APPENDIX I

REPORT

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Save Energy and Water Kits 2016 Program Year Evaluation Report

Submitted to Duke Energy Ohio
in partnership with Research into Action

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1.1 Program Summary

The Save Energy and Water Kit Program (SEWKP) is a Duke Energy program that provides free energy and water efficiency kits to pre-selected households in the Duke Energy Ohio (DEO) jurisdiction. The kits include aerators for kitchen and bathroom sink faucets, one or two showerheads, and water heater pipe wrap.

1.2 Evaluation Objectives and Results

This report presents the results and findings of evaluation activities for DEO SEWKP conducted by the evaluation team, collectively Nexant Inc. and our subcontracting partner, Research into Action, for the program year of January – December 2016.

1.2.1 Impact Evaluation

The evaluation team conducted the evaluation as detailed in this report to estimate energy and demand savings attributable to the DEO program. The evaluation was divided into two research areas - to determine gross and net savings (or impacts). Gross impacts are energy and demand savings estimated at a participant's home that are the direct result of the homeowner's installation of a measure included in the SEWKP kit. Net impacts reflect the degree to which the gross savings are a result of the program efforts and funds.

Table 1-1 and Table 1-2 present the summarized findings of the impact evaluation for the DEO jurisdiction.

Table 1-1: 2016 DEO Energy Savings per Kit

Measurement	Reported	Realization Rate	Gross Verified	Net-to-Gross Ratio	Net Verified
Energy (kWh)	584.3	74.0%	432.5	98%	423.4
Demand (kW)	0.04	304.9%	0.136		0.133

Table 1-2: 2016 DEO Program Level Energy Savings

Measurement	Reported	Realization Rate	Gross Verified	Net-to-Gross Ratio	Net Verified
Energy (kWh)	652,328	74.0%	482,908	98%	472,715
Demand (kW)	49.7	304.9%	151.8		148.7

Gross verified energy and demand savings by measure and net to gross ratio details for the DEO jurisdiction are presented in Figure 1-1; Table 1-3, respectively.

Figure 1-1: 2016 DEO Gross Verified Energy Savings

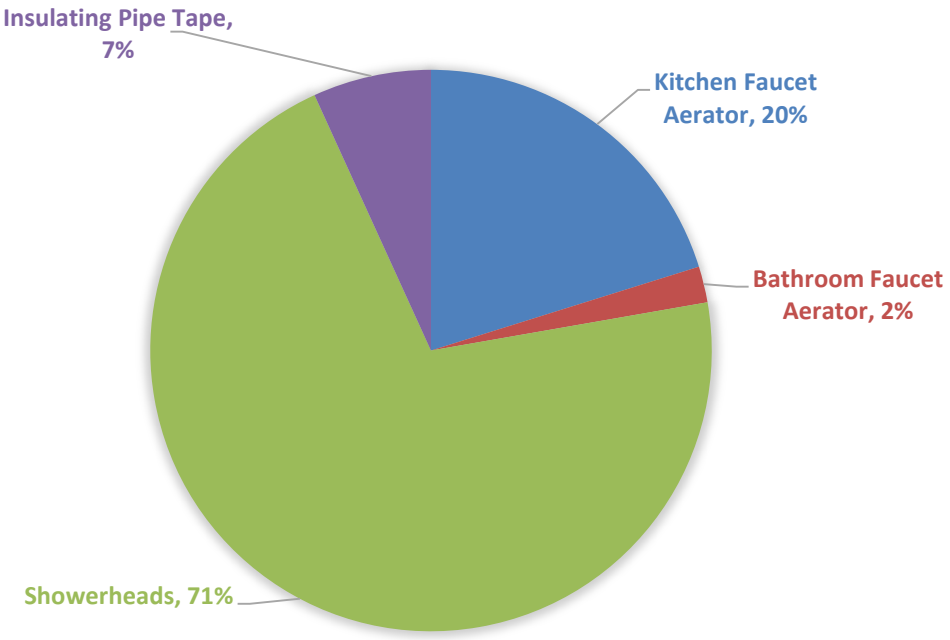


Table 1-3: DEO Program Year 2016 Verified Impacts by Measure

Measure	Gross Energy Savings per unit (kWh)	Gross Demand per unit (kW)	Free Ridership	Spillover	Net to Gross Ratio
1.5 GPM Showerhead	306.8	0.098	0.12	0.09	0.98
1.0 GPM Bathroom Faucet Aerator	9.0	0.003	0.10		
1.5 GPM Kitchen Faucet Aerator	87.3	0.031	0.08		
Pipe Wrap	29.5	0.003	0.11		
Total Kit Impacts	**432.5**	**0.136**	**0.11**	**0.09**	**0.98**

1.2.1.1 State Bill 310 Compliance

In the state of Ohio, electric distribution utilities (EDUs), including DEO, are required to achieve a cumulative annual energy savings of more than 22% by 2027 per Ohio Senate Bill (SB) 310[1]. SB 310 also introduced new mechanisms that adjust how EDUs may estimate their energy

[1] State of Ohio Substitute Senate Bill 310 Section 4928.662, sections (A) through (G), pages 30 and 31.

savings achieved through demand side management programs. Specifically, SB 310 requires the Ohio Public Utilities Commission (PUC) to permit EDUs to account for energy-efficiency savings estimated on an "as-found" or a deemed basis. That is, an EDU may claim savings based on the baseline operating conditions found at the location where the energy-efficiency measure was installed, or the EDU may claim a deemed savings estimate. For example, if a DEO customer installed an electronically commutated motor fan, DEO can claim energy savings based on its own assumed deemed or calculated energy savings value associated with the fan upgrade irrespective of third party evaluation, measurement, and verification, which could show a higher or lower level of energy savings from observed conditions. The relevant language from SB 310 is provided in Appendix C.

Table 1-4 provides the gross savings per measure that DEO will claim per SB 310 for the SEWKP 2016 program year.

Table 1-4: SB 310 Compliance Gross Savings per Measure

Measure	Claimed Gross Savings (kWh)	Claimed Gross Savings (kW - summer)	Source
1.5 GPM Showerhead	306.8	0.098	DEO program verified savings
1.0 GPM Bathroom Faucet Aerator	96.0	0.011	DEO program reported savings
1.5 GPM Kitchen Faucet Aerator	87.3	0.031	DEO program verified savings
Pipe Wrap	238.3	0.005	DEO program reported and verified savings

1.2.2 Process Evaluation

The process evaluation assessed opportunities for improving the program's design and delivery in the DEO service territory. It specifically documented participant experiences by investigating participating household responses to the kits and the extent to which the kits effectively motivate households to save energy.

The evaluation team reviewed program documents and conducted telephone and web surveys with households that received a kit (n=143). The team also conducted in-depth interviews with utility and implementation staff.

Program Successes

The 2016 DEO SEWKP evaluation found successes in the following areas:

Kit instructions are perceived as highly helpful among SEWKP participants. Seventy-nine percent of participants said they read the instructional insert from their kit that offers detailed instructions on self-installing the measures, the majority of which said the instructions were

highly helpful. These paper instructions are likely sufficient for most participants, as few respondents reported viewing the online instructional videos.

The program influenced household to install kit measures. Nearly all participating households installed at least one measure from the kit and the vast majority of measures, once installed, remained installed. Participants were highly influenced by the program to install kit measures, as demonstrated by low free ridership rates. Further, 18% of respondents reported program attributable spillover.

Most participants are satisfied with kit items and report high satisfaction with the overall program. Less than 10% of participants reported dissatisfaction with any of the specific measures they installed. Eighty-two percent of participants reported they were highly satisfied with the overall program.

The kit size assignment algorithm works fairly well. The kit size assignment algorithm assigns smaller kits to smaller homes (less than 1,500 square feet) and medium kits to larger homes (1,500 square feet or more). As a result, SEWKP typically delivers a useable number of units to most homes.

Program Challenges

The 2016 DEO SEWKP evaluation found some challenges in the following areas:

Pipe wrap is the least popular measure. Pipe wrap was the least installed measure type, with less than one-third of participants reporting installing it.

Low water pressure is a significant contributor to dissatisfaction and uninstallation rates. Complaints of excessively low water pressure were the primary drivers of dissatisfaction with and uninstallation of water saving measures. However, only a minority of participants were dissatisfied with or uninstalled them.

Inadequate size is a common barrier hindering aerator installation. Of those who did not install the kitchen faucet aerator, almost 24% reported they did not install the measure because it did not fit on their faucet. Similarly, 20% of respondents who did not install any of the bathroom faucet aerators cited sizing issues.

Many items do not get installed, especially multi-count measures. ISRs ranged from 30% to 55%. ISRs were lowest for multi-count measures.

Medium kits had lower ISRs on every measure. Medium kits had lower ISRs than small kits on every measure.

1.3 Evaluation Conclusions and Recommendations

Based on evaluation findings, the evaluation team concludes the following and provides several recommendations for program improvement:

Conclusion 1: The program model is highly successful: it leverages low-cost measures to foster energy savings that would not have happened otherwise. Duke Energy's easy process for requesting and receiving a kit with free energy and water saving items motivated over one-thousand customers to request and install energy saving measures in their home. Most participants installed at least one measure from the kit and the vast majority of measures, once installed, stayed installed. Participants were highly influenced by the program to install these kit measures, as demonstrated by low free ridership rates. Further, 18% of respondents reported program-attributable spillover actions.

> **Recommendation**: Continue using SEWKP to encourage Duke Energy customers to save energy and water.

