Cycle 3 Programs. The MEEIA Cycle 3 Programs covered in this audit include the following:

- **Business Standard Program** – Designed to help commercial and industrial (C&I) customers save energy through a broad range of energy efficiency options that address all major end uses and processes. The program offers standard rebates as well as mid-stream incentives. The measures incentivized included lighting, HVAC equipment, and motors.
- **Business Custom Program** - Offered to all Evergy C&I customers, the program provides incentives for a broad range of projects that do not fit within the Business EER – Standard program.
- **Process Efficiency Program** – In 2020 the program's activities focused on providing retro-commissioning services. The program offers participants recommendations for higher cost system improvements, and incentives are offered on a $/kWh basis to address the recommendations.
- **Heating, Cooling and Home Comfort** – Designed to help residential customers increase awareness and incorporation of energy efficiency into their homes by providing education and financial incentives. The program encourages home improvements that increase operational energy efficiency and home comfort and consists of three components: 1) Energy Savings Kit, 2) Insulation and Air Sealing, and 3) HVAC.
- **Energy Saving Products** – The program is designed to promote, cultivate, and facilitate the adoption of energy efficient products in residential settings. It is designed to expand both residential customer and sales associate knowledge of and familiarity with the advantages of various energy efficient products and promote efficient product adoption. Customers receive instant discounts for a variety of efficient measures including a selection of LED lighting measures, including standard, specialty, and smart bulbs.
- **Income-Eligible Multifamily** – Delivers long-term energy savings and bill reduction to residents in income-eligible multifamily housing. The program was separated into two tracks in PY2020: one consisting of direct install efficiency kit measures and the other consisting of prescriptive and custom measures.
- **Home Energy Report (HER) Program** – Distributes home energy reports by paper or mail to educate residential customers about their home energy usage and provides them with information designed to encourage behavior change in energy use.
- **Income-Eligible Home Energy Report (IE-HER) Program** – Identical to the HER program except report messaging focuses on low- or no-cost ways to save energy.

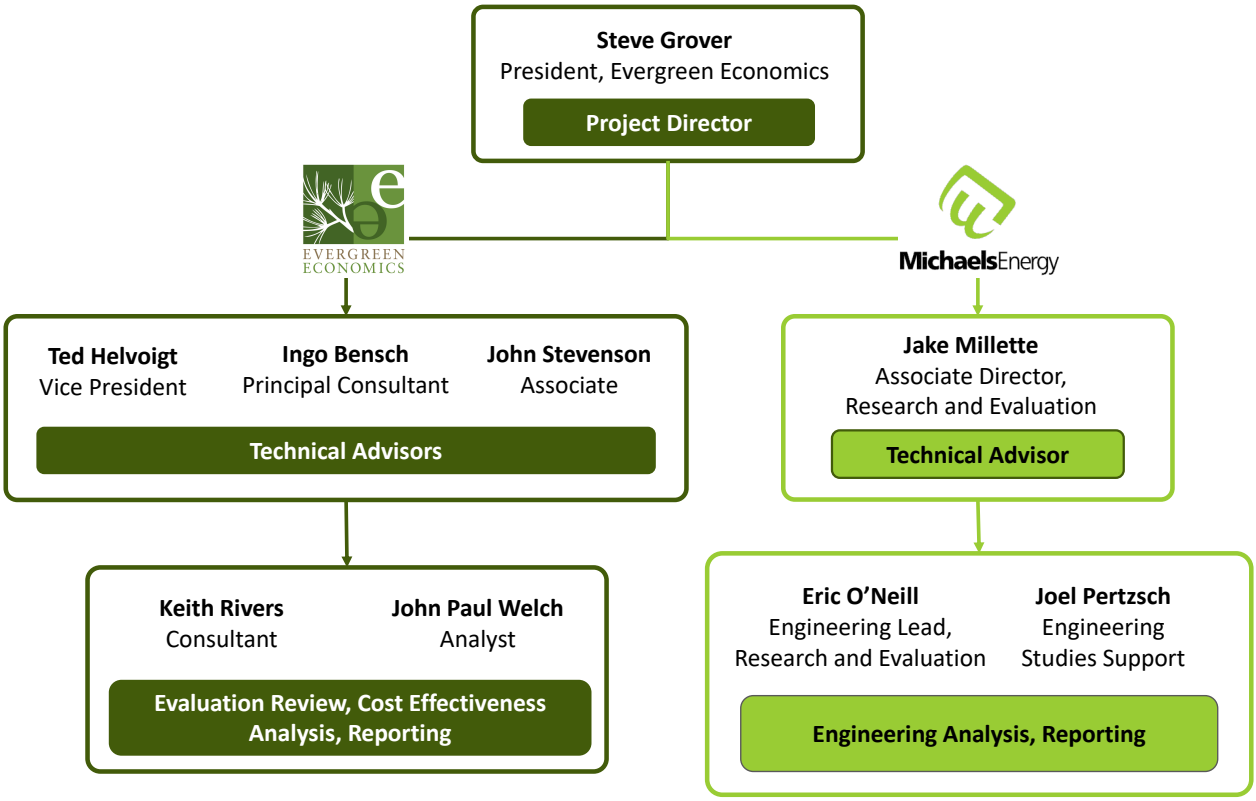
- **Home Online and Business Online Energy Audit** – Opt-in online tools that provide energy-saving tips and help customers track their energy usage. The tools encourage customers to take energy-saving actions in their homes and businesses through individual actions and through participation in other Evergy energy efficiency programs. This program claims no savings.
- **Business Smart Thermostat** – Uses automatic event call technology to reduce energy use during peak demand periods. Customers receive notification on their smart thermostat, and a customer's setpoint will increase between two and five degrees Fahrenheit.
- **Business Demand Response** – Provides rebates to C&I customers for curtailing their energy usage during system peak demand periods. When Evergy calls an event, participants reduce their load toward a pre-defined firm power level to create demand savings.
- **Residential Demand Response** – Provides rebates to residential customers for curtailing their energy usage during system peak demand periods. When Evergy calls an event, participants reduce their load toward a pre-defined firm power level to create demand savings.

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).

Evergy contracted with the evaluation teams led by Guidehouse, Inc. (Guidehouse) and ADM Associates (ADM). The evaluation teams conducted comprehensive impact and process evaluations of Evergy Metro's and Evergy Missouri West's energy efficiency portfolios in PY2020. For the purposes of this report, the evaluation teams will be referred to as "the Guidehouse team" and "the ADM team".

In 2020, the Missouri Public Service Commission (PSC) contracted with Evergreen Economics and Michaels Energy (the Evergreen team) 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

The audit team provided multiple comments and questions on the draft versions of the Guidehouse and ADM reports, and most of our issues were resolved prior to the final evaluation reports being completed. There are two remaining issues that are discussed below.

Free Ridership Calculation

For the free ridership estimates produced by Guidehouse for the C&I programs, we repeat our comment from prior years about coding 'don't know' responses. For customers answering 'don't' know' to any of the questions used in the free ridership scoring algorithm, these responses should be coded as missing and dropped from the free ridership calculation – they are not providing any information. They should not be assigned a value of 0.25 as they are in the current report.

Although the Business Standard Program uses the free ridership value from last year, we also reiterate our previous comment that the customer survey should be the source used to estimate free ridership, and not the trade ally surveys. As Guidehouse notes in their report (p. 12), the customer is in the best position to understand and articulate if they would purchase the equipment if the rebate had not been available.

For the ADM free ridership method used for the Evergy Residential Programs, we also repeat our comment from prior years that the algorithm should not use a single survey question as the sole determinant of the final free ridership value. Currently, if the customer indicates that they could not have afforded the equipment then they are automatically assigned a free ridership score of zero and the rest of the question responses are discarded. This should not be allowed. In this and prior years, ADM defends this practice by saying that few if any customers are removed from the free ridership algorithm based on this single question. This just furthers the argument for dropping the question entirely from the algorithm.

In a separate part of the scoring algorithm (Figure A-1 from the evaluation report Appendix), if the trade ally free ridership response is lower than the results from the customer survey, then only the trade ally value is used and the customer survey responses are completely discarded in the final free ridership calculation. Again, this allows for the free ridership value to be determined by a single question response. Additionally, it also has the problem of completely overriding the customer survey responses, which repeats the issue noted above of using the less reliable trade ally results instead of the customer survey. Finally, it also has the problem with biasing the free ridership value downward as only the minimum values are used (rather than the average).

A similar problem occurs with the timing adjustment; if the customers says the project would have been delayed by one year without the program, then they are assigned a free ridership value of zero and all of the customer survey responses are dropped from the free ridership calculation. For comparison, the Guidehouse free ridership algorithm for C&I customers limits the timing adjustment to 50 percent of the final free ridership score. All of these single question response scorings eliminate the potential for consistency checks that the other survey questions could provide and therefore go against industry best practices.

The ADM free ridership method is not commonly used elsewhere in the country and is different from the method used by Guidehouse for Evergy C&I and by ODC for the Ameren MO programs. To address this discrepancy and eliminate the problems noted above, we recommend that in the future the Evergy Residential Programs begin using the free ridership and spillover calculation algorithms from the Illinois TRM. This would make the free ridership and spillover estimates more consistent across similar programs and within Evergy's portfolio. The Illinois TRM method has been vetted by a large group of evaluators and stakeholders and offers a significant improvement over the current ADM method, as it provides a clearer scoring algorithm that includes multiple survey

questions, and has less opportunity to assign arbitrary weights to the survey responses. It also eliminates the problem of having free ridership determined by a single survey question response.

Residential and Business Smart Thermostat Regression Model

The same regression model (Equation I-1 and Equation J-1 in the evaluation report Appendix) is used to estimate the demand response program impacts for both the Residential Smart Thermostat and Business Smart Thermostat programs. This model includes several variables in the regression that appear duplicative:

- PreCooling = dummy variable for last 3 hours
- NHBU = based on 'past hourly values'
- MA4CDH = moving average of last 4 cooling degree hours
- MA24CDH = moving average of last 24 hours

The NHBU, MA4CDH, and MA24CDH variables are all trying to capture the building's heat build up and its effect on energy use. Going back 24 hours seems too far to capture anything relevant to the event period in terms of heat buildup that is not already being captured by the other variables. ADM provided information on the correlation coefficients and as expected some of these variables are highly correlated[1], which can reduce the statistical significance of the regression coefficient estimates.

It is also unclear how the NHBU variable is calculated; it is merely defined as "cumulative heat buildup based on the weighted average of past hourly values" but no additional information is provided on how it is calculated, what data are used, or how the weighting values are determined. Similarly, there is also no information on where the discount rate of 0.958333 comes from, or why it is being applied to the NHBU variable. Any adjustment (discounting or otherwise) would be reflected in the final coefficient estimate, assuming the model is correctly specified.

From our discussions with ADM about these issues, it appears that most of the variables are holdovers from an earlier model specification used by Guidehouse in prior evaluations of these same programs. Since there does not appear to be a compelling reason to use the more complicated model and as there is no supporting information provided to justify the additional variables, we recommend that a simpler model specification be adopted for both smart thermostat programs. Specifically, a model should be adopted that does not include multiple variables that attempt to capture heat build up effects. The regression model specification from

[1] From Table I-9 in the Appendix for the Residential Smart Thermostat program, the variable AM4CDH has a correlation coefficient of 0.906 with CDD, and NHBU has a correlation coefficient of 0.748 with MA24CDH and 0.574 with MA4CDH. Similarly high correlations among these same variables were observed for the Business Smart Thermostat program in Table J-10 in the Appendix.

the Business Smart Thermostat program for kWh impacts (Equation J-4 in the Appendix), might be a good starting candidate.

