

APPENDIX C

Duke Energy Ohio Schedule and Description of Planned Evaluation Activities
March 2018

Schedule of Planned¹ Evaluation Activities and Reports

Residential Customer Programs	Program/ Measure	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Energy Education Program for Schools	K12 Curriculum	M&V	M&V	Report					
Low Income Neighborhood							M&V	M&V	M&V
Low Income Weatherization	Pay for Performance								
My Home Energy Report	MyHER	M&V	M&V	Report					
Res Energy Assessments	HEHC		M&V	Report					
Residential Smart Saver®	HVAC								
	Lighting (Free LED & Online)	M&V	Report						
	Multi-Family								
	Save Energy & Water					M&V	Report		
Power Manager		M&V	2017 Report			M&V	2018 Report		

Non-Residential Customer Programs	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Small Business Energy Saver	Report							
Smart Saver® Custom	M&V	Report						
Smart Saver® Prescriptive			M&V	Report				
PowerShare®	2017 Report				2018 Report			

LEGEND	
M&V	Plan Development and Data collection (surveys, interviews, onsite visits, billing data) and analysis
Report	Evaluation Report

¹ Note: evaluation report dates are subject to change. Those programs without reports scheduled in 2017 and 2018 have EM&V activities planned during those time periods.

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Description of Planned Evaluation Activities by Program

Duke Energy Ohio has contracted with several independent, third-party evaluation consultants for each program in the portfolio to provide the appropriate Evaluation, Measurement & Verification support for planned evaluations. The work performed by the evaluation consultant varies by program and includes the development of a complete evaluation plan and the implementation of that plan to collect data and conduct impact evaluation analysis to estimate energy and demand savings resulting from the program. If included in the plan, the evaluation consultant conducts data collection and analysis for process evaluation to provide unbiased information on past program performance, current implementation strategies and opportunities for future improvements. The following section provides general descriptions of the current plans, which are subject to change in the complete evaluation plans.

Residential Programs

Energy Education Program for Schools

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The process evaluation is planned to include program manager, implementer and teacher surveys/interviews to assess program operations, and student family surveys to assess program awareness, satisfaction, and compliance with installations and recommendations. For the theater component, the process evaluation is planned to consist of interviews with school administrators and a review of the theatrical presentation and program operations. A statistically representative sample of participants will be selected for the analysis.

The impact analysis is planned to consist of a billing analysis to determine program impacts. An engineering analysis is also planned to be conducted using data collected through the participant survey. This analysis will provide measure level savings to offer insight into individual measure contributions to overall program impacts. While the billing analysis approach provides net savings, net-to-gross estimates are planned to be calculated for program management and information purposes using customer responses from the participant surveys at the measure level. Free-ridership and spillover are expected to be part of the net-to-gross analysis.

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Low Income Neighborhood

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact analysis is planned to consist of a billing analysis to determine program impacts using a comparison of treated homes versus a comparison group of not-yet-treated homes. An engineering analysis is also planned to be conducted using data collected through the participant survey. This analysis will provide measure level savings to offer insight into individual measure contributions to overall program impacts. The billing analysis approach will incorporate the effects of both free ridership and spillover, thus providing program net savings. Since the billing analysis incorporates the effects of free ridership and spillover, a separate net-to-gross analysis is not included in the evaluation.

The process evaluation is planned to include a participant survey to collect information on energy efficiency actions taken as a result of the program, prior intentions, and changes in other major end uses, changes in household occupancy, persistence and program satisfaction. A statistically representative sample of participants will be selected for analysis. In addition, the process evaluation is planned to include program manager and implementer interviews to assess program operations, and program and measure satisfaction.

Low Income Weatherization (Pay for Performance)

The pilot evaluation, measurement and verification report provided an independent, third-party report of energy savings attributable to the program including an impact evaluation.

The impact analysis consisted of a review of program tracking data, measure installation verification reports from the independent inspector, and work-papers supporting the deemed energy savings values assigned to each measure. The program was filed in early 2018. No evaluation is planned until there is sufficient program participation with which to conduct an evaluation.

My Home Energy Report (MyHER)

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

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The MyHER program involves a control group of customers that is randomly assigned to be used in the impact analysis. The impact evaluation is planned to consist of a billing analysis, specifically a difference in differences regression model to estimate impacts of the treatment group versus the control group. Differences in impacts between the two groups are attributed to the MyHER program. Incremental uptake of energy efficiency measures will be used to adjust savings to be net of other Duke Energy energy efficiency programs.

The process evaluation is planned to include program manager and implementer interviews to assess program effectiveness. A participant survey will be used to collect information on energy efficiency actions taken as a result of the program, prior intentions, and changes in other major end uses, changes in household occupancy, persistence and program satisfaction. A statistically representative sample of participants will be selected for analysis.

Residential Energy Assessments

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact analysis is planned to consist of a billing analysis to determine program impacts using a comparison of participants who participated during the evaluation period versus a comparison group of participants who participated during a post-evaluation period. An engineering analysis is also planned to be conducted using data collected through the participant survey. This analysis will provide measure level savings to offer insight into individual measure contributions to overall program impacts. The billing analysis approach will incorporate the effects of both free ridership and spillover, thus providing program net savings. Since the billing analysis incorporates the effects of free ridership and spillover, a separate net-to-gross analysis is not included in the evaluation.