Conclusion 2: The water saving measures' low flow water pressure results in some minor satisfaction and uninstallation issues. Complaints of excessively low water pressure were the primary drivers of item dissatisfaction and uninstallation. However, only a minority of participants were dissatisfied with or uninstalled water saving items.

> **Recommendation**: Consider expanding participant-facing messaging around low-flow measures; water measure ISRs and satisfaction may increase if participants have better upfront expectations on the flow rates of the measures and better understand the energy saving benefits of low-flow fixtures.

> **Recommendation**: Consider investigating alternative products that provide the same GPM as the current aerator and showerhead offerings, but offer higher perceived water pressure.

Conclusion 3: There may be opportunities to further encourage participants to save energy in their home. Kit recipients were highly engaged in energy-saving practices:

- Most participants installed at least one measure and read the installation instructional insert
- Eighteen percent of kit recipients reported program-influenced spillover actions, commonly LEDs and CFLs

> **Recommendation**: Consider leveraging the kits to promote other Duke Energy energy efficiency programs, (e.g.: Smart $aver) and other ways to save energy in the home (e.g.: LEDs, behavior change). Kit recipients may be good targets for encouraging additional energy saving opportunities, as they
>
> - demonstrated willingness to save energy in their home
> - demonstrated willingness to read information included with the kit
> - are single family homeowners, many of which have household incomes greater than average for the region

Conclusion 4: Despite delivering a useable number of units to most homes, there may be cost- effectiveness benefits to reducing the number of items delivered. The kit size assignment algorithm works fairly well:

- Small and medium kit recipients largely got the appropriate number of kitchen aerators and showerheads, given the number of kitchen faucets and showers in their home.
- However, 40% of medium kit recipients have only one or two bathroom sink faucets in their home.

Nonetheless, many items do not get installed, especially multi-count measures:

- Recipients of either kit size installed one bathroom aerator and one showerhead on average.
  - Very few medium kit recipients installed three or four bathroom aerators.
  - Few medium kit recipients installed both showerheads.
- Medium kits had lower ISRs on every measure, suggesting that delivering too many items may overwhelm participants and consequently hinder installations.

Recommendation: Consider if there is a significant enough cost-effectiveness benefit to justify reducing the number of kit sizes and multi-count units offered. Reducing the number of items included in the kit, particularly the number of bathroom aerators provided, could increase ISRs and reduce program costs as the survey data reveals there is a negative relationship with number of kit items delivered and ISRs (that is, the more items Duke Energy provides, the lower the ISRs).

Conclusion 5: The program was successful in identifying and soliciting customers with electric water heat. In total, the evaluation found that 10% of DEO customers in the program had non-electric water heaters. Based on the 2013 general population Duke Residential Appliance Saturation Survey, the Ohio territory has a non-electric water heat saturation of 63%.

Recommendation: Continue to update and refine the propensity score matching analysis to maintain and potentially increase the amount of electric water heat saturation for SEWKP participants.

2 Introduction and Program Description

2.1 Program Description

2.1.1 Overview

The Save Energy and Water Kit Program (SEWKP) is a Duke Energy program that provides free energy and water efficiency kits to pre-selected households in Duke Energy Ohio (DEO) territory. The kits include aerators for kitchen and bathroom sink faucets, one or two showerheads, and water heater pipe wrap.

2.1.2 Energy Efficiency Kit Measures

Table 2-1 lists the kit's contents included in the evaluation scope. There are two kit sizes, which dictate the number of showerheads and bathroom aerators the participant receives. In addition to the measures below, the kit includes plumbing tape, a rubber gasket opener to remove old aerators and showerheads, and an instructional insert that has detailed installation instructions. Duke Energy has additional installation instruction information available on their website.

Table 2-1: 2016 Kit Measures

Measures	Small Kit Count	Medium Kit Count
1.5 GPM Showerhead	1 low-flow showerhead	2 low-flow showerheads
1.0 GPM Bathroom Faucet Aerator	2 low-flow faucet aerators	4 low-flow faucet aerators
0.5/1.0/1.5 (adjustable) GPM Kitchen Faucet Aerator	1 low-flow kitchen aerator	1 low-flow kitchen aerator
Pipe Wrap (2 inches wide, 15 feet long)	1 roll of pipe wrap	1 roll of pipe wrap

2.2 Program Implementation

2.2.1 Participant Identification and Recruitment

Every month Duke Energy's internal analytics department identifies households to recruit into the program. They look through customer accounts for single family electric-only accounts that have not participated in SEWKP or any other programs with similar measures (specifically, the Energy Efficiency Education in Schools and Home Energy House Call programs). Pre-selected households are then assigned either a small oIf your medium kit based on household square footage data. Next, Duke Energy mails business reply cards (BRC) to all pre-selected households. Simultaneously, Duke Energy sends the implementer – Energy Federation, Inc. (EFI) – a list of pre-selected accounts that received the BRC that month. Households that receive the BRC simply detach the reply form and put it back in the mail (postage is pre-paid). These BRC reply forms are mailed to EFI. Upon receipt, EFI scans the unique barcodes on the

BRCs to register responding households as participants. Alternatively, customers may also call a toll free number, provided on the BRC, to confirm eligibility and request their free kit. EFI then ships the appropriate kit (small or medium) to registered households. EFI then ships the appropriate kit (small or medium) to registered households.

2.2.2 Participation

For the defined evaluation period of January 2016 through December 2016, the program recorded a total of 1,257 kit recipients in DEO. During survey recruitment of sampled customers, 11.2% of participants reported that their kit did not arrive in the mail. The causation of this high rate could not be fully identified by the evaluation team. Due to the program design of soliciting customers via a program mailer, customer address accuracy is expected to be very high for the program. However, this does not account for issues related to third party delivery failure or inaccurate customer recall.

2.3 Key Research Objectives

Over-arching project goals will follow the definition of impact evaluation established in the "Model Energy-Efficiency Program Impact Evaluation Guide – A Resource of the National Action Plan for Energy Efficiency," November 2007:

> *"Evaluation is the process of determining and documenting the results, benefits, and lessons learned from an energy-efficiency program. Evaluation results can be used in planning future programs and determining the value and potential of a portfolio of energy-efficiency programs in an integrated resource planning process. It can also be used in retrospectively determining the performance (and resulting payments, incentives, or penalties) of contractors and administrators responsible for implementing efficiency programs".*

Evaluation has two key objectives:

1) To document and measure the effects of a program and determine whether it met its goals with respect to being a reliable energy resource.
2) To help understand why those effects occurred and identify ways to improve the program.

2.3.1 Impact

As part of evaluation planning, the evaluation team outlined the following activities to assess the impacts of the DEO SEWKP:

- Quantify accurate and supportable energy (kWh) and demand (kW) savings for energy efficient measures implemented in participants' homes;
- Assess the rate of free riders from the participants' perspective and determine spillover effects;

- Benchmark verified measure-level energy impacts to applicable technical reference manual(s) and other Duke-similar programs in other jurisdictions.

2.3.2 Process

The process evaluation assessed opportunities for improving the design and delivery of the program in DEO service territory. It specifically documented participant experiences by investigating participant responses to the energy efficiency kits and the extent to which the kits effectively motivate households to save energy and water.

The evaluation team assessed several elements of the program delivery and customer experience, including:

Motivation:

- What motivated participants to request and install the measures in the kit?
- In what ways, if any, did the program motivate participants to adopt new energy and water saving behaviors?

Program experience and satisfaction:

- How satisfied are participants with the overall program experience and kit items in terms of ease of use and measure quality?

Challenges and opportunities for improvement:

- Are there any inefficiencies or challenges with the delivery of the program?
- Are there any measures that have particularly low installation rates? If so, why?
- Are there any measures that have particularly high uninstallation rates? If so, why?

Participant household characteristics:

- What are demographic characteristics of those who received the kits?

2.4 Evaluation Overview

The evaluation team divided its approach into key tasks to meet the goals outlined:

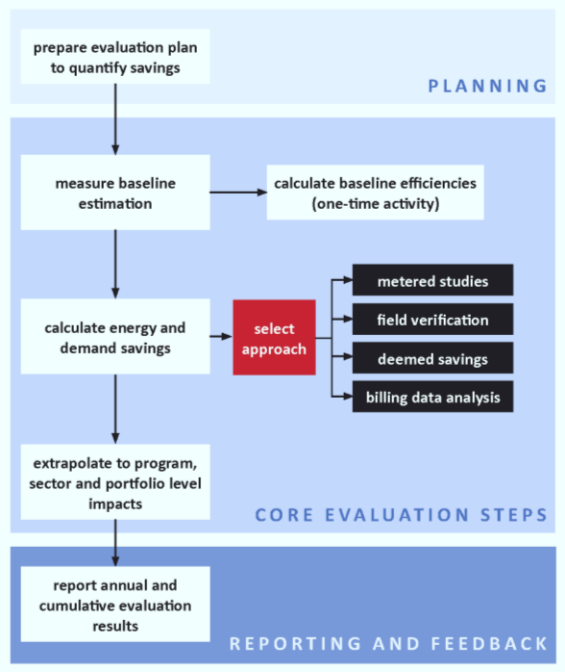
- **Task 1 –** Develop and manage evaluation work plan to describe the processes that will be followed to complete the evaluation tasks outlined in this project;
- **Task 2 –** Conduct a process review to determine how successfully the programs are being delivered to participants and to identify opportunities for improvement;
- **Task 3 –** Verify gross and net energy and peak demand savings resulting from SEWKP through verification activities of a sample of 2016 program participants.