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 Evergy reached an agreement to create Evergy Metro's and Evergy Missouri West'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). For PY2020, program evaluation reports were filed for Evergy as part of Case No. EO-2019-0132.

The PY2020 Evergy programs covered in this audit include:

- **Business Standard Program** – Designed to help commercial and industrial (C&I) customers save energy through a broad range of energy efficiency options that address all major end uses and processes. The program offers standard rebates as well as mid-stream incentives. The measures incentivized included lighting, HVAC equipment, and motors.
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- **Energy Saving Products** – The program is designed to promote, cultivate, and facilitate the adoption of energy efficient products in residential settings. It is designed to expand both

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

residential customer and sales associate knowledge of and familiarity with the advantages of various energy efficient products and promote efficient product adoption. Customers receive instant discounts for a variety of efficient measures including a selection of LED lighting measures, including standard, specialty, and smart bulbs.

- **Income-Eligible Multifamily** – Delivers long-term energy savings and bill reduction to residents in income-eligible multifamily housing. The program was separated into two tracks in PY2020: one consisting of direct install efficiency kit measures and the other consisting of prescriptive and custom measures.
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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?
  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?

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

Evergy contracted with Guidehouse, Inc. and ADM Associates as the Evaluation, Measurement & Verification (EM&V) contractors to conduct comprehensive impact and process evaluations of Evergy Metro's and Evergy Missouri West's energy efficiency portfolio. Guidehouse evaluated the commercial energy efficiency programs, and ADM conducted evaluations of the residential energy efficiency and demand response programs.

In 2020, 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 Evergy Metro and Evergy Missouri West program evaluations for PY2020.

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

- Reviewed each program's evaluation report in its entirety, including impact, process, and cost effectiveness methodologies and results;
- Reviewed the evaluation survey instruments and responses (where available) to confirm that the methodologies used were reasonable and consistent with best practices and that reported findings aligned with the data collected;
- Verified that the cost effectiveness calculation inputs used the final net impact numbers from the final evaluation reports; and
- Reviewed specific evaluation tools and methodologies used for calculating program savings, including selected measure-level savings calculations, and survey methods for developing net program impacts.

The remainder of this audit report is organized as follows. First, a summary of the impact and process evaluation results are provided in the following sections. After these summaries, we present our review of the cost effectiveness calculations where we confirm that the calculation inputs used match the results from the PY2020 evaluation. The final section presents the audit conclusions and recommendations.

3 Impact Evaluation Summary

This section summarizes the results and key findings and recommendations from the impact evaluations of Evergy Metro's and Evergy Missouri West's residential and business energy efficiency program portfolios.

3.1 Summary of Impact Evaluation Methods

Guidehouse and ADM followed the Missouri Code of State Regulations 4 CSR-240-22-070 (8), completing impact evaluations for each Evergy Metro and Every Missouri West program that reported energy savings in 2020. Missouri regulations state that programs should be evaluated using one or both methods and one or both 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 summarizes Guidehouse's and ADM's methods and protocols for each program. The labels in columns three and four align with the Missouri requirements discussed above.

Table 1: Impact Evaluation Methods and Protocols

Program	Evaluator	Impact Method	Impact Protocol	Description
Commercial and Industrial Programs				
Business Standard Program	Guidehouse	1a	2a and 2b	Tracking database review, deemed measure savings review, engineering analysis
Business Custom Program	Guidehouse	1a	2b	Tracking database review, Desk/phone reviews, engineering analysis
Process Efficiency Program	Guidehouse	1a	2b	Tracking database review
Residential Programs				
Heating Cooling & Home Comfort	ADM	1a	2b	Tracking database review, deemed measure savings review, supporting documentation review, participant and general population surveys, ENERGY STAR data review
Energy Saving Products	ADM	1a	2b	Tracking database review, deemed measure savings review, general population surveys, ENERGY STAR data review
Income-Eligible Multifamily	ADM	1a	2b	Tracking database review, deemed measure savings review, property manager surveys, ENERGY STAR data review

Program	Evaluator	Impact Method	Impact Protocol	Description
Educational and Behavioral Programs				
Online Business Energy Audit*	Guidehouse	N/A	N/A	N/A
Online Home Energy Audit*	ADM	N/A	N/A	N/A
Home Energy Report	ADM	1b	2a	Tracking database review, participant and general population surveys, billing consumption data review, NOAA weather data review
Income-Eligible Home Energy Report	ADM	1b	2a	Tracking database review, participant and general population surveys, billing consumption data review, NOAA weather data review
Demand Response (DR) Programs				
Business Demand Response	ADM	1a	2a	Tracking database review, billing consumption data review, schedule of program events, NOAA weather data review
Residential Demand Response	ADM	1b	2b	Tracking database review, schedule of program events, NOAA weather data review
Business Smart Thermostat	ADM	1b	2b	Tracking database review, schedule of program events, NOAA weather data review

* No savings were claimed for this program in PY2020.

3.1.1 Net-to-Gross Calculation Methods

Guidehouse and ADM developed net-to-gross (NTG) ratios for selected Evergy Metro and Evergy Missouri West's 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 NTG 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 NTG ratio is:

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

Guidehouse applied NTG ratios developed over the course of the MEEIA Cycle 3 in PY2020 for the Business Custom Program, while the Standard program used the prior year's NTG ratio value. NTG ratios were not calculated by Guidehouse for the Process Efficiency and Business Online Energy Audit programs as they did not claim any savings.

ADM performed new research to determine NTG ratios for the Heating, Cooling, and Home Comfort and Energy Saving Products programs. ADM did not calculate an NTG ratio for the Home Online Energy Audit program as it did not claim any savings.

Additionally, ADM applied a deemed NTG ratio of 1.0 for the following programs in PY2020:

- The **Income-Eligible Multifamily** program, due to the specific targeting of the low-income sector and the small contributions of the program to the overall portfolio savings, which do not justify the cost of conducting primary research needed to adjust the NTG ratio from stipulated values.
- The **Demand Response** programs (Business Demand Response, Residential Demand Response, and Business Smart Thermostats), because customers are compensated only if they reduce their load during the peak demand window, presumably eliminating spillover and free ridership.
- The **Home Energy Reports** program because it is designed as a randomized control trial.

3.2 Summary of Impact Evaluation Findings

In this section, we provide a summary of the energy savings goals and accomplishments across Evergy Metro and Every Missouri West's energy efficiency program portfolio. Table 2 and Table 3 show Evergy Metro's energy efficiency targets, *ex ante* gross values, *ex post* gross values, the *ex post* net savings (evaluated) and net achievement compared to the targets for energy savings (kWh) and demand reductions (kW), respectively. Table 4 and Table 5 show these same values

compared to energy savings (kWh) and demand reductions (kW) for Evergy Missouri West. To ensure clarity, these terms are defined as follows:

- ***Ex Ante* Gross Savings:** Annualized savings reported by Evergy Metro and Evergy Missouri West 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 NTG 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 2 summarizes the Evergy Metro results for energy savings. Evergy Metro's commercial portfolio achieved 26 percent of the three-year target net savings goal in 2020 at 27,006,087 kWh. The Business Standard and Custom programs reached 31 percent and 34 percent of their targets respectively.

In contrast, the residential portfolio achieved 100 percent of the three-year target net savings goal in 2020 at 16,940,153 kWh. Of the three residential programs, only the Energy Saving Products program reached its three-year target, achieving 110 percent of its goal. The Heating, Cooling, and Home Comfort and the Income-Eligible Multifamily programs achieved 84 percent and 52 percent of their targets respectively.

The Home Energy Reports and the Income-Eligible Home Energy Reports programs collectively met 116 percent of their target net savings in 2020 at 14,465,684 kWh. More specifically, the Home Energy Reports program met 141 percent of its target, while the Income-Eligible program met 32 percent of its savings goal.

Finally, the demand response portfolio achieved 45 percent of the three-year target net savings goal in 2020 at 536,419 kWh. Although the Business Demand Response program did not claim any savings in 2020, the Business Smart Thermostat and Residential Demand Response programs met 131 percent and 43 percent of their savings goals respectively.

Table 2: Evergy Metro Portfolio Energy Savings in PY2020, kWh

Program	Evaluator	*Ex Ante* Gross Savings	*Ex Post* Gross Savings	Gross Realization Rate	MEEIA 3-Year Cycle 3 Targets	Net Savings *Ex Post*	% of Target Reached
Business Standard Program	Guidehouse	16,217,890	17,464,540	108%	53,977,377	16,765,958	31%
Business Custom Program	Guidehouse	11,954,187	12,800,161	107%	30,239,803	10,240,129	34%
Process Efficiency Program	Guidehouse	0	0	N/A	19,454,539	N/A	0%
Total Commercial Portfolio		**28,172,077**	**30,264,701**	**107%**	**103,671,720**	**27,006,087**	**26%**
Heating, Cooling and Home Comfort	ADM	3,621,316	3,636,230	100%	3,346,358	2,822,852	84%
Energy Saving Products	ADM	18,716,688	23,016,764	123%	12,153,179	13,402,662	110%
Income-Eligible Multifamily	ADM	715,807	714,639	100%	1,368,009	714,639	52%
Total Residential Portfolio		**23,053,811**	**27,367,633**	**119%**	**16,867,546**	**16,940,153**	**100%**
Home Energy Report	ADM	14,637,019	13,523,117	92%	9,579,000	13,523,117	141%
Income-Eligible Home Energy Report	ADM	374,416	942,567	252%	2,928,146	942,567	32%
Total Educational Portfolio*		**15,011,435**	**14,465,684**	**96%**	**12,507,146**	**14,465,684**	**116%**
Residential Demand Response	ADM	498,213	498,213	100%	1,171,048	498,213	43%
Business Smart Thermostat	ADM	9,062	38,206	422%	29,156	38,206	131%
Total Demand Response Portfolio*		**507,275**	**536,419**	**106%**	**1,200,204**	**536,419**	**45%**

*Online Energy Audit programs are not part of MEEIA Targets for Energy or Demand Savings.
**The Business Demand Response Program did not claim any energy savings.

Table 3 displays the Evergy Metro results for demand savings. The residential and education portfolios both exceeded their targets, achieving 139 percent and 207 percent of their respective goals. The commercial portfolio fared similarly to its energy savings performance, meeting 37 percent of its demand savings target.

Of the residential programs, the Energy Saving Products and Heating, Cooling and Home Comfort programs met their goals, achieving 207 percent and 117 percent of their respective demand savings targets. The Income-Eligible Multifamily program only met 31 percent of its three-year target.

In contrast with its energy savings performance, the Demand Response portfolio met its demand savings goal, achieving 101 percent of its target demand savings. The Business Demand Response program was most successful, achieving 135 percent of its demand savings goal, while the Residential Demand Response and Business Smart Thermostat programs met 44 percent and 8 percent of their respective demand savings targets.