The process evaluation is planned to employ program staff interviews and participant surveys. Participant survey questions include perceived barriers to program participation, marketing and outreach tactics, and program satisfaction.

Residential Smart \$aver®: HVAC

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact evaluation utilizes a multi-faceted technique for estimating savings:

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- **Engineering Calculations:** The evaluation team may utilize engineering algorithms with field measurement and verification parameters to estimate energy consumption and savings.
- **On-Site Metering & Verification:** The evaluation team may include an in-situ metering study to estimate operational hours of air source heat pumps and central air conditioners, on-site verification of attic insulation and air sealing projects, and verification surveys with program participants paired with engineering desk analyses to estimate gross savings for all measures in the program.
- **Deemed Savings:** In some limited cases, the evaluation team may utilize deemed per-unit savings estimates from Ohio technical reference manual, as needed.

The process evaluation includes interviews with program staff, program implementer, and most-active trade allies. Surveys will be conducted among less-active trade allies and with participants to estimate free-ridership and uncover potential issues that might impact customer satisfaction or program effectiveness. A statistically representative sample of participants will be selected for the analysis.

Residential Smart Saver®: Residential Lighting

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact analysis is planned to use an engineering analysis to determine program savings, utilizing the savings algorithms and parameters provided by the Ohio or other relevant TRMs, with updated values of some parameters using data collected through a participant survey and an engineering analysis. A statistically representative sample of participants will be selected for the analysis. In addition, the impact analysis will include an hours-of-use study to estimate hours of use and coincidence factors for LEDs among DEO program participants.

The process evaluation is planned to include program staff interviews and participants to estimate net-to-gross and uncover potential issues that might impact customer satisfaction or program effectiveness. A statistically representative sample of participants will be selected for the analysis.

Residential Smart Saver®: Multi-Family

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

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The impact analysis is planned to consist of an engineering analysis, utilizing data collected during on-site field verification of program measures. The analysis will stratify the field verification sample by measure type, and include a sufficient number of properties and housing units within each property to gather representative information for the program.

The process evaluation is planned to include program manager, implementer interviews to assess program operations, and property manager and tenant surveys to estimate net-to-gross, assess program awareness and satisfaction. A statistically representative sample of participants will be selected for analysis.

Residential Smart Saver: Save Energy & Water

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact analysis is planned to use an engineering analysis to determine program savings, utilizing the savings algorithms and parameters provided by the Ohio or other relevant TRMs, with updated values of some parameters using data collected through a participant survey and an engineering analysis. A statistically representative sample of participants will be selected for the analysis.

The process evaluation is planned to include program staff interviews and participants to estimate net-to-gross and uncover potential issues that might impact customer satisfaction or program effectiveness. A statistically representative sample of participants will be selected for the analysis.

Power Manager (Demand Response)

Evaluation, measurement and verification actions will provide an independent, third-party report of demand savings attributable to the program.

The impact evaluation will be conducted using smart meter data and a randomized control trial design. The combination of smart meter data and a randomized control trial yields extremely precise estimates of demand reductions at substantial savings in comparison to end use data collection. It also enables side by side testing of operational strategies and side by side testing of the effect of event dispatch timing on demand reductions.

A process evaluation was conducted in 2016 which included post-event surveys. There will not be a process component in the 2018 evaluation.

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Non-Residential Programs

Small Business Energy Saver

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact analysis is planned to consist of a detailed engineering analysis to estimate impacts. Depending on the distribution of installed measure types, the projects may be stratified into groups and then a sample selected for on-site verification of equipment installation and inputs to the engineering savings estimates.

The process evaluation is planned to include program staff interviews, implementation contractor interviews, and participant surveys to assess correlations between reductions in consumption and certain behavior changes and equipment purchases. The participant survey will be used collect data to estimate net-to-gross for the program.

Smart \$aver® Non-Residential Custom

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

The impact analysis for the Smart \$aver Custom program is planned to use a statistically representative sample of participating projects. A blend of selective monitoring and site visits will be performed at each of the selected sample set projects, with engineering-based estimation.

The Process evaluation is planned to include participant surveys to collect information needed to estimate net impacts and participants will be asked about equipment that was replaced, energy efficiency actions taken, prior intentions regarding these measures, changes in other major end uses that impact energy consumption, hours of facility operation, persistence and program satisfaction. A statistically representative sample of participants will be selected for the analysis.

Smart \$aver® Non-Residential Prescriptive

Evaluation, measurement and verification actions will provide an independent, third-party report of energy savings attributable to the program including an impact analysis and process evaluation.

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The impact analysis for the Smart \$aver Prescriptive program is planned to use a statistically representative samples of participants. A sample of facilities will receive a combination of selective monitoring and site visits to develop an engineering-based estimation

The process evaluation is planned to include participant surveys and Trade Ally interviews to collect information needed to estimate net impacts, as well as to ask about awareness and satisfaction with key program components and overall program satisfaction. Trade allies will also be asked about effects of program participation on their practices to help assess spillover.

PowerShare® (Demand Response)

The impact analysis is planned to measure and evaluate the short-term changes in load due to the potential and actual interruption of activity or start of on-site generation. The evaluation research includes the collection and processing of interval consumption data and analysis of actual event day load response by program participants.

There will not be a process component in the Program Year 2017 evaluation; however a process component is expected to be conducted for Program Year 2018.