2.4.1 Impact Evaluation

The primary determinants of impact evaluation costs are the sample size and the level of rigor employed in collecting the data used in the impact analysis. The accuracy of the study findings is in turn dependent on these parameters. Techniques that we used to conduct our evaluation, measurement, and verification (EM&V) activities, and to meet the goals for this evaluation, included telephone and web-based surveys with program participants, best practice review, and interviews with implementation and program staff.

Figure 2-1 demonstrates the principal evaluation team steps organized through planning, core evaluation activities, and final reporting.

Figure 2-1: Impact Evaluation Process



The evaluation is generally comprised of the following steps, which are described in further detail throughout this report:

- **Participant Surveys:** The file review for all sampled and reviewed program participation concluded with a telephone and/or web-based survey with the participants. Table 2-2 below summarizes the number of surveys and on-site inspections completed. The samples were drawn to meet a 90% confidence and 10% precision level based upon the expected and actual significance (or magnitude) of program participation, the level of certainty of savings, and the variety of measures.
- **Calculate Impacts:** Data collected via surveys enabled the evaluation team to calculate gross verified energy and demand savings for each measure.

- **Estimate Net Savings**: Net impacts are a reflection of the degree to which the gross savings are a result of the program efforts and incentives. The evaluation team estimated free-ridership and spillover based on self-report methods through surveys with program participants. The ratio of net verified savings to gross verified savings is the net-to-gross ratio as an adjustment factor to the reported savings.

2.4.2 Process Evaluation

Process evaluation examines and documents:

- Program operations
- Stakeholder satisfaction
- Opportunities to improve the efficiency and effectiveness of program delivery

To satisfy the evaluation, measurement, and verification (EM&V) objectives for this research effort, the evaluation team reviewed program documents and conducted telephone and web surveys with participating households who received a kit. The team also held in-depth interviews (IDI) with utility and implementation staff. Table 2-2 provides a summary of the activities the evaluation team conducted as part of the DEO SEWKP process and impact evaluation.

Table 2-2: DEO SEWKP Summary of Evaluation Activities

Target Group	2016 Population	Sample	Confidence /Precision	Method
Impact Activities				
DEO Participants	1,257	143	90/6.1	Telephone/Web Survey
Process Activities				
DEO Participants	1,257	143	90/6.1	Telephone/Web Survey
Duke Energy Program Staff	N/A	1	N/A	Telephone IDI
Implementer Staff: EFI	N/A	1	N/A	Telephone IDI

3 Impact Evaluation

3.1 Methodology

The evaluation team's impact analysis focused on the energy and demand savings attributable to the SEWKP for the period of January 2016 through December 2016. The evaluation was divided into two research areas: to determine gross and net savings (or impacts). Gross impacts are energy and demand savings estimated at a participant's home that are the direct result of the homeowner's installation of a measure included in the program-provided energy saving kit. Net impacts are a reflection of the degree to which the gross savings are a result of the program efforts and funds. The evaluation team verified energy and demand savings attributable to the program by conducting the following impact evaluation activities:

- Review of DEO participant database.
- Completion of telephone and web-based surveys to verify key inputs into savings calculations.
- Estimation of gross verified savings using primary data collected from participants.
- Comparison of the gross-verified savings to program-evaluated results to determine kit-level realization rates.
- Application of attribution survey data to estimate net-to-gross ratios and net-verified savings at the program level.

3.2 Database and Historical Evaluation Review

Duke Energy provided the evaluation team with a program database for the SEWKP participation within each jurisdiction. The program database provided participant contact information including account number, address, phone number, email address (if available), and whether or not the participant was willing to be contacted. Because Duke Energy was able to provide both phone numbers and email addresses, we were able to design a sampling approach that could take advantage of both phone and web-based surveying.

The evaluation team conducted a benchmarking review of the uncertainty of ex-ante savings estimates by comparing multiple technical reference manuals (TRMs) and SEWKP evaluations conducted in select Duke Energy jurisdictions. The details of the benchmarking review are referenced in Table 3-1. The listed savings values include the impact of in-service rates.

Table 3-1: Comparison of Ex-Ante SEWKP Savings to Peer Group Estimates

Measure	Duke Energy Ohio 2015 ex-ante savings[1]	Duke Energy Carolinas 2015 SEWKP evaluation[2]	Ohio 2010 TRM[3]	Indiana 2012 TRM[4]	Mid-Atlantic 2016 TRM (kWh)[5]	Penn-sylvania 2016 TRM[6]
1.5 GPM Showerhead	171	294	165	65	297	390
1.0 GPM Bathroom Faucet Aerator	96	7	20	12	38	26
Adjustable Kitchen Faucet Aerator	79	183	20	33	38	201
Pipe Wrap	238	112	97	93	111	47

[1]Duke Energy provided.
[2]Duke Energy Carolinas Save Energy and Water Kit Program evaluation. The Cadmus Group, revised April, 2016.
[3]State of Ohio Energy Efficiency Technical Reference Manual. August, 2010.
[4]Indiana Technical Reference Manual, version 1.0. December, 2012.
[5]Mid-Atlantic Technical Reference Manual V6. May, 2016. June, 2016.
[6]State of Pennsylvania Technical Reference Manual. June, 2016.

While Table 3-1 does illustrate variation in deemed savings among each source for each given measure, much of this variation reflects different in-service rate and water heat fuel type assumptions. Also of note is that the Ohio and Mid-Atlantic TRMs do not differentiate parameter assumptions between bathroom and kitchen faucet aerators. For this reason, the evaluation team ultimately used assumptions outlined by the Indiana and Pennsylvania TRMs to capture different usage patterns between each aerator location. All other parameters not mined from the participant survey generally relied on the Ohio TRM assumptions.

3.3 Sampling Plan and Achievement

To provide representative results and meet program evaluation goals, a sampling plan was created to guide all evaluation activity. A random sample was created to target 90/10 confidence and precision at the program level across both jurisdictions assuming a coefficient of variation (C_v) equal to 0.5.

3.3.1 DEO Sample

After reviewing the program database, we identified a population of 1,257 participants within our defined evaluation period. Based on this population, the evaluation team established sub-sample frames for phone and web-based survey administration. Customers who were flagged as “do not contact” in the participation database were excluded from the sample frame. As illustrated in Table 3-2 below, we completed a total of 143 surveys. This sample size resulted in an achieved confidence and precision of 90/6.1.

Table 3-2: DEO Impact Sampling

Survey Mode	Sample Frame	Sampled Participants	Achieved Confidence/ Precisions
Phone	365	70	90/6.1
Web-based	679	73	
Total	**1,044**	**143**	

3.4 Description of Analysis

3.4.1 Telephone and web-based surveys

The evaluation team performed telephone and web-based surveys to gain key pieces of information used in the savings calculations. Results of the completed surveys were used to inform our program-wide assumptions as detailed in Table 3-3.

Table 3-3: Participant Data Collected and Used for Analysis

Measure	Data Collected	Assumption
1.5 GPM Showerhead 1.0 GPM Bathroom Faucet Aerator Adjustable Kitchen Faucet Aerator	Units Installed	In-Service Rate
	Units Later Removed	
	Hot Water Fuel Type	% Electric DHW
	Adjustable Aerator Flow Rate	GPM Installed
	Frequency of Showers	Hot Water Consumption
	Duration of Showers	
Pipe Wrap	Pipe Wrap Used	In-Service Rate
	Pipe Wrap Removed	
	Hot Water Fuel Type	% Electric DHW
	Length of Insulated Pipe	Pipe Length

3.4.2 In-Service Rate

The in-service rate (ISR) represents the ratio of equipment installed and operable to the total pieces of equipment distributed and eligible for installation. For example, if 15 telephone surveys were completed for customers receiving 1 bathroom aerator each, and five customers reported to still have the aerator installed and operable, the ISR for this measure would be five out of 15 or 33%. In some instances equipment was installed but may have been removed later due to homeowner preferences. In these cases the equipment is no longer operable and therefore contributes negatively to the ISR. In-service rates for each measure from all eligible survey respondents are detailed in Table 3-4.

Table 3-4: DEO SEWKP In-Service Rates

Measure	Distributed	Installed	Removed	ISR
1.5 GPM Showerhead	255	125	10	45%
1.0 GPM Bathroom Faucet Aerator	510	165	10	30%
Adjustable Kitchen Faucet Aerator	143	91	13	55%
Pipe Wrap*	143	45	1	31%

*Quantity of pipe tape packages.

3.4.3 Faucet Aerators

The Save Energy and Water Kit contained one kitchen faucet aerator and multiple bathroom faucet aerators. Participants receiving a small kit received two bathroom faucet aerators; those qualifying for a medium kit received four bathroom faucet aerators. The equations below outline the algorithms utilized to estimate savings accrued by the faucet aerator measures with parameters defined in Table 3-5.

Equation 3-1: Faucet Aerator Energy Savings

$$\Delta kWh = ISR \times ELEC \times \left[\frac{\Delta GPM \times T_{person/day} \times N_{persons} \times 365\frac{days}{year} \times DF \times \Delta T \times 8.3\frac{BTU}{gal \cdot °F}}{\#_{faucets} \times 3{,}412\frac{BTU}{kWh} \times RE}\right]$$

Equation 3-2: Faucet Aerator Demand Savings

$$\Delta kW = ETDF \times \Delta kWh$$

Table 3-5: Inputs for Faucet Aerator Measures Savings Calculations

Input	Units	DEO Value*	Source
ISR	N/A	Bath: 30% Kitchen: 55%	Survey responses
ELEC	N/A	Bath: 91% Kitchen: 90%	Survey responses
ΔGPM	GPM	Bath: 1.2 Kitchen: 1.21	Product specification sheet compared against federal code minimum
$T_{person/day}$	Minutes	Bath: 1.6 Kitchen: 4.5	Indiana 2016 TRM
$N_{persons}$	Persons	Bath: 2.6 Kitchen: 2.4	Survey responses
DF	N/A	Bath: 90% Kitchen: 75%	Pennsylvania 2016 TRM
ΔT	°F	Bath: 22.2 Kitchen: 22.2	Ohio 2010 TRM

Input	Units	DEO Value*	Source
$\#_{faucets}$	Units	Bath: 2.7 Kitchen: 1.1	Survey responses
ETDF	N/A	Bath: 0.00036 Kitchen: 0.00036	Pennsylvania 2016 TRM
RE	N/A	98%	Ohio 2010 TRM

*Parameter values are estimated based on participants who installed the measure. For example, the water heat saturation is representative of participants who installed the faucet aerator as opposed to the full sample of participants which would include participants who did not install a faucet aerator.