Table 3: Evergy Metro Portfolio Demand Savings in PY2020, kW

Program	Evaluator	*Ex Ante* Gross Savings	*Ex Post* Gross Savings	Gross Realization Rate	MEEIA 3 -Year Cycle 3 Targets	Net Savings *Ex Post*	% of Target Reached
Business Standard Program	Guidehouse	2,916	3,073	105%	8,523	2,950	35%
Business Custom Program	Guidehouse	2,420	2,591	107%	4,834	2,073	43%
Process Efficiency Program	Guidehouse	0	0	N/A	182	N/A	0%
Total Commercial Portfolio		**5,335**	**5,664**	**106%**	**13,538**	**5,023**	**37%**
Heating, Cooling and Home Comfort	ADM	2,310	2,508	109%	1,607	1,882	117%
Energy Saving Products	ADM	2,334	3,150	135%	889	1,843	207%
Income-Eligible Multifamily	ADM	76	77	101%	248	77	31%
Total Residential Portfolio		**4,721**	**5,736**	**121%**	**2,743**	**3,802**	**139%**
Home Energy Report	ADM	3,641	3,017	83%	1,200	3,017	251%
Income-Eligible Home Energy Report	ADM	40	232	586%	366	232	63%
Total Educational Portfolio*		**3,680**	**3,249**	**88%**	**1,566**	**3,249**	**207%**
Business Demand Response	ADM	19,670	20,183	103%	15,000	20,183	135%
Residential Demand Response	ADM	4,770	3,861	81%	8,679	3,861	44%
Business Smart Thermostat	ADM	62	18	29%	213	18	8%
Total Demand Response Portfolio		**24,501**	**24,061**	**98%**	**23,892**	**24,061**	**101%**

*Online Energy Audit Programs are not part of MEEIA targets for Energy or Demand Savings

Table 4 shows Evergy Missouri West'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).

Evergy Missouri West's commercial portfolio achieved 25 percent of the three-year target net savings goal in 2020 at 18,991,091 kWh. The Business Standard and Custom programs reached 32 percent and 41 percent of their targets respectively.

The residential portfolio achieved 92 percent of the three-year target net savings goal in 2020 at 19,906,443 kWh. Similar to Evergy Metro, only the Energy Saving Products program reached its three-year target at 115 percent of the energy savings goal. The Heating, Cooling, and Home Comfort program and the Income-Eligible Multifamily programs achieved 55 percent and 64 percent of their targets respectively.

The educational portfolio, consisting entirely of the Home Energy Reports program for energy savings, met 122 percent of its target at 24,864,459 kWh.

Finally, the demand response portfolio achieved 41 percent of the three-year target net savings goal in 2020 at 510,515 kWh. Although the Business Demand Response program did not claim any savings in 2020, the Business Smart Thermostat and Residential Demand Response programs achieved 155 percent and 38 percent of their savings goals respectively.

Table 4: Evergy MO West Portfolio Energy Savings in PY2020, kWh

Program	Evaluator	*Ex Ante* Gross Savings	*Ex Post* Gross Savings	Gross Realization Rate	MEEIA 3 -Year Cycle 3 Targets	Net Savings *Ex Post*	% of Target Reached
Business Standard Program	Guidehouse	14,366,301	15,537,675	108%	46,646,197	14,916,168	32%
Business Custom Program	Guidehouse	5,258,912	5,093,653	97%	10,016,241	4,074,922	41%
Process Efficiency Program	Guidehouse	0	0	N/A	20,470,674	N/A	N/A
Total Commercial Portfolio		**19,625,213**	**20,631,328**	**105%**	**77,133,113**	**18,991,091**	**25%**
Heating, Cooling and Home Comfort	ADM	5,937,819	5,496,808	93%	7,236,542	3,963,157	55%
Energy Saving Products	ADM	21,731,835	25,434,704	117%	13,038,632	15,058,272	115%
Income-Eligible Multifamily	ADM	879,280	885,014	101%	1,388,947	885,014	64%
Total Residential Portfolio		**28,548,934**	**31,816,526**	**111%**	**21,664,120**	**19,906,443**	**92%**
Home Energy Report	ADM	19,340,629	24,864,459	129%	20,355,375	24,864,459	122%
Total Educational Portfolio*		**19,340,629**	**24,864,459**	**129%**	**20,355,375**	**24,864,459**	**122%**
Residential Demand Response	ADM	466,496	466,496	100%	1,220,615	466,496	38%
Business Smart Thermostat	ADM	10,441	44,019	422%	28,368	44,019	155%
Total Demand Response Portfolio*		**476,937**	**510,515**	**107%**	**1,248,983**	**510,515**	**41%**

*Online Energy Audit Programs are not part of MEEIA targets for Energy or Demand Savings

**The Business Demand Response Program did not claim any energy savings.

Table 5 displays Evergy Missouri West's results for demand savings. Like Evergy Metro, Evergy Missouri West's residential and education portfolios both exceeded their targets, achieving 109 percent and 135 percent of their respective goals. The commercial portfolio fared similarly to its energy savings performance, meeting 35 percent of its demand savings target.

Of the residential programs, only the Energy Saving Products program met its goals, achieving 215 percent of its demand savings targets. The Income-Eligible Multifamily and Heating, Cooling, and Home Comfort programs met 50 percent and 81 percent of their respective targets.

Evergy Missouri West's Demand Response portfolio fared better for demand savings than for energy savings, achieving 74 percent of its target at 43,444 kW. The Business Demand Response program was most successful, achieving 80 percent of its demand savings goal, while the Residential Demand Response and Business Smart Thermostat programs met 43 percent and 34 percent of their respective demand savings targets.

Table 5: Evergy MO West Portfolio Demand Savings in PY2020, kW

Program	Evaluator	*Ex Ante* Gross Savings	*Ex Post* Gross Savings	Gross Realization Rate	MEEIA 3 -Year Cycle 3 Targets	Net Savings *Ex Post*	% of Target Reached
Business Standard Program	Guidehouse	2,565	2,710	106%	7,514	2,601	35%
Business Custom Program	Guidehouse	949	842	89%	1,587	673	42%
Process Efficiency Program	Guidehouse	0	0	N/A	227	N/A	N/A
Total Commercial Portfolio		**3,514**	**3,551**	**101%**	**9,328**	**3,275**	**35%**
Heating, Cooling and Home Comfort	ADM	3,328	3,451	104%	3,133	2,525	81%
Energy Saving Products	ADM	2,725	3,461	127%	955	2,057	215%
Income-Eligible Multifamily	ADM	111	122	110%	243	122	50%
Total Residential Portfolio		**6,164**	**7,034**	**114%**	**4,331**	**4,703**	**109%**
Home Energy Report	ADM	4,038	3,453	86%	2,550	3,453	135%
Total Educational Portfolio*		**4,038**	**3,453**	**86%**	**2,550**	**3,453**	**135%**
Business Demand Response	ADM	40,680	39,384	97%	49,488	39,384	80%
Residential Demand Response	ADM	4,455	3,989	90%	9,221	3,989	43%
Business Smart Thermostat	ADM	98	71	72%	207	71	34%
Total Demand Response Portfolio		**45,233**	**43,443**	**96%**	**58,916**	**43,444**	**74%**

*Online Energy Audit Programs are not part of MEEIA targets for Energy or Demand Savings

Table 6 and Table 7 show estimated free ridership, spillover, and non-participant spillover rates along with the final NTG ratios for both Evergy Metro and Evergy Missouri West's 2020 program portfolios.

Table 6: Evergy Metro Portfolio Estimated Free Ridership, Spillover and NTG Ratio

Program	Evaluator	Free Ridership	Participant Spillover	Non-participant Spillover	NTG Ratio
Business Standard Program	Guidehouse	0.05	0.00	0.00	96%
Business Custom Program	Guidehouse	0.24	0.04	0.00	80%
Process Efficiency Program	Guidehouse	N/A - Savings not claimed in PY1			
Online Business Energy Audit	Guidehouse	N/A - Savings not claimed in PY1			
Heating, Cooling and Home Comfort	ADM	22%	5%	2%	78%
Energy Saving Products	ADM	47%	7%	0%	60%*
Income-Eligible Multifamily	ADM	ADM assumed a net-to-gross (NTG) value of 1.0 for the IEMF program			
Home Energy Report	ADM	Program is designed as a randomized control trial, net-to-gross score of 1.0			
Business Demand Response	ADM	ADM assumed a net-to-gross (NTG) value of 1.0 for the Demand Response programs			
Residential Demand Response	ADM				
Business Smart Thermostats	ADM				

*NTG calculations for Energy Saving Products contains an additional 1.6 percent reduction due to program spillover.

Table 7: Evergy MO West Portfolio Estimated Free Ridership, Spillover and NTG Ratio

Program	Evaluator	Free Ridership	Participant Spillover	Non-participant Spillover	NTG Ratio
Business Standard Program	Guidehouse	0.05	0.00	0.00	96%
Business Custom Program	Guidehouse	0.24	0.04	0.00	80%
Process Efficiency Program	Guidehouse	N/A - Savings not claimed in PY1			
Online Business Energy Audit	Guidehouse	N/A - Savings not claimed in PY1			
Heating, Cooling and Home Comfort	ADM	28%	5%	2%	72%
Energy Saving Products	ADM	46%	7%	0%	61%*
Income-Eligible Multifamily	ADM	ADM assumed a net-to-gross (NTG) value of 1.0 for the IEMF program			
Home Energy Report	ADM	Program is designed as a randomized control trial, net-to-gross score of 1.0			
Business Demand Response	ADM	ADM assumed a net-to-gross (NTG) value of 1.0 for the Demand Response programs			
Residential Demand Response	ADM				
Business Smart Thermostats	ADM				

*NTG calculations for Energy Saving Products contains an additional 1.6 percent reduction due to program spillover.

3.3 Summary of Key Impact Evaluation Recommendations

3.3.1 PY2020 Recommendations

Guidehouse and ADM provided recommendations from the PY2020 program evaluations that seek to guide and improve future impact evaluations. Table 8 below summarizes the evaluator recommendations by program.

Table 8: Evaluator Recommendations by Program

Program	PY2020 Recommendation
Business Standard Program	Implementation Contractor (IC) should perform additional quality checks of the customer or TA reported efficient lamp/fixture wattage to ensure that they match the value in the product specification sheets.
	IC should align with Evergy on the methodology for tracking the tonnage for non-lighting measures.
	Provide further guidelines, such as a lumen equivalency range, around what qualifies for the LED High/Low Bay measures.
	Update deemed savings for networked lighting control measures to align with the IL TRM v9 algorithms.
	Include an additional field in the tracking database for the energy efficiency ratio (EER) rating of the efficient unit installed for small <65 kBtu Air Source Heat Pump (ASHP) measures.
Business Custom Program	All calculations, independent of measure type, should be initially performed in worksheets where the equations are transparent and easily reviewed to facilitate verification and evaluation. Currently, a subset of measure types uses locked worksheets which makes verification of the engineering analysis more time intensive.
	Ensure that final models and all accompanying model files are packaged together so accurate final modeling results stay intact, including weather and building simulation input files. Furthermore, ensure the correlating outputs from the final models match the reported energy savings values for each project involving an energy model. The IC should request modeling files in file formats that facilitate review such as Excel sheets or a comma separated values (.csv) file.
	Ensure the correct energy code is referenced for baseline engineering values and assumptions. Establish a systematic check within the program application that references the appropriate energy code based on local jurisdiction and project permit date to ensure the appropriate baseline code is assigned.
	Employ an 8,760 hourly analysis evaluation approach when appropriate, particularly for weather-dependent measures such as HVAC equipment. This methodology leverages weather data to analyze energy consumption variances by time of day and seasonality, which better represents the actual operating conditions of the installed equipment.
Process Efficiency Program	No impact recommendations were made because there were no claimed savings associated with the Process Efficiency program.