The evaluation team determined that the 2016 Pennsylvania's TRM provided the most applicable by differentiating between kitchen and bathroom water use and providing more comprehensive algorithms. Where the Ohio 2010 and Indiana 2016 TRMs made appropriate distinctions, the evaluation team used the Ohio and Indiana parameter assumptions due to its geographic relevance to the DEO territory. However, where the Ohio and Indiana TRMs lacked granularity, the evaluation team elected to use the Pennsylvania TRM as the secondary data source for estimating savings.

3.4.4 Showerheads

The Save Energy and Water Kit contained multiple low-flow showerheads with the quantity depending on the size of the kit received. Participants receiving a small kit received one showerhead; those qualifying for a medium kit received two showerheads. The equations below outline the algorithms utilized to estimate savings accrued by the faucet aerator measures with parameters defined in Table 3-6.

Equation 3-3: Showerhead Energy Savings

$$\Delta kWh = ISR \times ELEC \times \left[\frac{\Delta GPM \times T_{person/day} \times N_{persons} \times 365\frac{days}{year} \times N_{showers-day} \times \Delta T \times 8.3\frac{BTU}{gal \cdot °F}}{3{,}412\frac{BTU}{kWh} \times RE}\right]$$

Equation 3-4: Showerhead Demand Savings

$$\Delta kW = ETDF \times \Delta kWh$$

Table 3-6: Inputs for Showerhead Savings Calculations

Input	Units	DEO Value*	Source
ISR	N/A	45%	Survey responses
ELEC	N/A	88%	Survey responses
ΔGPM	GPM	1.0	Product specification sheet compared against federal code minimum
$T_{person/day}$	Minutes	10.0	Survey responses
$N_{persons}$	Persons	2.5	Survey responses

Input	Units	DEO Value*	Source
$N_{showers\text{-}day}$	Persons	0.8	Survey responses
ΔT	°F	43.2	Ohio 2010 TRM
ETDF	N/A	0.00032	Pennsylvania 2016 TRM
RE	N/A	98%	Ohio 2010 TRM

*Parameter values are estimated based on participants who installed the measure. For example, the water heat saturation is representative of participants who installed the showerhead as opposed to the full sample of participants which would include participants who did not install a showerhead.

The evaluation team determined that the 2016 Pennsylvania's TRM provided the most applicable and rigorous algorithm. However, we did rely on the Ohio 2010 and Indiana 2016 TRMs for parameter assumptions that were more geographically relevant to the DEO territory.

3.4.5 Insulating Pipe Wrap

All participants received a 15 foot roll of pipe wrap insulation with their kit. To estimate the impacts resulting from the installation pipe wrap measure, the evaluation team used the algorithms presented below.

Equation 3-5: Insulating Pipe Wrap Energy Savings

$$\Delta kWh = ISR \times ELEC \times \frac{\left(\frac{1}{R_{ex}} - \frac{1}{R_{new}}\right) \times L \times C \times \Delta T \times 8{,}760}{\eta DHW \times 3{,}413}$$

Equation 3-6: Insulating Pipe Wrap Demand Savings

$$\Delta kW = \frac{\Delta kWh}{8{,}760}$$

Table 3-7: Inputs for Insulating Pipe Wrap Savings Calculations

Input	Units	DEO Value*	Source
ISR	N/A	31%	Survey Responses
ELEC	N/A	87%	Survey Responses
R_{ex}	N/A	1.00	Federal Code Minimum
R_{new}	N/A	3.00	Product Sheet Specification
L	Feet	5.2	Survey Responses**
C	Feet	0.20	Indiana TRM (Average of 1/2" and 3/4" pipe)
ΔT	°F	62.2	Ohio 2010 TRM
ηDHW	N/A	0.98	Ohio 2010 TRM
ETDF	N/A	0.00011	Indiana 2016 TRM (Calculated)

*Parameter values are estimated based on participants who installed the measure. For example, the water heat saturation is representative of participants who installed the pipe tape as opposed to the full sample of participants which would include participants who did not install pipe tape.

**Participant-provided estimated lengths of hot water pipe covered by the pipe tape was used to estimate verified savings.

Through a combination of participant survey responses as well as TRM and other deemed values, we estimated the parameter inputs presented above in Table 3-7.

3.5 Targeted and Achieved Confidence and Precision

We developed the SEWKP evaluation plan with the goal of achieving a target of 10% relative precision at the 90% confidence interval across both jurisdictions at the program level. Due to a high response rate from the web-based surveys, the evaluation team was able to surpass this target and achieve a high level of statistical precision for both jurisdictions. The final DEO sample yielded a relative precision of +/- 6.1% at the 90% confidence level (Table 3-8).

Table 3-8: Targeted and Achieved Confidence and Precision

Program	Targeted Confidence/Precision	Achieved Confidence/Precision
DEO SEWKP	90/10.0	90/6.1

3.6 Results

3.6.1 DEO findings

Measure-level and kit-level energy savings values for the DEO jurisdiction are detailed in Figure 3-1 and Table 3-9.

Figure 3-1: 2016 DEO Gross Verified Energy Savings

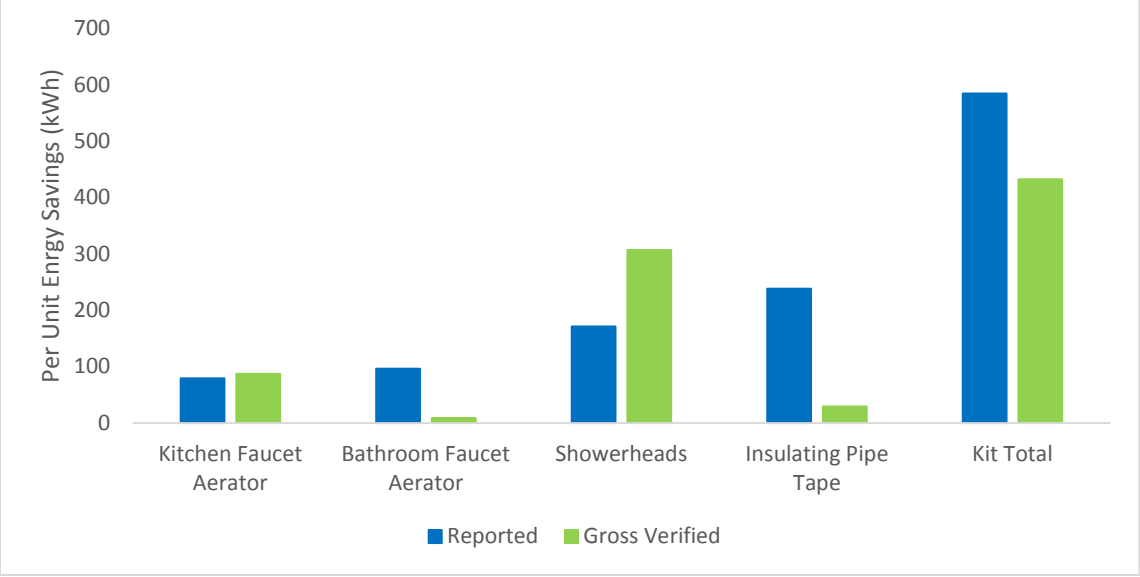


Table 3-9: DEO Measure-Level Reported and Verified Gross Energy Savings

Measure	Reported Energy Savings, per unit (kWh)	Realization Rate	Verified Gross Energy Savings, per unit (kWh)	Total Verified Gross Energy Savings (kWh)
Low-flow Showerhead	171.0	179.4%	306.8	342,580
Low-flow Bathroom Aerator	96.0	9.3%	9.0	10,017
Low-flow Kitchen Aerator	79.0	110.5%	87.3	97,426
Pipe Wrap	238.3*	12.4%	29.5	32,886
Total	**584.3**	**74.0%**	**432.5**	**482,908**

*Reported savings for pipe tape based on an assumed installation of 5.2 feet of tape.

Measure-level and kit-level demand savings are detailed in Table 3-10.

Table 3-10: DEO Measure-Level Reported and Verified Demand Gross Savings

Measure	Reported Demand Savings, per unit (kW)	Realization Rate	Verified Gross Demand Savings, per unit (kW)	Total Verified Gross Demand Savings (kW)
Low-flow Showerhead	0.020	504.4%	0.098	109.8
Low-flow Bathroom Aerator	0.011	29.6%	0.003	3.6
Low-flow Kitchen Aerator	0.009	345.3%	0.031	34.7
Pipe Wrap	0.005*	63.4%	0.003	3.8
Total	**0.045**	**304.9%**	**0.136**	**151.8**

*Reported savings for pipe tape based on an assumed installation of 5.2 feet of tape.

The impact evaluation for the 2016 program resulted in a program energy realization rate of 74% and a demand realization rate of 305% as presented in Table 3-11.

Table 3-11: 2016 DEO Energy Savings per Kit

Measurement	Reported	Realization Rate	Gross Verified
Energy (kWh)	584.3	74.0%	432.5
Demand (kW)	0.04	304.9%	0.136

Table 3-12 presents the reported and verified energy and demand savings for the 2016 program year.

Table 3-12: 2016 DEO Program Level Energy Savings

Measurement	Reported	Realization Rate	Gross Verified
Energy (kWh)	652,329	74.0%	482,908
Demand (kW)	49.8	304.9%	151.8

3.6.1 State Bill 310 Compliance

As noted in Section 1.2.1.1, DEO may claim alternate savings values for each program measure per the terms of Ohio Senate Bill 310 in order to comply with its energy savings goals. The relevant language from Senate Bill 310 is provided in Appendix C.

Table Table 3-13 provides the gross savings per measure that DEO will claim per SB 310 for the SEWKP 2016 program year.

Table 3-13: SB 310 Compliance Gross Savings per Measure

Measure	Claimed Gross Savings (kWh)	Claimed Gross Savings (kW - summer)	Source
1.5 GPM Showerhead	306.8	0.098	DEO program verified savings
1.0 GPM Bathroom Faucet Aerator	96.0	0.011	DEO program reported savings
1.5 GPM Kitchen Faucet Aerator	87.3	0.031	DEO program verified savings
Pipe Wrap	238.3	0.005	DEO program reported and verified savings

4 Net-to-Gross Methodology and Results

The evaluation team used participant survey data to calculate a net-to-gross (NTG) ratio for SEWKP. NTG reflects the effects of free ridership (FR) and spillover (SO) on gross savings. Free ridership refers to the portion of energy savings that participants would have achieved in the absence of the program through their own initiatives and expenditures (U.S. DOE, 2014).[2] Spillover refers to the program-induced adoption of additional energy-saving measures by participants who did not receive financial incentives or technical assistance for the additional measures installed (U.S. DOE, 2014). The evaluation team used the following formula to calculate the NTG ratio:

$$NTG = 1 - FR + SO$$

4.1 Free Ridership

Free ridership estimates how much the program influenced participants to install the energy-saving items included in the energy efficiency kit. Free ridership ranges from 0 to 1, 0 being no

[2] The U.S. Department of Energy (DOE) (2014). *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures. Chapter 23: Estimating Net Savings: Common Practices.* Retrieved August 29, 2016 from http://energy.gov/sites/prod/files/2015/02/f19/UMPChapter23-estimating-net-savings_0.pdf.

free ridership and 1 being total free ridership, with values in between representing varying degrees of partial free ridership.

The evaluation team used participant survey data to estimate free ridership. The survey used several questions to identify items that a given participant installed and did not later uninstall: respondents were only asked free ridership questions about items that remained installed by the date of the survey.

The evaluation team's methodology for calculating free ridership consists of two components, free ridership change (FRC) and free ridership influence (FRI), both of which range from 0 to .5 in value.

$$FR = FRC + FRI$$

4.1.1 Free Ridership Change

FRC reflects what participants reported they would have done if the program had not provided the items in the kit. For each respondent, the survey assessed FRC for each measure that the respondent installed and did not later uninstall.

Specifically, the survey asked respondents which, if any, of the currently installed items they would have purchased and installed on their own within the next year if Duke Energy had not provided them. For respondents who installed more than one of a given measure (bathroom aerators or showerheads) that indicated they would have installed either of the multi-count measures on their own, we asked them a follow up question that determined how many of the number installed through the program that they would have installed on their own.

For each measure, the evaluation team assigned one of the FRC values shown in the Table 4-1, based on the respondents' responses. FRC values range from 0.0 to 0.5.

Table 4-1: Free Ridership Change Values

What Respondent Would Have Done Absent the Program*	FRC Value
Would ***not*** have purchased and installed the item within the next year	0.00
Would have purchased and installed the item within the next year	$\frac{\text{Count respondent said would install on their own}}{\text{Count respondent installed through program}}$
Don't know	0.25

*Survey response to: If you had not received the free efficiency items in the kit, would you have purchased and installed any of these same items within the next year?

4.1.2 Free Ridership Influence

FRI assesses how much influence the program had on a participant's decision to install (and keep installed) the items in the kit. The survey asked respondents to rate how much influence four program-related factors had on their respective decisions to install the measures, using a

scale from 0 (“not at all influential”) to 10 (“extremely influential”). The program-related factors included:[3]

- The fact that the items were free
- The fact that the items were mailed to their home
- Information provided by Duke Energy about how the items would save energy and water
- Other information or advertisements from Duke Energy, including its website

Asking respondents to separately rate the influence of each of the four above items had on the decision to install each measure would have been overly burdensome. Therefore, while the survey assessed FRC for each measure type, it assessed collective FRI for all measures.

FRI is based on the highest-rated item in the FRI battery. The evaluation team assigned the following FRI scores, based on that rating (Table 4-2).

Table 4-2: Free Ridership Influence Values

Highest Influence Rating	FRI Value
0	0.50
1	0.45
2	0.40
3	0.35
4	0.30
5	0.25
6	0.20
7	0.15
8	0.10
9	0.05
10	0.00

4.1.3 Measure-Specific Total Free Ridership

The evaluation team calculated total free ridership by measure, by:

- First, calculating measure-specific FR scores for each respondent by summing each respondent’s measure-specific FRC score with their FRI score.
- Second, calculating a weighted mean FR score for each measure from the individual measure-specific FR scores; we weighted measure-specific FR scores by the number of units installed by each respondent.

[3] To reduce response fatigue, we only asked respondents to rate program influence on their decision to install the measures (as a whole). Thus, we did not collect separate influence data for each measure included in the kit.

Table 4-3 presents the end-use FR estimates.

Table 4-3: Measure-Specific Free Ridership Scores

End-use	Measure-Specific Free Ridership
Showerhead	0.12
Kitchen Faucet Aerator	0.08
Bathroom Faucet Aerator	0.10
Pipe Wrap	0.11

4.1.4 Program-Level Free Ridership

The evaluation team estimated program-level free ridership by calculating a savings-weighted mean of the measure-specific FR scores presented in Table 4-3. Overall free ridership for DEO water kits is 11%.

4.2 Spillover

Spillover estimates energy savings from additional energy improvements made by participants who are influenced by the program to do so and is used to adjust gross savings. The evaluation team used participant survey data to estimate spillover. The survey asked respondents to indicate what energy-saving measures they had implemented since participating in the program. The evaluation team then asked participants to rate the influence the program had on their decision to purchase these additional energy-saving measures on a scale of 0 to 10, where 0 means “not at all influential” and 10 means “extremely influential.”

The evaluation team converted the ratings to a percentage representing the program-attributable percentage of the measure savings, from 0% to 100%. The team then applied the program-attributable percentage to the savings associated with each reported spillover measure to calculate the participant measure spillover (PMSO) for that measure. We defined the per unit energy savings for the reported spillover measures based on ENERGY STAR® calculators as well as based on algorithms and parameter assumptions listed in the 2010 Ohio TRM and the 2016 Illinois TRM.

Lighting measures (namely, LEDs and CFLs) were commonly reported spillover measures. Since Duke Energy offered discounted lighting at participating retailers through their Energy Efficient Lighting (EEL) program as well through their online lighting store, we asked respondents to confirm they did not use Duke Energy’s website to find or purchase discounted lighting. As to not double-count these savings, respondents who indicated they used Duke Energy’s website to find or purchase discounted lighting did not count towards spillover estimates.

Participant measure spillover is calculated as follows:

$$PMSO = Deemed\ Measure\ Savings * Program\ Attributable\ Percentage$$

The evaluation team summed all PMSO values for each jurisdiction (Table 4-4).

Table 4-4: DEO PMSO, by Measure by Category

Measure Category	Total kWh for Category	Percent Share of kWh
LEDs	4,409.5	79%
CFLs	492.2	9%
Appliances	507.4	9%
Insulation	148.8	3%
Total	**5,557.8**	**100%**

The evaluation team then calculated each jurisdictional sample's gross program savings by summing the products of each measure's average per household savings and the total jurisdictional sample size (Table 4-5).

Table 4-5: DEO Sample's Gross Program Savings (n=143)

Measure	Average per Household Savings (kWh)	Verified Sample Savings (kWh)
Showerhead	306.8	43,878.5
Kitchen Faucet Aerator	87.3	12,478.6
Bathroom Faucet Aerator	9.0	1,283.0
Insulating Pipe Tape	29.5	4,212.2
Total	**432.5**	**61,852.2**

The evaluation team then divided the summed jurisdictional PMSO values by the sample's gross program savings to calculate an estimated spillover percentage for the program:

$$Program\ SO = \frac{\sum PMSO}{\sum Sample's\ Gross\ Program\ Savings}$$

$$DEP\ SO = \frac{5{,}557.8}{61{,}852.2}$$

These calculations produced a spillover estimate of 9% for the DEO program.

4.3 Net-to-Gross

Inserting the FR and SO estimates into the NTG formula (NTG = 1 – FR + SO) produces an NTG value of 0.98 for the program (Table 4-6). The evaluation team applied the NTG ratio of 0.98 to program-wide verified gross savings to calculate SEWKP kit net savings for the jurisdiction.

Table 4-6: Net-to-Gross Results

Jurisdiction	Free Ridership	Spillover	NTG
DEO	0.11	0.09	0.98

5 Process Evaluation

5.1 Summary of Data Collection Activities

The process evaluation is based on interviews and surveys with program staff, implementer staff, and households who received a kit during the program evaluation year (Table 5-1).