Program	PY2020 Recommendation
Heating, Cooling, and Home Comfort	Add fields for additional customer household characteristics information to the data collection process, including number of stories of customers' homes. This is needed to estimate Minimum Ventilation Rate and would allow administrators to more readily examine if homes are being sealed within allowable guidelines.
	Monitor installation rates on an ongoing basis for the Energy Savings Kit sub-program to mitigate risk of non-installation or measure removal.
	Track installation rates and satisfaction rates along with customer demographics to identify if there are customer sub-groups that prefer the virtual installation process to assess if this option should remain in the program long-term.
	Periodically review the incentive structure for higher-efficiency HVAC systems in the program. When examining the benefit-cost ratios for higher-efficiency HVAC systems, Evergy can assess if incentives can be or need to be revised.
	Develop a simplified and more automated application process. Drop-down options with pre-programmed equipment and AHRI numbers could be utilized to reduce the time it takes for trade allies to look up the information themselves and would reduce input error.
Energy Saving Products	Continue to build on the success of the online marketplace. Program staff indicated that the online marketplace was successful in 2020. Program staff can explore additional avenues for marketing the availability of the online marketplace and opportunities to add measures for purchase.
Income-Eligible Multifamily	Create short interactive surveys for tenants and property managers. During the installation process, offer the tenant or manager the option to complete a survey using a tablet or a link sent to their phones to encourage immediate feedback. Have automatic reminders set up a week after in case the survey has not been completed.
	Create an infographic or report of IEMF program success and post on social media. Report year energy goal savings every year and highlight major projects on social media platforms. Use these numbers to increase project leads and increase program credibility within the service territory.
Home Energy Report	Consider ways to make the information on home comparisons (as well as how to provide for more accurate feedback on the home's energy usage) more obvious to HER recipients and Energy Analyzer users. Incorrect beliefs about how the comparisons are made or of the option for providing for a more accurate comparison may create frustration, leading some customers to make minimal use of the reports.
	Consider discontinuing the practice of telling recipients (and Energy Analyzer users) they are being compared to their "neighbors." A one-mile radius encompasses far more homes than many individuals may consider to be a neighbor. This practice may reinforce

Program	PY2020 Recommendation
	an inaccurate interpretation of how the comparison is made. One alternative phrasing could be to state that they are being compared to "homes in your neighborhood".
Online Home Energy Audit	Consider developing ways to tailor messaging to the different groups of customers that represent different levels of readiness to take steps to reduce energy use. Tailoring messaging to the "unknowledgeable intent," "unknowledgeable concern," and "concern, no intent" groups may provide the needed nudge or knowledge to turn them into effective energy savers.
	Consider reviewing the Energy Analyzer to ensure its readability level reaches all customers. This could be checked against the Flesch-Kinkaid Reading Ease formula (or other acceptable metric of linguistic ease), with a goal of a Flesch-Kinkaid score of 65 out of 100 to balance professionalism with reading ease.
Business Smart Thermostat	Survey respondents indicated they wanted better notification of upcoming DR events. Therefore, Evergy staff should consider additional ways to provide event notification, including sending reminder emails to program participants.
	Continue efforts to reduce evaluation risk using modeled annual counterfactual baseline (CBL) selection for each participant.
	Currently, enrollment eligibility for the program is restricted to manufacturers that total less than 30% of market share for smart thermostats. Evergy should engage with other major smart thermostat manufacturers to obtain the required data access permissions to facilitate their enrollment as this is a structural barrier to program scale.
Residential Demand Response	Survey respondents indicated they wanted better notification of upcoming DR events. Therefore, Evergy staff should consider additional ways to provide event notification, including sending reminder emails to program participants.
	Continue efforts to reduce evaluation risk using modeled annual counterfactual baseline (CBL) selection for each participant.
	Continue to look for ways to expand the eligibility of smart thermostats, as this strategy will make the program more affordable, and continue research into smart thermostat technology to identify additional devices in the next program year.

4 Process Evaluation Summary

This section summarizes key methods and findings from the PY2020 process evaluations of Evergy Metro's and Evergy Missouri West's residential and business energy efficiency program portfolios. The first subsection summarizes the process evaluation methods used by the evaluation teams 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).

4.1 PY2020 Process Evaluation Findings

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

4.1.1 Process Evaluation Findings

Guidehouse and ADM 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, thorough, and respond to the mandated questions.

In the following sections, we summarize key process evaluation findings and recommendations.

4.1.2 Customer and Trade Ally Satisfaction

Evergy Metro and Evergy Missouri West's programs appear to be performing to customer and trade ally satisfaction. The satisfaction results reported (on a five-point scale) indicate that the programs are well run and are meeting the needs of customers and trade allies. Table 9 presents a summary of satisfaction results for the Evergy Metro and Evergy Missouri West's programs.

Table 9: PY2020 Customer and Trade Ally Satisfaction Findings Summary

Program	Participant Satisfaction	Trade Ally Satisfaction
Business Custom Program	The average overall participant satisfaction score was a 4.5, with over 50 percent of respondents rating their satisfaction as a 5.	Guidehouse did not conduct trade ally interviews for the Business EER - Custom Program in PY2020.
Heating, Cooling and Comfort	85 percent of participants rated their satisfaction as a 4 or 5.	86 percent of trade allies rated their satisfaction as a 4 or a 5.
Income-Eligible Multi-Family	100 percent of participants rated their satisfaction as a 5.	N/A
Home Energy Report	69 percent of participants rated their satisfaction as a 4 or 5.	N/A
Online Home Energy Report	65 percent of participants rated their satisfaction as a 4 or 5.	N/A
Business Smart Thermostat	91 percent of participants rated their satisfaction as a 4 or 5.	N/A
Residential Demand Response	88 percent of participants rated their satisfaction as a 4 or 5.	N/A
Business Demand Response	81 percent of participants rated their satisfaction as a 4 or 5.	N/A

4.2 Summary of Key Process Evaluation Recommendations

Based on the evaluation findings, Guidehouse and ADM provided overall evaluation conclusions and recommendations for each PY2020 program. Table 10 summarizes the evaluators' recommendations by program.

Table 10: PY2020 Key Process Evaluation Recommendations

Program	PY2020 Recommendation
Business Standard Program	The program could continue efforts to offer additional education, technical support and potentially new measure categories to: a) help customers identify energy efficient lighting projects, b) help customers and TAs with the application process such that they apply for the most appropriate measure category, and c) identify areas where there continues to be confusion and provide specific training and examples to address this confusion. The increase in incentives in July 2020 through the end of PY1 for small businesses could be repeated if participation decreases.

Program	PY2020 Recommendation
	The program could continue efforts deployed during PY1 that increased participation among the 'School' strata and small businesses such that certain business types do not dominate the program. These efforts included targeted webinars explaining the benefits of implementing energy conservation, increased incentives for small businesses, and direct outreach to public sector and municipal customers.
	The program could continue the marketing and outreach efforts that led to the increase in the number of HVAC and Cooling measures incentivized in PY1 compared to previous program years. The program could continue to research methods to increase participation in the cooking end-use category since that end-use is still seeing very low participation even though there is likely significant potential for energy savings.
	The following recommendations are provided to improve the communication channels and delivery mechanisms of the program: • Continue education and training of new and existing TAs to reduce rebate application errors. • Create accessible targeted marketing materials that can be available on the program's website. • Continue efforts to streamline the rebate check delivery process.
	The program saw low participation from some business types including those that may have been impacted by the COVID-19 pandemic such as hotels, motels, restaurants, entertainment centers, and other assembly building types. The program could work to develop targeted marketing and targeted incentive increases for measures such as air conditioners or food service for these building types to increase participation in PY2 and PY3.
Business Custom Program	The program should continue efforts to offer additional technical support to: a) help identify non-standard energy efficiency projects that do not fall within the Business Standard or Process Efficiency programs, b) help customers with the application process including the preapproval and post phase, and c) develop new industry-specific outreach campaigns, which help customers understand how Business Custom projects benefit customers like them.
	Evergy's Business Custom program should continue to work to identify new construction projects with potential for energy savings. These new construction projects may be in new business types such as indoor cannabis growing facilities, that have never participated in the program before because they did not exist prior to changes in legislation. Also, the IC should continue to work closely with the CSMs to identify opportunities to keep Tier 1 customers actively participating in Evergy's programs and meet the needs of these larger or national accounts.

Program	PY2020 Recommendation
	TAs and customers should continue to be encouraged to install non-lighting measures. These efforts could expand in PY2 once COVID-19 restrictions are lifted to include different methods of outreach. Efforts should continue to educate customers and TAs about the availability of the peak load shift measure since it can lead to significant demand savings.
	Evergy should continue efforts to market and communicate about the Business Custom program as part of the broader marketing efforts of Evergy's business programs, including the Business Standard and Process Efficiency programs. This was shown in PY1 to lead to increased participation among smaller business customers in the Business Custom program.
	Since some customers and TAs continue to express some confusion and miscommunication about the Business Custom program in PY1, Evergy and the IC should offer additional technical support and education that is accessible to all customers. The overall high satisfaction with the program in PY1 indicates that the communication mechanisms are appropriate for most of the target market but may not be accessible for all eligible customers and TAs. Further efforts to identify TA and customer communication issues through the TA Advisory Board meetings should be pursued. Guidehouse recommends that incentive levels for non- lighting end-uses are reviewed annually to ensure they are significant enough to not only increase participation in the program without increasing free ridership but to also consider the time and effort needed to complete the Business Custom application.
Heating, Cooling and Home Comfort	Add fields for additional customer household characteristics information to the data collection process. Collect the number of stories of customers' homes to supplement the savings calculations for the air sealing and attic insulation measures. This is needed to estimate Minimum Ventilation Rate (MVR) and would allow for program administrators to more readily examine if homes are being sealed within allowable guidelines that maximize energy savings while ensuring maintenance of indoor air quality.
	Monitor installation rates on an ongoing basis for the Energy Savings Kit sub-program. The sub-program has moved from direct install to virtual install, and this comes with trade-offs of lower administration costs but greater risk of non-installation or measure removal.
	Track installation rates and satisfaction rates along with customer demographics (age, income, etc.) to identify if there are customer sub-groups that prefer the virtual installation process to assess if this option should remain in the program long-term.