Table 5-1: Summary of Process Evaluation Data Collection Activities

Target Group	Method	Sample Size	Population	Confidence / Precision
Duke Energy program staff	Phone in-depth interview	1	N/A	N/A
Implementation staff: EFI	Phone in-depth interview	1	N/A	N/A
DEO participants	Mixed mode (web/phone) survey	143	1,257	90/6.1

Comparisons with census data confirm that the DEO sample is fairly representative of income for the region, although higher income residents were slightly underrepresented and middle income residents were slightly overrepresented. Additionally, the sample demonstrated slightly greater educational attainment than that of the region.[4]

5.2 Process Evaluation Findings

Motivations for Requesting Kit

More than half of participants requested the Save Energy and Water Kit to conserve water (59%) and/or electricity (56%) (Table Table 5-2). Fewer than half (41%) requested the kit because "it was free."

Table 5-2: Participant Motivations for Requesting Kit (Multiple Responses Allowed)

Motivation	n=143
Wanted to conserve water	59%
Wanted to conserve electricity	56%
It was free	41%
It was offered by Duke Energy	38%
It was easy	25%
Other	11%

Additional analysis revealed that few (1%) respondents reported "it was easy" as their sole motivation. However, the "easy" response was related to other responses: while respondents were most likely to say "easy" if they said "free," their likelihood of giving any other response was increased if they said "easy." This finding suggests that "easy" is not an independent

[4] Region comparisons come from 2015 American Community Survey (Census) 5-year period estimates data for Brown, Butler, Clermont, Hamilton, and Warren Counties in Ohio.

reason for ordering the kit – very few would have ordered it just because it was easy. But the fact that it was easy made participants more likely to act on their other reasons, mainly to conserve water or electricity.

Installation Rates

Most (92%) kit recipients installed at least one measure, installing an average of two measures from the kit. The majority of kit recipients initially installed at least one of the showerheads (69%) or bathroom faucet aerators (66%), with a smaller proportion reporting installing the other measures. Of the respondents who received a medium-sized kit, 33% installed both showerheads[5]. Regardless of kit size received, participants installed one bathroom aerator and one showerhead on average.

Of the respondents who installed at least one item from the kit, 18% said they later uninstalled at least one of the measures, but only four participants uninstalled everything she or he had installed. In total, 8% of all installed measures were later uninstalled. Kitchen faucet aerators and showerheads had the highest uninstallation rates, with over one-tenth of respondents who installed them later uninstalling them. Respondents said they uninstalled these water saving measures because they did not like how they worked, later elaborating that the water pressure provided was insufficient to their preferences.

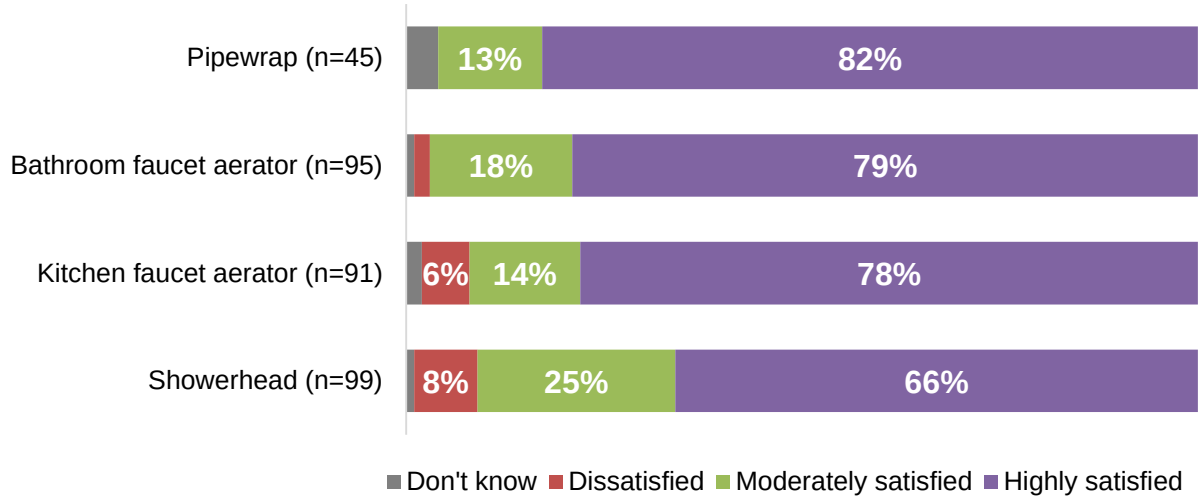
Thirteen percent of respondents reported installing all measure types. Of the respondents who did not install all items, 34% said they plan to install at least one of the items they had not yet installed. Respondents who indicated they don't plan to install one or more of the measures typically said they would not install the remaining items because they already had the item, they had not "gotten around to it", or the item did not fit on their fixture.

Measure Satisfaction

Nearly all kit recipients reported moderate to high satisfaction with the items they installed from their kit (Figure 5-1). To best gauge the experience with the measures, we asked respondents to rate their satisfaction with all measures they installed, including those they later uninstalled. Respondents were most satisfied with the pipe wrap and bathroom faucet aerator.

[5] 71% of medium kit recipients installed at least one showerhead, 33% of which installed both that came with the kit.

Figure 5-1: Kit Recipient Satisfaction with Measures They Had Installed*



* Respondents rated their satisfaction with the measures on a 0 ("very dissatisfied") to 10 ("very satisfied") scale. Dissatisfied indicates 0-4 ratings, moderately satisfied indicates 5-7 ratings, and highly satisfied indicates 8-10 ratings.

Instructional Materials in the Kit

In addition to energy-saving measures, the Save Energy and Water Kit includes a detailed instruction insert booklet that provides information on how to install the provided measures. The majority (79%) of respondents said they read the booklet, most of whom (67%) reported they found it highly helpful.[6] Additionally, Duke Energy provides how-to videos on its website that demonstrate how to install the kit items. Only 3% of kit recipients watched these online videos, though all of them considered the videos highly helpful.[7]

Additional Energy Saving Actions

Less than half of participants (60 of 143, or 42%) reported purchasing and installing additional energy efficiency measures since receiving their kit (Table 5-3). Participants most commonly reported installing LEDs (14 respondents) or sealing air leaks in windows, walls, and doors (17 respondents). Four respondents reported getting a Duke Energy incentive for their measure, and most (45 of 59) respondents said DEO SEWKP at least partially influenced their decision to purchase and install additional energy-saving measures.

[6] We asked respondents to rate the helpfulness of the instruction booklet on a scale from 0 ("not at all helpful") to 10 ("very helpful"). Seventy-six of the 113 (or 67%) respondents who reported reading the booklet gave a rating of 8 or higher.

[7] We asked respondents to rate the helpfulness of the DEO online how-to videos on a scale from 0 "not at all helpful" to 10 ("very helpful"). Three out of 3 respondents who reported watching the videos gave a rating of 8 or higher.

Table 5-3: Additional Energy Saving Measures Purchased by DEO Participants (Multiple Responses Allowed; n=143)

	Count of Respondents Reporting Purchases After Receiving the Kit	Count That Received Duke Rebates for the Purchase/Measure*	Count Reporting at Least Some DEO Program Influence on Purchase
At least one measure	59	10	45
LEDs	33	7	25
Air sealing	17	0	13
Efficient appliances	12	1	8
Efficient heating or cooling equipment	12	0	7
Insulation	10	0	9
CFLs	9	1	6
Efficient water heater	7	1	5
Efficient windows	5	0	0
Duct sealing	3	0	3
Moved into ENERGY STAR home	1	0	1
Other	13	1	10

* Includes respondents that indicated they got their LEDs and CFLs through the DEO buy-down program.

6 Conclusions and Recommendations

The evaluation findings, led to the following conclusions and recommendations for the program.

Conclusion 1: The program model is highly successful: it leverages low-cost measures to foster energy savings that would not have happened otherwise. Duke Energy's easy process for requesting and receiving a kit with free energy and water saving items motivated over one-thousand customers to request and install energy saving measures in their home. Most participants installed at least one measure from the kit and the vast majority of measures, once installed, stayed installed. Participants were highly influenced by the program to install these kit measures, as demonstrated by low free ridership rates. Further, 18% of respondents reported program-attributable spillover actions.

> **Recommendation**: Continue using SEWKP to encourage Duke Energy customers to save energy and water.

Conclusion 2: The water saving measures' low flow water pressure results in some minor satisfaction and uninstallation issues. Complaints of excessively low water pressure were the primary drivers of item dissatisfaction and uninstallation. However, only a minority of participants were dissatisfied with or uninstalled water saving items.

> **Recommendation**: Consider expanding participant-facing messaging around low-flow measures; water measure ISRs and satisfaction may increase if participants have better upfront expectations on the flow rates of the measures and better understand the energy saving benefits of low-flow fixtures.

> **Recommendation**: Consider investigating alternative products that provide the same GPM as the current aerator and showerhead offerings, but offer higher perceived water pressure.

Conclusion 3: There may be opportunities to further encourage participants to save energy in their home. Kit recipients were highly engaged in energy-saving practices:

- Most participants installed at least one measure and read the installation instructional insert
- Eighteen percent of kit recipients reported program-influenced spillover actions, commonly LEDs and CFLs

> **Recommendation**: Consider leveraging the kits to promote other Duke Energy energy efficiency programs,(e.g.: Smart $aver) and other ways to save energy in the home (e.g.: LEDs, behavior change). Kit recipients may be good targets for encouraging additional energy saving opportunities, as they

- demonstrated willingness to save energy in their home
- demonstrated willingness to read information included with the kit
- are single family homeowners, many of which have household incomes greater than average for the region

Conclusion 4: Despite delivering a useable number of units to most homes, there may be cost- effectiveness benefits to reducing the number of items delivered. The kit size assignment algorithm works fairly well:

- Small and medium kit recipients largely got the appropriate number of kitchen aerators and showerheads, given the number of kitchen faucets and showers in their home.
- However, 40% of medium kit recipients have only one or two bathroom sink faucets in their home.

Nonetheless, many items do not get installed, especially multi-count measures:

- Recipients of either kit size installed one bathroom aerator and one showerhead on average.
  - Very few medium kit recipients installed three or four bathroom aerators.
  - Few medium kit recipients installed both showerheads.
- Medium kits had lower ISRs on every measure, suggesting that delivering too many items may overwhelm participants and consequently hinder installations.

Recommendation: Consider if there is a significant enough cost-effectiveness benefit to justify reducing the number of kit sizes and multi-count units offered. Reducing the number of items included in the kit, particularly the number of bathroom aerators provided, could increase ISRs and reduce program costs as the survey data reveals there is a negative relationship with number of kit items delivered and ISRs (that is, the more items Duke Energy provides, the lower the ISRs).

Conclusion 5: The program was successful in identifying and soliciting customers with electric water heat. In total, the evaluation found that 10% of DEO customers in the program had non-electric water heaters. Based on the 2013 general population Duke Residential Appliance Saturation Survey, the Ohio territory has a non-electric water heat saturation of 63%.

Recommendation: Continue to update and refine the propensity score matching analysis to maintain and potentially increase the amount of electric water heat saturation for SEWKP participants.

Appendix A Summary Form

Save Energy and Water Kit Program

Completed EMV Fact Sheet

Description of program

The Duke Energy Save Energy and Water Kit Program (SEWKP) is an energy efficiency program that offers energy-efficient water fixtures and water pipe insulation to residential customers. The program is designed to reach customers who have not adopted energy-efficient water devices. The kits are provided to residents through a Direct Mail Campaign, allowing eligible customers to request to have the items shipped directly to their homes, free of charge.

Date	January 1, 2017 – September 30, 2017
Region(s)	Ohio
Evaluation Period	January 1, 2016 – December 31, 2016
Annual Gross MWh Savings	813*
Per Kit Gross kWh Savings	728.4*
Annual Gross MW Savings	0.16*
Net-to-Gross Ratio	0.98
Process Evaluation	Yes
Previous Evaluation(s)	None available
*Gross savings represent SB 310 assumptions.	

Evaluation Methodology

Impact Evaluation Activities

- Telephone/web surveys (n=143) and analysis of 4 unique measures.

Impact Evaluation Findings

- Realization rate: 74% for energy impacts; 305% for demand impacts
- Net-to-gross ratio: 0.98

Process Evaluation Activities

- Telephone/web surveys with SEWKP participants (n=143) and analysis of 4 unique measures.
- 1 interview with program staff
- 1 interview with implementation staff

Process Evaluation Findings

- The SEWKP influences participants to install kit measures and adopt new behaviors.
- Participants are generally satisfied with kit items and report high satisfaction with overall program.
- Kit size assignment algorithm is fairly accurate.
- Low water pressure is a significant contributor to dissatisfaction among participants for water-saving kit items.
- Pipe wrap is least popular measure; less than half of SEWKP participants installed pipe wrap.

Appendix B Measure Impact Results

Table B-1: DEO Program Year 2016 per Unit Verified Impacts by Measure – Key Measure Parameters

Measure Category	Gross Energy Savings (kWh)*	Gross Demand (kW)*	Realization Rate (Energy)	Free Ridership	Spillover	Net to Gross Ratio	M&V Factor (Energy) (RR x NTG)	Measure Life
1.5 GPM Showerhead	306.8	0.098	179.4%	0.12	0.09	97.9%	175.7%	10
1.0 GPM Bathroom Faucet Aerator	96.0	0.011	9.3%	0.10			9.1%	10
1.0 GPM Kitchen Faucet Aerator	87.3	0.031	110.5%	0.08			108.1%	10
Insulating Pipe Tape	238.3	0.005	12.4%	0.11			12.1%	13
Total	**728.4**	**0.146**	**74.0%**	**0.11**	**0.09**	**97.9%**	**72.5%**	**-**

*Gross savings represent SB 310 assumptions.

Appendix C Senate Bill 310 Legislation on Energy Efficiency Accounting

130th General Assembly Senate Bill Number 310

Sec. 4928.662. For the purpose of measuring and determining compliance with the energy efficiency and peak demand reduction requirements under section 4928.66 of the Revised Code, the public utilities commission shall count and recognize compliance as follows:

(A) Energy efficiency savings and peak demand reduction achieved through actions taken by customers or through electric distribution utility programs that comply with federal standards for either or both energy efficiency and peak demand reduction requirements, including resources associated with such savings or reduction that are recognized as capacity resources by the regional transmission organization operating in Ohio in compliance with section 4928.12 of the Revised Code, shall count toward compliance with the energy efficiency and peak demand reduction requirements.

(B) Energy efficiency savings and peak demand reduction achieved on and after the effective date of S.B. 310 of the 130th general assembly shall be measured on the higher of an as found or deemed basis, except that, solely at the option of the electric distribution utility, such savings and reduction achieved since 2006 may also be measured using this method. For new construction, the energy efficiency savings and peak demand reduction shall be counted based on 2008 federal standards, provided that when new construction replaces an existing facility, the difference in energy consumed, energy intensity, and peak demand between the new and replaced facility shall be counted toward meeting the energy efficiency and peak demand reduction requirements.

(C) The commission shall count both the energy efficiency savings and peak demand reduction on an annualized basis.

(D) The commission shall count both the energy efficiency savings and peak demand reduction on a gross savings basis.

(E) The commission shall count energy efficiency savings and peak demand reductions associated with transmission and distribution infrastructure improvements that reduce line losses. No energy efficiency or peak demand reduction achieved under division (E) of this section shall qualify for shared savings.

(F) Energy efficiency savings and peak demand reduction amounts approved by the commission shall continue to be counted toward achieving the energy efficiency and peak demand reduction requirements as long as the requirements remain in effect.

(G) Any energy efficiency savings or peak demand reduction amount achieved in excess of the requirements may, at the discretion of the electric distribution utility, be banked and applied toward achieving the energy efficiency or peak demand reduction requirements in future years.

Appendix D Program Performance Metrics

This appendix provides key program performance metrics, or PPIs. See Chapter 5 for the underlying results and more detailed findings.

Figure D-1: DEO Program Experience PPIs

	Participants	
Motivation PPIs	**%**	**n**
Top motivating factors to request and install items from kit		
To conserve water	59%	143
To conserve electricity	56%	143
Because it was free	41%	143
Program experience & satisfaction PPIs		
Overall satisfaction with program	82%	131
Usefulness of kit instructions	67%	113
Usefulness of online how-to videos	100%	3
Satisfaction with kit measures		
Showerhead	66%	99
Kitchen faucet aerator	78%	91
Bathroom faucet aerator	79%	95
Pipe wrap	82%	45
Program influence on behavior PPIs		
Installed at least one kit measure	92%	143
Plan to install measure[s] (of those that did not install any measures)	58%	12
Most common measure installed: *showerhead*	69%	143
Adopted new energy and water saving behaviors	54%	143
Respondents reporting program attributable spillover	18%	143
Challenges and opportunities for improvement PPIs		
Measure with lowest installation rate: *pipewrap*	31%	143
Measure with highest uninstallation rate: *kitchen faucet aerator*	14%	91
Measure with highest dissatisfaction: *showerhead*	8%	99

Figure D-2: DEO Participant Demographics PPIs

Ownership Status	
Own	96%
Rent	4%

Household Size	
One to two	68%
Three	15%
Four	8%
Five +	9%

Education	
High school or less	23%
Some college	27%
Bachelor's degree	29%
Graduate degree	17%
Refused	4%

Income	
<$30k	10%
$30k to <$60k	20%
$60k to <$75k	10%
$75k to <$100k	13%
$100k+	13%
Refused / Don't know	34%

Figure 6-1: DEO Participant Household Characteristics PPIs

Housing Type	
Detached	89%
Attached	6%
Mobile	1%
Apartment or condo	1%
Duplex or triplex	1%

Water Heater Fuel Type	
Electric	90%
Natural Gas	6%
Other	4%

Home Square Feet	Small Kit	Medium Kit
Less than 1,000	13%	2%
1,000-1,499	42%	20%
1,500-1,999	23%	40%
2,000-2,999	0%	29%
3,000+	3%	5%

Number of Showers	Small Kit	Medium Kit
1	71%	14%
2	29%	66%
3	0%	18%
4+	0%	2%

Number of Kitchen Faucets	Small Kit	Medium Kit
1	94%	89%
2	6%	10%
3	0%	0%
4+	0%	1%

Number of Bathroom Faucets	Small Kit	Medium Kit
1-2	87%	40%
3-4	13%	51%
5+	0%	9%

Appendix E Instruments

E.1 Program Staff In-Depth Interview Guide

Introduction

Today, we'll be discussing your role in the SEWKP or water kit program. We would like to learn about your experiences in administering this program.

Your comments are confidential. If I ask you about areas you don't know about, please feel free to tell me that and we will move on. Also, if you want to refer me to specific documents to answer any of my questions, that's great – I'm happy to look things up if I know where to get the information.

I would like to record this interview for my note-taking purposes. Do I have your permission?