Program	PY2020 Recommendation
	Periodically review the incentive structure for higher-efficiency HVAC systems in the program. When examining the benefit-cost ratios for higher-efficiency HVAC systems, Evergy can assess if incentives can be or need to be revised. Metrics for this may assessment include: ○ Balance between UCT and PCT ratios. If the UCT ratio exceeds the PCT ratio, Evergy can rebalance by increasing incentives. ○ Percent of incremental cost covered by incentives. If incremental cost coverage is below 50%, Evergy can consider increasing incentives while remaining within boundaries of industry norms for this measure group.
	Develop a simplified and more automated application process. As it is, some trade allies reported that the application process has many required components that can be easily overlooked. Drop-down options with pre-programmed equipment and AHRI numbers could be utilized to reduce the time it takes for trade allies to look up the information themselves and would reduce input error.
Energy Saving Products	Continue to build on the success of the online marketplace. Program staff indicated that the online marketplace was successful in 2020. Program staff can explore additional avenues for marketing the availability of the online marketplace and opportunities to add measures for purchase.
Income-Eligible Multifamily	Create short interactive surveys for tenants and property managers. During the installation process, offer the tenant or manager the option to complete a survey using a tablet or a link sent to their phones to encourage immediate feedback. Have automatic reminders set-up a week after in case the survey has not been completed.
	Create an infographic or report of IEMF program success and post on social media. Report year energy goal savings every year and highlight major projects on social media platforms. Use these numbers to increase project leads and increase program credibility within the service territory.
Home Energy Report	Oracle should consider ways to make the information on home comparisons (as well as how to provide for more accurate feedback on the home's energy usage) more obvious to HER recipients and Energy Analyzer users. Incorrect beliefs about how the comparisons are made or of the option for providing for a more accurate comparison may create frustration, leading some customers to make minimal use of the reports.
	Oracle may also consider discontinuing the practice of telling recipients (and Energy Analyzer users) they are being compared to their "neighbors." A one-mile radius encompasses far more homes than many individuals may consider to be a neighbor. This practice may reinforce an inaccurate interpretation of how the comparison is made. One alternative phrasing could be to state that they are being compared to "homes in your neighborhood".

Program	PY2020 Recommendation
Online Home Energy Audit	Evergy and Oracle should consider developing ways to tailor messaging to the different groups of customers that represent different levels of readiness to take steps to reduce energy use. Tailoring messaging to the "unknowledgeable intent," "unknowledgeable concern," and "concern, no intent" groups may provide the needed nudge or knowledge to turn them into effective energy savers.
	Oracle should also consider reviewing the Energy Analyzer to ensure its readability level reaches all customers. This could be checked against the Flesch-Kinkaid Reading Ease formula (or other acceptable metric of linguistic ease), with a goal of a Flesch-Kinkaid score of 65 out of 100 to balance professionalism with reading ease.
Business Smart Thermostat	Evergy's Business Smart Thermostat program received high satisfaction ratings from program participants. However, the survey respondents indicated they wanted better notification of upcoming DR events. Therefore, Evergy staff should consider additional ways to provide event notification, including sending reminder emails to program participants. Evergy can ensure that its program application process captures and updates participant email addresses.
	Continue efforts to reduce evaluation risk using modeled annual counterfactual baseline (CBL) selection for each participant.
	Currently, enrollment eligibility for the program is restricted to manufacturers that total than 30% of market share for smart thermostats. Evergy should engage with other majo smart thermostat manufacturers to obtain the required data access permissions to facil their enrollment as this is a structural barrier to program scale.
Residential Demand Response	Continue efforts to reduce evaluation risk using modeled annual counterfactual baseline (CBL) selection for each participant.
	Evergy's Residential Smart Thermostat program received high satisfaction ratings from program participants. However, the survey respondents indicated they wanted better notification of upcoming DR events. Therefore, Evergy staff should consider additional ways to provide event notification, including sending reminder emails to program participants. Evergy can ensure that its program application process captures and updates participant email addresses.
	Evergy can continue to look for ways to expand the eligibility of smart thermostats, as this strategy will make the program more affordable. Evergy should also continue its research into smart thermostat technology to identify additional devices in the next program year.

5 Review of Cost Effectiveness

Guidehouse and ADM calculated the cost effectiveness for the individual Evergy Metro and Evergy Missouri West's energy efficiency and demand response programs, as well as the cost effectiveness of the portfolios of energy efficiency and demand response programs. Guidehouse and ADM 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.

Guidehouse and ADM conducted these tests in a manner consistent with the 2001 California Standard Practice Manual (SPM).[4] For this evaluation audit, Guidehouse and ADM 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:

[4] California Public Utilities Commission. October 2001. "California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects."
File will automatically download: https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/utilities_and_industries/energy_-_electricity_and_natural_gas/cpuc-standard-practice-manual.pdf

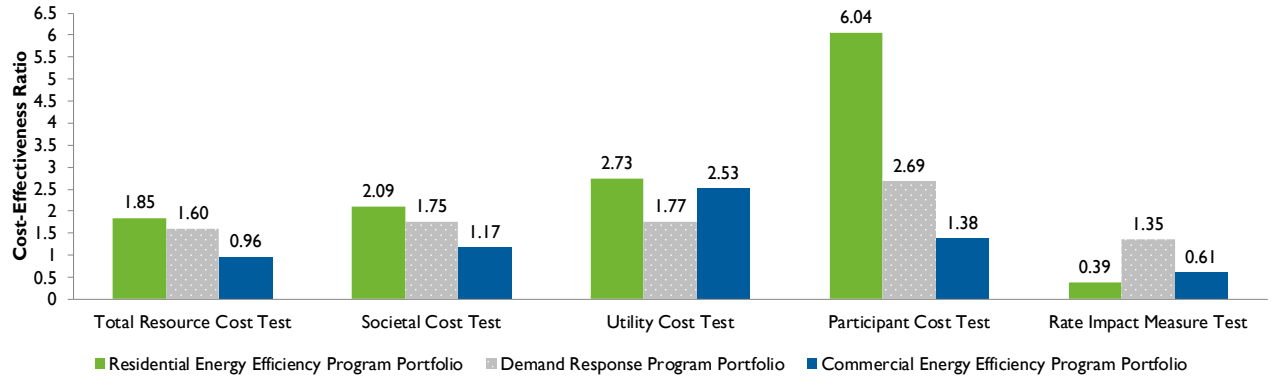
- Confirm summary values included in the final evaluation report matched the values in the results file;
- Confirm that the reported costs matched the costs input into the cost effectiveness input files, including administrative costs, incentive costs, and participant incremental equipment costs;
- Review avoided cost of energy and demand values and confirmed Guidehouse and ADM used appropriate values to calculate program level benefits;
- Confirm that measures received appropriate cost effectiveness input values, from appropriate sources, consistent with the sources used in the Guidehouse and ADM evaluation reports (i.e., kWh savings, expected usable life (EUL), incremental cost); and
- Confirm that discount rates were appropriate.

5.1 Cost Effectiveness Results

Figure 2 and Figure 3 present the results of the cost effectiveness tests for Evergy Metro's and Evergy Missouri West's residential, commercial, and demand response portfolios.

Evergy Metro's residential 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. The commercial energy efficiency portfolio achieves a Total Resource Cost ratio of 0.96, which may be attributed to higher-than-average cycle start-up costs and lower participation due to COVID-19 (Figure 2).

Figure 2: Evergy Metro Cost Effectiveness Test Results



Evergy Missouri West's residential and commercial energy efficiency portfolios are cost effective across all tests except the Rate Impact Measure Test, while the demand response portfolio is cost effective across all tests (Figure 3).

Figure 3: Evergy Missouri West Cost Effectiveness Test Results

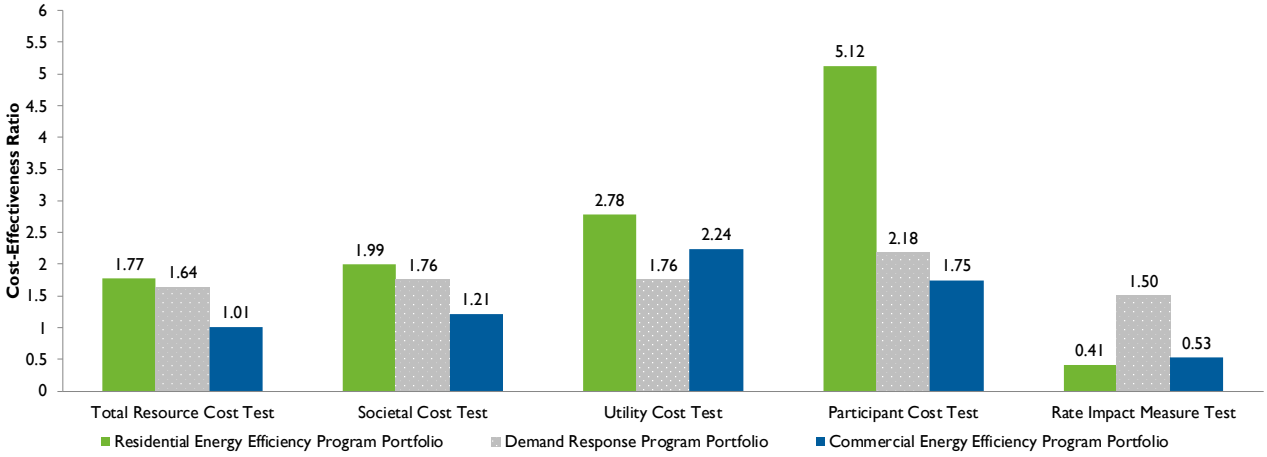


Table 11 and Table 12 present the program specific cost effectiveness test results for Evergy Metro and Evergy Missouri West service territories. Where applicable, we also present the cost effectiveness results for PY2019 for comparison.

Using the PCT test, all programs are cost effective from the participant perspective for both the Evergy Metro and Evergy Missouri West service territories. Only the Business and Residential Demand Response programs are cost effective under the RIM test for both service territories.

Table 11: Evergy Metro Cost Effectiveness Test Results

Program	TRC		SCT		UCT		PCT		RIM	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
Business EER - Standard	1.27	1.01	1.49	1.19	3.07	2.31	1.44	1.57	0.84	0.59
Business EER - Custom	1.02	0.91	1.28	1.17	1.91	3.07	1.19	1.20	0.73	0.65
Energy Saving Products	N/A	4.95	N/A	5.46	N/A	6.77	N/A	12.00	N/A	0.43
Heating, Cooling and Home Comfort	N/A	1.07	N/A	1.33	N/A	4.08	N/A	1.97	N/A	0.46
Home Energy Report	1.47	1.20	1.47	1.20	1.47	1.20	--*	--*	0.47	0.26
Income-Eligible Multifamily	0.90	0.40	1.11	0.45	0.90	0.35	5.24	N/A	0.33	0.23
Income-Eligible Home Energy Report	0.23	0.29	0.23	0.29	0.23	0.29	--*	--*	0.18	0.16
Business Demand Response	N/A	1.86	N/A	1.86	N/A	1.86	N/A	N/A	N/A	1.86
Business Smart Thermostat	1.43	0.43	1.65	0.51	2.02	0.47	0.43	4.90	1.74	0.32
Residential Demand Response	N/A	1.50	N/A	1.74	N/A	1.76	N/A	2.65	N/A	1.18

* Ratios are infinite because there are positive benefits and no participant costs.
Benefit-cost calculations for Educational Programs are not included because no savings are claimed for these programs.

Table 12: Evergy Missouri West Cost Effectiveness Test Results

Program	TRC		SCT		UCT		PCT		RIM	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
Business EER - Standard	1.32	0.95	1.55	1.12	3.23	2.21	1.41	1.60	0.88	0.53
Business EER - Custom	1.22	1.38	1.54	1.76	2.20	2.72	1.50	2.47	0.75	0.57
Energy Saving Products	N/A	4.77	N/A	5.25	N/A	6.51	N/A	11.66	N/A	0.42
Heating, Cooling and Home Comfort	N/A	1.02	N/A	1.24	N/A	3.94	N/A	1.47	N/A	0.54
Home Energy Report	1.59	1.23	1.59	1.23	1.59	1.23	--*	--*	0.45	0.27
Income-Eligible Multifamily	0.84	0.43	1.03	0.50	0.84	0.44	4.79	7.38	0.33	0.26
Income-Eligible Home Energy Report	N/A	--*	N/A	--*	N/A	--*	N/A	--*	N/A	--*
Business Demand Response	N/A	1.82	N/A	1.82	N/A	1.82	N/A	N/A	N/A	1.82
Business Smart Thermostat	1.54	0.98	1.79	1.14	2.15	1.08	0.48	5.06	1.84	0.70
Residential Demand Response	N/A	1.48	N/A	1.72	N/A	1.71	N/A	2.12	N/A	1.27

* Ratios are infinite because there are positive benefits and no participant costs.
Benefit-cost calculations for Educational Programs are not included because no savings are claimed for these programs.

6 Audit Conclusions

The audit team provided multiple comments and questions on the draft versions of the Guidehouse and ADM reports, and most of our issues were resolved prior to the final evaluation reports being completed. There are two remaining issues that are discussed below.

Free Ridership Calculation

For the free ridership estimates produced by Guidehouse for the C&I programs, we repeat our comment from prior years about coding 'don't know' responses. For customers answering 'don't' know' to any of the questions used in the free ridership scoring algorithm, these responses should be coded as missing and dropped from the free ridership calculation – they are not providing any information. They should not be assigned a value of 0.25 as they are in the current report.

Although the Business Standard Program uses the free ridership value from last year, we also reiterate our previous comment that the customer survey should be the source used to estimate free ridership, and not the trade ally surveys. As Guidehouse notes in their report (p. 12), the customer is in the best position to understand and articulate if they would purchase the equipment if the rebate had not been available.

For the ADM free ridership method used for the Evergy Residential Programs, we also repeat our comment from prior years that the algorithm should not use a single survey question as the sole determinant of the final free ridership value. Currently, if the customer indicates that they could not have afforded the equipment then they are automatically assigned a free ridership score of zero and the rest of the question responses are discarded. This should not be allowed. In this and prior years, ADM defends this practice by saying that few if any customers are removed from the free ridership algorithm based on this single question. This just furthers the argument for dropping the question entirely from the algorithm.

In a separate part of the scoring algorithm (Figure A-1 from the evaluation report Appendix), if the trade ally free ridership response is lower than the results from the customer survey, then only the trade ally value is used and the customer survey responses are completely discarded in the final free ridership calculation. Again, this allows for the free ridership value to be determined by a single question response. Additionally, it also has the problem of completely overriding the customer survey responses, which repeats the issue noted above of using the less reliable trade ally results instead of the customer survey. Finally, it also has the problem with biasing the free ridership value downward as only the minimum values are used (rather than the average).

A similar problem occurs with the timing adjustment; if the customers says the project would have been delayed by one year without the program, then they are assigned a free ridership value of zero and all of the customer survey responses are dropped from the free ridership calculation. For

comparison, the Guidehouse free ridership algorithm for C&I customers limits the timing adjustment to 50 percent of the final free ridership score. All of these single question response scorings eliminate the potential for consistency checks that the other survey questions could provide and therefore go against industry best practices.

The ADM free ridership method is not commonly used elsewhere in the country and is different from the method used by Guidehouse for Evergy C&I and by ODC for the Ameren MO programs. To address this discrepancy and eliminate the problems noted above, we recommend that in the future the Evergy Residential Programs begin using the free ridership and spillover calculation algorithms from the Illinois TRM. This would make the free ridership and spillover estimates more consistent across similar programs and within Evergy's portfolio. The Illinois TRM method has been vetted by a large group of evaluators and stakeholders and offers a significant improvement over the current ADM method, as it provides a clearer scoring algorithm that includes multiple survey questions, and has less opportunity to assign arbitrary weights to the survey responses. It also eliminates the problem of having free ridership determined by a single survey question response.

Residential and Business Smart Thermostat Regression Model

The same regression model (Equation I-1 and Equation J-1 in the evaluation report Appendix) is used to estimate the demand response program impacts for both the Residential Smart Thermostat and Business Smart Thermostat programs. This model includes several variables in the regression that appear duplicative:

- PreCooling = dummy variable for last 3 hours
- NHBU = based on 'past hourly values'
- MA4CDH = moving average of last 4 cooling degree hours
- MA24CDH = moving average of last 24 hours

The NHBU, MA4CDH, and MA24CDH variables are all trying to capture the building's heat build up and its effect on energy use. Going back 24 hours seems too far to capture anything relevant to the event period in terms of heat buildup that is not already being captured by the other variables. ADM provided information on the correlation coefficients and as expected some of these variables are highly correlated,[5] which can reduce the statistical significance of the regression coefficient estimates.

[5] From Table I-9 in the Appendix for the Residential Smart Thermostat program, the variable AM4CDH has a correlation coefficient of 0.906 with CDD, and NHBU has a correlation coefficient of 0.748 with MA24CDH and 0.574 with MA4CDH. Similarly high correlations among these same variables were observed for the Business Smart Thermostat program in Table J-10 in the Appendix.

It is also unclear how the NHBU variable is calculated; it is merely defined as "cumulative heat buildup based on the weighted average of past hourly values" but no additional information is provided on how it is calculated, what data are used, or how the weighting values are determined. Similarly, there is also no information on where the discount rate of 0.958333 comes from, or why it is being applied to the NHBU variable. Any adjustment (discounting or otherwise) would be reflected in the final coefficient estimate, assuming the model is correctly specified.

From our discussions with ADM about these issues, it appears that most of the variables are holdovers from an earlier model specification used by Guidehouse in prior evaluations of these same programs. Since there does not appear to be a compelling reason to use the more complicated model and as there is no supporting information provided to justify the additional variables, we recommend that a simpler model specification be adopted for both smart thermostat programs. Specifically, a model should be adopted that does not include multiple variables that attempt to capture heat build up effects. The regression model specification from the Business Smart Thermostat program for kWh impacts (Equation J-4 in the Appendix), might be a good starting candidate.

Appendix A: Evergy Metro Full Process Evaluation Responses to Minimum Question Requirements

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

Table 13: 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 14: Issue 1 - What are the primary market imperfections common to the target market segment?

Program	2019 Summary Response	2020 Summary Response
Business Standard Program	The target market faces a high barrier to make an energy efficiency upgrade due to the first cost and a lack of understanding of lifetime value for energy efficient products. Evergy Metro addresses the barrier by providing incentives which reduce the incremental cost. In addition, there are many smaller C&I customers that have limited resources for researching energy conservation, leading to imperfect or incomplete information about the market. Evergy Metro has developed targeted marketing materials and hosted interactive events to increase participation of smaller C&I customers in implementing energy conservation measures.	The business sector faces a high barrier to participation due to the high upfront installation cost and a lack of understanding of lifetime value for energy efficient products. Evergy has developed targeted marketing materials, hosted webinars, and increased incentives in July 2020 to increase participation of smaller business customers in implementing energy efficiency measures.
Business Custom Program	Custom measures are complex and can have uncertainty in energy savings requiring utility education and incentives.	Project types included in the Business Custom program can be complex and take many years to complete. Customers may not understand fully the available energy savings from these types of projects which requires utility education initiatives and incentives.
Heating, Cooling and Home Comfort	No process evaluation was conducted for this program in PY2019.	The COVID-19 pandemic is part of the reason that HCHC did not achieve goals, as customer unwillingness to allow contractors in their home to perform air sealing and insulation reduced participation in that program component by half. Our evaluation did not find evidence of other substantial barriers, such as poor program awareness, resistance to energy reduction in general, or ineffectiveness of program incentives.

Program	2019 Summary Response	2020 Summary Response
Income-Eligible Multifamily	The target market for this program are income-eligible multifamily residents and property owners and managers, targeting tenant units for direct install measures and property owners and managers for building improvements. This market generally has limited capital availability and property management staff experience high turnover. However, the program is overcoming these challenges with direct outreach strategies, developing relationships with property managers, and a new concierge approach that was rolled out for HVAC projects in PY2019. This concierge approach involved providing a consultation for the customer, identifying possible contractors, developing an RFP for the work that contractors can respond to, and completing savings calculations for the projects. Program staff report that the HVAC offerings were very successful in PY2019.	IEMF program staff identified challenges for the program that may have contributed to its failure to meet goals. First, they noted that limited capital for upgrades continues to be an issue for this market segment. Second, they indicated that high turnover rates in the management of most multi-family housing complexes means that constant communication and familiarizing with the program is needed. Third, they suggested that there is not much support in Missouri for carrying out energy efficiency projects in this type of property: HERS ratings are not common, the lead finance agency does not push energy efficiency.
Energy Saving Products	No process evaluation was conducted for this program in PY2019.	Even though the ESP program met savings goals, program staff reported that customer education and market saturation are challenges for the program. Our evaluation found that about half of surveyed customers who reported buying LEDs at participating stores through ESP were aware of the Evergy discount, which compares well to awareness rates we have identified in similar programs in other jurisdictions. Given that the program met goals, this may be adequate, but given program staff's concerns, increasing customer awareness of the discounts and that Evergy provided them may help improve the proper assignment of attribution of the savings resulting from the purchases.

Program	2019 Summary Response	2020 Summary Response
Home Energy Report & Income-Eligible Home Energy Report	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.	The primary potential barriers to program effectiveness would appear to be lack of customer motivation to save energy, lack of understanding of how to save energy, and differences in among customer sub-segments in either of those two items. In this light, the primary barriers that our evaluation identified are that: 1) the rate with which report recipients review the reports in detail could be higher; 2) a notable minority of recipients may misunderstand the basis on which the report compares their home to that of other homes, which may lead to frustration and failure to accept the report's suggestions; 3) report recipients were no more familiar with other Evergy program offerings than were the matched controls. Our evaluation provided little evidence that the HERs' effectiveness differs for older versus younger or more- versus less-educated recipients.
Home Online Energy Audit	Some customers do not understand how their actions and appliances or equipment in their home or business can affect their energy use. The HOEA and BOEA tools educate customers on their energy use and provide tips to help them lower their use.	There is a potential concern about awareness of the OHEA tools. Program staff contacts noted that the biggest challenge for the program was customer awareness and education, and fewer than 10% of customers have accessed the tools. Other possible barriers to the program's effectiveness, identified by our evaluation, are: 1) inconsistent use of the tools (user most commonly have engaged "a few times"); 2) possible misunderstanding of the basis on which the "Compare" tool compares their home to that of other homes; and 3) some possibly overly complex language and lack of clarity in the FAQ section.

Program	2019 Summary Response	2020 Summary Response
Business Smart Thermostat	As noted in the PY2018 evaluation, the program addresses market imperfections by providing customers with an ability to reduce electricity usage during hours of peak demand.	Feedback from program staff identified two factors that contributed to BST's failure to meet goals. First, delays in the contracting and developing of the online portal for the customer co-payment contributed to a later program launch than expected. Second, midway through 2020, Google acquired Nest and instituted changes that made Evergy unable to enroll customers with Nest thermostats – the top-selling thermostat – into the program.
Business Demand Response	CLEAResult continued using propensity modeling in PY2019 to select customers to recruit. Evergy should continue to refine propensity modeling to select customers for the program. Additionally, Evergy should begin to identify and target customers with automated curtailment capabilities.	Staff feedback indicated that the primary reason for the Business Demand Response program's failure to meet demand goals was a program design change in Cycle 3 to a pay-for-performance program. As a result of the change, some customers had challenges understanding how the baseline was constructed and how that affected the incentive structure. These changes made recruitment more difficult compared to previous years.
Residential Demand Response	No process evaluation was conducted for this program in PY2019.	RDR underwent a program design change and had to begin recruiting all new customers, while in previous years, the program had been able to roll participants over from one year to the next. Evergy also froze all marketing activities for the program in March 2020 because of the COVID-19 pandemic, which may have reduced recruitment. In addition to the above, it is possible that the COVID-19 pandemic created changes in households (e.g., more people at home) that resulted in more overrides and advance opt-outs than normal.

Table 15: Issue 2 - Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?

Program	2019 Summary Response	2020 Summary Response
Business Standard Program	Evergy Metro has a well-defined target market (C&I) for the Standard program. No further subdivisions appear necessary given current program participation.	Evergy has a well-defined target market of large and small commercial businesses for the Business Standard program. Evergy and their IC track activity by trade ally and have bi-yearly Trade Ally Advisory Board meetings. The TA Advisory Board meetings had to happen virtually in PY1. Evergy actively solicits feedback on the program by sending surveys to all customers that completed a project. Evergy reviews this feedback and incorporates it in the program design as warranted.
Business Custom Program	Yes, the target market is appropriately defined. All business customers are eligible to participate in the Custom program. Tier one customers provide the most energy savings to the program. The program could target small and medium sized customers.	Guidehouse found that the target market is appropriately defined. All business customers are eligible to participate in the Business Custom program. The program could target small and medium sized customers. The small and medium business customers are highly targeted by the Business Standard program since the application process and incentives are easier to complete and receive.
Heating, Cooling and Home Comfort	No process evaluation was conducted for this program in PY2019.	The Heating, Cooling, and Home Comfort program participant survey respondents were highly skewed toward homeowners, small households (one or two occupants), and very highly educated customers. However, we cannot be certain that either of these reflects a bias in participation or in survey response.

Program	2019 Summary Response	2020 Summary Response
Income-Eligible Multifamily	The target market includes income-eligible multifamily properties. Implementation staff noted that there was limited participation of smaller MF properties during PY2019 (for example, a six-unit building as opposed to a larger 40-unit building). A goal for MEEIA Cycle 3 is to increase participation of this market segment to bring more diversity to the program and continue achieving program goals. Program staff reported that barriers to reaching this market segment include that there may not be a property manager on site, contact information for offsite property managers may be difficult to obtain, property budgets tend to be very limited, and more support is typically required to engage this market segment in the program because these smaller buildings tend to need more updates.	The Income-Eligible Multifamily program servers lower- and middle-income customers. The evaluation did not identify clear evidence that any specific program fails to serve any specific part of its target audience.
Energy Saving Products	No process evaluation was conducted for this program in PY2019.	The Energy Saving Products program serves homeowners and renters. The evaluation did not identify clear evidence that any specific program fails to serve any specific part of its target audience.
Home Energy Report & Income-Eligible Home Energy Report	The target market segment is appropriately defined as residential customers in single-family homes.	The Home Energy Report programs serves homeowners and renters. The Home Energy Report survey respondents skewed older, more educated, and more likely to be homeowners than the Evergy general population. However, we cannot be certain that either of these reflects a bias in participation or in survey response.

Program	2019 Summary Response	2020 Summary Response
Home Online Energy Audit	In PY2019, the program targeted residential and small business customers interested in making their homes/businesses more energy efficient and/or reducing their electricity bill. The applicability of energy-saving tips is different for residential and small business customers, so it is appropriate to have separate tools for these groups.	The Home Online Energy Audit survey respondents skewed older, more educated, and more likely to be homeowners than the Evergy general population. However, we cannot be certain that either of these reflects a bias in participation or in survey response.
Business Smart Thermostats	Evergy resumed recruitment efforts of customers in PY2019 to meet their enrollment targets. In MEEIA Cycle 3, Guidehouse recommends focusing on BYOT and waitlist customers. In MEEIA Cycle 3, Evergy may consider targeting a more staggered program enrollment over the cycle's duration.	The evaluation did not identify clear evidence that any specific program fails to serve any specific part of its target audience.
Business Demand Response	The target market is appropriately defined.	The evaluation did not identify clear evidence that any specific program fails to serve any specific part of its target audience.
Residential Demand Response	No process evaluation was conducted for this program in PY2019.	The evaluation did not identify clear evidence that any specific program fails to serve any specific part of its target audience.

Table 16: 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	2019 Summary Response	2020 Summary Response
Business Standard Program	While the Standard program includes many measures that address a participant's water heating, refrigeration, and HVAC energy end-uses, 96% of the projects in PY2019 were for lighting measures. The other Evergy Metro Business EER programs primarily address the other end-uses.	The Business Standard program complements the Business Custom program by providing rebates for common energy efficiency upgrades which are primarily lighting measures. Evergy is working toward further aligning the Business Standard and Business Custom programs, so that multiple end-use energy saving projects can be easily served across the entire portfolio. Evergy and the IC are constantly evaluating the measure list to determine if it is meeting the needs of customers. The other Evergy Business programs primarily address the end-uses besides lighting, but also tend to be dominated by lighting projects.
Business Custom Program	Due to the shortened program year, the program focused on lighting measures to meet the PY2019 goals. Lighting measures made up 54% of the energy savings in PY2019. The Product Manager for the Custom program continued to increase focus on non-lighting measures in PY2019. This is apparent in the year-over-year increase in participation in non-lighting measures, including HVAC and motor end-uses.	Guidehouse thinks that the program participation does appropriately reflect the end-use needs within the target market segment. Due to the inclusion of some large new construction lighting projects in the Business Custom program, lighting projects made up more than half of the energy savings. New construction projects made up slightly less than half of the energy savings. The air conditioning and heating measures made up slightly over a quarter of savings with the rest of the savings achieved by savings in the appliances and other miscellaneous end- use categories such as refrigeration.
Heating, Cooling and Home Comfort	No process evaluation was conducted for this program in PY2019.	Heating, Cooling and Home Comfort offers energy saving measures through three program components: 1) an Energy Savings Kit with an assortment low-cost measures (LED lightbulbs, faucet aerators, low- flow showerheads, pipe insulation, and advanced power strips); 2) insulation and air

Program	2019 Summary Response	2020 Summary Response
		sealing measures; and 3) HVAC measures. Program participants and trade allies were generally satisfied with the program, and two-thirds of trade allies were satisfied with the equipment that the program offers. However, for trade allies, that satisfaction level was lower than the levels for program paperwork and the rebates offered. The primary substantive suggestion that trade allies made regarding the program offerings was to push higher-SEER (>17) air conditioning.
Income-Eligible Multifamily	Guidehouse found that the program includes appropriate measures for its current targets. Custom projects continued to perform well, as they did in PY2018. During PY2019, the program had to waitlist some properties that wanted to do custom lighting projects because the program had achieved 100% of its program budget. The budget was increased to 115% in October 2019. As a result, the program is entering MEEIA Cycle 3 with a pipeline of waitlisted projects.	The Income-eligible Multifamily program provides a wide range of measure types, various direct-install measures (low-flow showerheads, kitchen faucet aerators, and advanced power strips); prescriptive rebates for LED lighting, appliances (dishwashers, washing machines, dryers), HVAC (air conditioners, heat pumps), bathroom fans, refrigerator replacement, and air sealing; and custom rebates for larger projects. However, LED lighting and direct-install measures make up a very large proportion of program savings. Increasing uptake of the other measures offered could increase overall program savings.
Energy Saving Products	No process evaluation was conducted for this program in PY2019.	Energy Saving Products provides upstream discounts for energy efficient products, which currently are limited to a selection of LED lighting measures.
Home Energy Report and Income-Eligible Home Energy Report	HERs 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 EE programs.	No feedback for this issue was offered by the evaluator for this program.

Program	2019 Summary Response	2020 Summary Response
Home Online Energy Audit	The tools appropriately reflect the diversity of end-use energy service needs of the target market. The residential tool has five components: • Trends: Customers can view their energy usage over time. They can also view trends of "efficient" and "all neighbors" over time. The page also includes energy saving tips. • Compare: Customers can view their current usage compared to similar homes. The page also includes energy saving tips. • Analyze: This is an online survey that helps customers understand the sources of their energy use. The page also includes energy saving tips. • Save: This tip library provides practical suggestions for customers to reduce their energy use. The guides use customer attributes to generate personalized guides and include common residential end uses such as lighting, HVAC, pools, and plug loads. • Reports: Home Energy Report recipients can opt-out and designate their preferred communication channel. The small business tool has three components: • My Energy Usage: Customers can view their own usage on a monthly or annual basis. Ways to Save: This tip library provides business-specific suggestions in the areas of lighting, HVAC, and	No feedback for this issue was offered by the evaluator for this program.

Program	2019 Summary Response	2020 Summary Response
	refrigeration for customers to reduce their energy use. The library contains over 30 tips.	
Business Smart Thermostat	The mix of end-use measures included in the program (i.e., PTs) meets the needs of the existing market. Evergy is expanding the program to include customers that have already purchased other brands of smart or connected thermostats. In addition, Evergy could continue expanding the BYOT customer segment through targeted marketing in MEEIA Cycle 3. BYOT programs are comparatively inexpensive to operate and a way that many utilities run thermostat programs successfully.	No feedback for this issue was offered by the evaluator for this program.
Business Demand Response	The mix of end-use measures appropriately reflects the diversity of end-use energy needs. Evergy should consider the impacts of weather when determining a participant's curtailable load in cool summers.	No feedback for this issue was offered by the evaluator for this program.
Residential Demand Response	No process evaluation was conducted for this program in PY2019.	No feedback for this issue was offered by the evaluator for this program.

Table 17: Issue 4 - Are the communication channels and delivery mechanisms appropriate for the target market segment?

Program	2019 Summary Response	2020 Summary Response
Business Standard Program	The IC for the Standard program works one on one with the larger customers. The trade-ally network addresses medium and smaller customers. In addition, there is also targeted marketing for sectors with historically lower participation such as datacenters and property managers on the website. Evergy Metro's marketing activities meet the programs needs as evidenced by them exceeding their savings and participation goals.	Guidehouse finds that Evergy's marketing activities meet the program's needs. The IC for the Business Standard program works one on one with the larger customers and those larger customer's CSMs. The trade-ally network addresses medium and smaller customers. In PY1, the implementer hosted targeted webinars for the certain sectors such as schools and the public sector and end-use categories such as HVAC. These targeted webinars were in addition to general webinars for all business customers interested in energy efficiency upgrades available across all the business programs. The effectiveness of Evergy's marketing activities is further evidenced by a sharp increase in projects once an increase in incentives for a few measures for small businesses was enacted in July 2020 through the end of PY1.
Business Custom Program	Due to the shortened program year in PY2019, the marketing and promotion of the program was primarily through emails to customers and trade allies.	Due to the COVID-19 pandemic, the marketing and promotion of the Business Custom program was primarily through emails and online webinars available to customers and trade allies. One in-person kickoff event for all the Cycle 3 business programs was held at the beginning of 2020 and had over 80 customer attendees. The online communications throughout the year provide information about Evergy's business programs and supplement the information available on Evergy's website. Customers indicated that the in-person kickoff event and the online communications led them to complete Business Custom projects. Also, the Business Custom program communicated closely with the CSMs who represent the larger Tier 1 customers. These

Program	2019 Summary Response	2020 Summary Response
		customers continued to be a large part of the Business Custom program in PY1.
Heating, Cooling, and Home Comfort	No process evaluation was conducted for this program in PY2019.	The Heating, Cooling and Home Comfort program has consistent structures in place with rebate distribution, a well-developed internal marketing team, and continued trade ally support. Program participants and trade allies were satisfied with program processes and interactions. However, some TAs reported that the application process has many required components that can be easily overlooked and suggested ways to improve the process.
Income-Eligible Multifamily	As in prior program years, communication channels focused largely on direct outreach, in-person contacts, and forming relationships with MF property managers. During PY2019, the program placed advertisements in apartment association magazines to generate broad awareness of the program, did video advertising on a local television channel (channel 41), and conducted approximately 10 community outreach events, often by partnering with neighborhood association meetings. This neighborhood outreach approach was a new strategy in PY2019. Program staff reported that their aim was to increase awareness of the program among neighborhoods and tenants, developing a vehicle through which they could reach property owners and managers. Program staff reported that they intend to select specific geographic areas in which to conduct neighborhood-level outreach for MEEIA Cycle 3.	Income-eligible Multifamily program participants were satisfied with the program processes. Most participants (property managers) learned about the program via outreach from program staff, indicating they were not aware of the program before being contacted. Program staff reported that the program “is not a TA-driven program” and so it relies on contract by the implementer to generate projects. Nevertheless, prior program awareness may be helpful in securing participation and generating greater program-related savings.

Program	2019 Summary Response	2020 Summary Response
Energy Saving Products	No process evaluation was conducted for this program in PY2019.	Energy Saving Products program participants also were satisfied with the program. Our evaluation found that about half of surveyed customers who reported buying LEDs at participating stores through ESP were aware of the Evergy discount, which compares well to awareness rates we have identified in similar programs in other jurisdictions. Given that the program met goals, this may be adequate, but program staff indicated concerns about market saturation, and so increasing customer awareness of the discounts and that Evergy provided them may help improve the proper assignment of attribution of the savings resulting from the purchases.
Home Energy Report and Income-Eligible Home Energy Report	The HER program uses two primary communication channels: paper mailed reports and emails.	No feedback for this issue was offered by the evaluator for this program.
Home Online Energy Audit	Both communication channels and delivery mechanisms are appropriate for the target market segments. In PY2019 Evergy Metro cross promoted HOEA through multiple channels including a series of emails related to the utility re-branding and the HERs. Across all Evergy MO territory, 3,342 customers completed the Analyzer survey and in total completed or plan to complete 8,536 energy-saving tips. BOEA did not do any targeted communications in PY2019 pending changes to the program expected in 2020/2021.	No feedback for this issue was offered by the evaluator for this program.

Program	2019 Summary Response	2020 Summary Response
Business Smart Thermostat	In PY2019, Evergy successfully released an online customer portal to better communicate with and educate customers.	Business Smart Thermostat participants indicated they would like more advance notice of events.
Business Demand Response	Per PY2017 recommendation, as AMI becomes more prevalent, Evergy has worked hard to provide more consistent updates to participants regarding their program performance. Guidehouse recommends continuing this effort in preparation for a "pay-for-performance" incentive structure in which immediate event feedback is required from DERMS. Such capabilities would also allow for more periodic updates of participants' event target values (FPLs), as recommended in PY2017.	No feedback for this issue was offered by the evaluator for this program.
Residential Demand Response	No process evaluation was conducted for this program in PY2019.	Residential Demand Response participants indicated they would like more advance notice of events.

Table 18: 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?

Program	2019 Summary Response	2020 Summary Response
Business Standard Program	In PY2019, Evergy Metro continued to have strong success with the efficient lighting measures in the Standard program. The effect from other end uses was less than 1%, but other programs such as the Custom program covers many of those non-lighting measures.	In PY2020, Evergy continued to have strong success with the efficient lighting measures in the Business Standard program. The effect from other end-uses was around 2%, but other programs such as the Business Custom program covers many of those non-lighting measures.
Business Custom Program	Customers need support in the identification and implementation of energy efficient projects. Support would encourage more customers to complete high efficiency projects, particularly when equipment needs to be specified and installed quickly.	Customers and the TAs that work with them need support in the identification and implementation of large and non-standard energy efficient projects that fall within the Business Custom program. There continued to be some confusion among TAs about certain Business Custom measures. Also, some customers indicated some misunderstanding about the amount of incentive they would receive.
Heating, Cooling and Home Comfort	No process evaluation was conducted for this program in PY2019.	• Add fields for additional customer household characteristics information to the data collection process. Collect the number of stories of customers' homes to supplement the savings calculations for the air sealing and attic insulation measures. This is needed to estimate Minimum Ventilation Rate (MVR) and would allow for program administrators to more readily examine if homes are being sealed within allowable guidelines that maximize energy savings while ensuring maintenance of indoor air quality. • Monitor installation rates on an ongoing basis for the Energy Savings Kit sub-program. The sub-program has moved from direct install to virtual install, and this comes with trade-offs of lower administration costs

Program	2019 Summary Response	2020 Summary Response
		but greater risk of non-installation or measure removal. • Track installation rates and satisfaction rates along with customer demographics (age, income, etc.) to identify if there are customer sub-groups that prefer the virtual installation process to assess if this option should remain in the program long-term. • Periodically review the incentive structure for higher-efficiency HVAC systems in the program. When examining the benefit-cost ratios for higher-efficiency HVAC systems, Evergy can assess if incentives can be or need to be revised. • Develop a simplified and more automated application process. As it is, some trade allies reported that the application process has many required components that can be easily overlooked. Drop-down options with pre-programmed equipment and AHRI numbers could be utilized to reduce the time it takes for trade allies to look up the information themselves and would reduce input error.
Income-Eligible Multifamily	The program is leveraging several strategies to overcome market imperfections and increase measure implementation such as a concierge-type service for selecting measures to support property managers and owners, and neighborhood- level outreach.	• Create short interactive surveys for tenants and property managers. During the installation process, offer the tenant or manager the option to complete a survey using a tablet or a link sent to their phones to encourage immediate feedback. Have automatic reminders set-up a week after in case the survey has not been completed. • Create an infographic or report of IEMF program success and post on social media. Report year energy goal savings every year and highlight major projects on

Program	2019 Summary Response	2020 Summary Response
		social media platforms. Use these numbers to increase project leads and increase program credibility within the service territory.
Energy Saving Products	No process evaluation was conducted for this program in PY2019.	• Oracle should consider ways to make the information on home comparisons (as well as how to provide for more accurate feedback on the home's energy usage) more obvious to HER recipients and Energy Analyzer users. Incorrect beliefs about how the comparisons are made or of the option for providing for a more accurate comparison may create frustration, leading some customers to make minimal use of the reports. • Oracle may also consider discontinuing the practice of telling recipients (and Energy Analyzer users) they are being compared to their "neighbors." A one-mile radius encompasses far more homes than many individuals may consider to be a neighbor. This practice may reinforce an inaccurate interpretation of how the comparison is made. One alternative phrasing could be to state that they are being compared to "homes in your neighborhood".
Home Energy Report and Income-Eligible Home Energy Report	Paper report readership rates are consistent with IC-reported utility averages and email open rates are about 46%. However, there may be opportunities to encourage additional readership.	• Oracle should consider ways to make the information on home comparisons (as well as how to provide for more accurate feedback on the home's energy usage) more obvious to HER recipients and Energy Analyzer users. Incorrect beliefs about how the comparisons are made or of the option for providing for a more accurate comparison may create frustration, leading some customers to make minimal use of the reports.

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		• Oracle may also consider discontinuing the practice of telling recipients (and Energy Analyzer users) they are being compared to their "neighbors." A one-mile radius encompasses far more homes than many individuals may consider to be a neighbor. This practice may reinforce an inaccurate interpretation of how the comparison is made. One alternative phrasing could be to state that they are being compared to "homes in your neighborhood".
Home Online Energy Audit	The main barrier to entry for residential customers is awareness of and understanding how to use the tools. Evergy has continually addressed these through extensive cross promotion through web, social media, email campaigns, and cross-promoting through other programs. Evergy has also made the tools easier to use through embedded widgets. With a single sign on and no-load time, customers have a more seamless experience. Every widget or page of the tool includes energy-saving tips, ensuring that even if customers use only a portion of the available tools, they still receive tips. The main barrier to entry for small business customers is likely time and perceived value of the tools. Evergy is planning to address these barriers with change to the program expected in 2020/2021.	• Evergy and Oracle should consider developing ways to tailor messaging to the different groups of customers that represent different levels of readiness to take steps to reduce energy use. Tailoring messaging to the "unknowledgeable intent," "unknowledgeable concern," and "concern, no intent" groups may provide the needed nudge or knowledge to turn them into effective energy savers. • Oracle should also consider reviewing the Energy Analyzer to ensure its readability level reaches all customers. This could be checked against the Flesch-Kinkaid Reading Ease formula (or other acceptable metric of linguistic ease), with a goal of a Flesch-Kinkaid score of 65 out of 100 to balance professionalism with reading ease.
Business Smart Thermostat	As noted in PY2019, Evergy should monitor program savings targets in addition to enrollment goals to ensure that program cost effectiveness remains high. Guidehouse acknowledges Evergy addressed this issue	• Evergy's Business Smart Thermostat program received high satisfaction ratings from program participants. However, the survey respondents indicated they wanted better notification of upcoming DR events. Therefore, Evergy staff should consider additional

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	in PY2019, identifying the need to expand the low-cost BYOT channel.	ways to provide event notification, including sending reminder emails to program participants. Evergy can ensure that its program application process captures and updates participant email addresses. • Continue efforts to reduce evaluation risk using modeled annual counterfactual baseline (CBL) selection for each participant. • Currently, enrollment eligibility for the program is restricted to manufacturers that total less than 30% of market share for smart thermostats. Evergy should engage with other major smart thermostat manufacturers to obtain the required data access permissions to facilitate their enrollment as this is a structural barrier to program scale.
Business Demand Response	In PY2019, the DRI product manager made progress to better manage participants' event behavior. The results of the PY2019 impact evaluation reveal limitations in what performance improvements are achievable through behavior management due to the fundamental program design. Guidehouse recommends moving to a "pay-for-performance" incentive structure to increase event participation in Cycle 3. As noted earlier, the DRI Product Manager is planning to adopt this recommendation in MEEIA Cycle 3.	No feedback for this issue was offered by the evaluator for this program.
Residential Demand Response	No process evaluation was conducted for this program in PY2019.	• Evergy's Residential Smart Thermostat program received high satisfaction ratings from program participants. However, the survey respondents indicated they wanted better notification of upcoming DR events. Therefore, Evergy staff should consider

Program	2019 Summary Response	2020 Summary Response
		additional ways to provide event notification, including sending reminder emails to program participants. Evergy can ensure that its program application process captures and updates participant email addresses. • Continue efforts to reduce evaluation risk using modeled annual counterfactual baseline (CBL) selection for each participant. • Evergy can continue to look for ways to expand the eligibility of smart thermostats, as this strategy will make the program more affordable. Evergy should also continue its research into smart thermostat technology to identify additional devices in the next program year.