Roles & Responsibilities

Q1. Please describe your position at Duke Energy and your role in the water kit program.

Q2. How long have you been in this role?

Program Delivery

Next, I'd like to learn more about how this program was delivered since your involvement. If the program implementation is different in 2017, please let me know.

Q3. How is Duke Energy targeting households to participate in this program? Does this vary by jurisdiction?

[*IF NEEDED*:]

1. What marketing and outreach activities did Duke Energy conduct in the 2016 program year? [*Interviewer: we know they market the program through direct-mail campaign. Probe to inquire if they market the program in any other way.*]
2. In 2016, what proportion requested a kit among those targeted by the direct mail campaign? Are you satisfied with this response rate? If not, why not?
3. In terms of marketing, what is planned for 2017? [*If not mentioned:* Do you all plan to have a customer facing website for the program? If yes, when and what would it entail? If not, why not?]

Q4. What feedback, if any, did you receive from kit recipients on why they decided to request a kit?

Q5. Please describe the kit distribution process, including the responsibilities of your vendors: Relationship 1 (R1) and EFI.

[*IF NEEDED*:]

1. Can the kit form be submitted online? If not, is Duke considering this option?
2. Who checks whether customers who submitted the kit form are eligible for the program? What is the eligibility criteria?
3. How do you identify customers who have an electric water heating? [*Interviewer: Prior evaluation states that customers with electric water heating are eligible for this program.*]
4. Who tracks kit processing and distribution?
5. How are kits customized? [*IF NEEDED:*] Can you describe what is included in the small, medium, and large kit? (Confirm kit contents as seen below)

Kit 1 (small)	bath aerator	2
	kitchen aerator	1
	shower head	1
	pipe wrap	5
Kit 2 (medium)	bath aerator	4
	kitchen aerator	1
	shower head	2
	pipe wrap	5
Kit 3 (large)	bath aerator	5
	kitchen aerator	1
	shower head	3
	pipe wrap	5

6. [*If not mentioned*] Are large kits still offered to customers? (If so, does this vary by jurisdiction?)
7. Prior to January 2016, documentation shows the kitchen aerator to have 1.0 GPM, but according to a Duke staff person, the aerator is now rated at 1.5 GPM. Can you please confirm the current GPM for kitchen aerators, and when that changed over (if at all)?
8. What energy saving educational materials are included in the kit?

Q6. What type of feedback have you received from kit recipients about the measures in the kit? [*IF ANY ISSUES REPORTED:*] How have you addressed those issues?

Program Goals

Q7. In 2016 and 2017 program year, what were/are Duke Energy targets in terms of:

1. Number of water kits distributed in Carolinas, Progress, Ohio, Indiana, and Kentucky
2. Number of kits distributed by customer segments – if applicable

3. Cost of distributing the kits [*Probe: Does this vary by jurisdiction?*]
4. Anything else?

Q8. How were those targets set, and by whom?

Q9. Compared to the previous program years, have these targets been the same or have they changed? [*If changed:*] Why have they changed?

Q10. Were/are you on track to meet 2016/2017 targets? [*If not on track, probe why not on track and how far behind are they in meeting their targets.*]

1. Number of water kits distributed in each jurisdiction
2. Number of kits distributed by customer segments – if applicable
3. Cost of distributing the kits
4. Anything else?

Q11. How about savings targets? Are you on track to meet the savings targets in Carolinas, Progress, Ohio, Indiana, and Kentucky? If not, why not?

Q12. Does the program have any process or non-impact goals? *(Probe: low-income, renter, or non-English speaking population targeting, increased kit recipient knowledge of how to save energy, etc.)*

[*IF YES:*]

1. How are these goals established?
2. How are they measured?

Communication

Q13. Can you describe how your vendors communicate about the program with Duke Energy? Who do you communicate with, how often, and what about? Does this vary by jurisdiction?

Q14. How often do you or vendors have to resolve an issue with kits? What types of issues come up?

Data Tracking of Kits

Let's talk about the kits a little bit.

Q15. Were there any changes to the items in the small, medium, or large kit during 2016 and 2017 program year? Any changes for 2018 program year? Are these changes for all jurisdictions?

Q16. We heard that customers must complete a short survey/form to receive a kit. Would it be possible to receive/see this survey data?

Q17. From the moment a customer requests a kit, how long does it take to receive a kit? Is this time frame typical in terms of how long it takes to receive a kit? [*IF NOT TYPICAL, PROBE to get more information on this topic.*] Does it vary by jurisdiction?

Q18. Can you tell us how your vendor reports the number of kits sent out to customers to Duke Energy? Is there information on kit distribution that you need but are not getting? What?

We are almost done. I have a few more questions.

Wrap Up

Q19. What would you say are the greatest strengths of this program?

Q20. What would you say is the biggest challenge in administering this program?

Q21. How can this program be improved?

Q22. Is there anything else about the program that we have not discussed that you feel should be mentioned?

Q23. What would you like to learn from the program evaluation?

Those are all of my questions. Thank you very much for your time.

E.2 Implementer Staff In-Depth Interview Guide

Introduction

[*Note: Research Into Action staff will schedule calls ahead of time through email contact.*]

[*If needed:*] We are conducting an evaluation of Duke Energy Save Energy and Water Kit Program (SEWKP). Because your organization is involved with this program, we would like to get your perspective on how the program works to help guide us in our efforts.

I would like to record this interview for my note-taking purposes. Do I have your permission?

Roles & Responsibilities

Q1. Can you describe your role in the SEWKP or water kit program?

Q2. Can you describe your program processes? (From receipt of kit forms to notifying EFI to send kits)

Q3. We have been told that your organization processes kit submission forms for Duke Energy water kit program. Do you provide any other services to Duke Energy?

1. Do you provide these services in all jurisdictions where this program is offered: Progress, Carolinas, Ohio, Indiana, and Kentucky?

Program Goals

Q4. In jurisdictions where you are providing services to Duke Energy, do you know what are Duke Energy targets in terms of:

1. Number of water kits distributed
2. Cost of the kits
3. Education goals
4. Anything else?

Q5. Do you know if Duke Energy is on track to achieve those targets? If so, how do you know?

Data Tracking of Kits and Eligibility

Q6. Based on what we heard, households must complete a short survey/form to receive a kit. Do you track the information that is on the survey form in a database? If so, what exactly do you track?

1. Do you track the same information for each jurisdiction?

2. How do you report this information to Duke Energy?
3. [*If not addressed:*] Do you maintain a dashboard that tracks number of kits and possibly other information. If so, can you send us a screen shot of that dashboard so we can see what is tracked on that dashboard?
4. Could you provide us with one of the forms so we can see what participants are filling out?

Q7. Can you describe to us who is eligible to receive the kit – that is, eligibility criteria? Do eligibility criteria vary by jurisdiction?

Q8. Can you tell us what proportion of households who sent in a kit survey form were ineligible to receive a kit in 2016 in each jurisdiction? What are the most common reasons as to why customers are ineligible? Do you think the proportion of ineligible applications will increase in 2017? If so, why?

Q9. From the moment households request a kit, do you know how long it takes to receive a kit? Is this time frame typical in terms of how long it takes to receive a kit? [*IF NOT TYPICAL, PROBE to get more information on this topic.*]

Q10. What challenges have you encountered with processing of the kit forms? [*Probe about missing information or other errors.*] [*If challenges:*] What could be done to address these challenges? Any suggestions on how to change the form? Are some of these challenges more prevalent in certain jurisdictions? If so, why?

Q11. How many forms, on average, do you process per week or annually?

Q12. [*If not addressed:*] What demographic data do you collect from households that request the kits? Which demographic segments are more likely to request the kits? Does this vary by jurisdiction?

Communication

Q13. Can you describe how you communicate with Duke Energy about the kit form submissions or anything else? Who do you communicate with, how often, and what about?

Q14. Have there been any challenges in your interactions with Duke Energy? If so, what were they? How did you address them? Were they resolved? If not, what do you think might resolve them?

Wrap Up

I have only a couple of more questions left.

Q15. What would you say is the biggest challenge in processing kit submission forms and distributing kits? What could be done to improve this process?

Q16. Is there anything else about the program that we have not discussed that you feel should be mentioned?

Those are all of my questions. Thank you very much for your time.

E.3 Participant Survey

Introduction/ Screening

[READ IF MODE=PHONE]

Q1. Hi, I'm _____, calling on behalf of Duke Energy. We are calling about the Save Energy and Water Kit you got from Duke Energy.

This kit included faucet aerators, one or two showerheads, and pipe wrap that can help you save water and energy in your home. Do you recall receiving this kit?

1. Yes
2. No [If no: Can I speak with someone who may know something about this kit?]
98. Don't know [If DK: Can I speak with someone who may know something about this kit?]

[INTERVIEWER INSTRUCTIONS: *If no adults are able to speak about the kit, thank and terminate.*]

Q2. [DISPLAY IF MODE=WEB]

We are conducting surveys about the Save Energy and Water Kit you got from Duke Energy. This kit included faucet aerators, one or two showerheads, and pipe wrap that can help you save water and energy in your home.

Do you recall receiving this kit?

1. Yes
2. No [TERMINATE]
98. Don't know [TERMINATE]

Motivation and Collateral

Q3. What motivated you to request a free Save Energy and Water Kit from Duke Energy?

[MULTIPLE RESPONSE]

1. Wanted to conserve electricity
2. Wanted to conserve water
3. It was free
4. It was easy
5. It was offered by Duke Energy
6. Other – please specify: [OPEN-ENDED RESPONSE]
98. Don't know [*EXCLUSIVE ANSWER*]

Q4. Did you read the included instructions on how to install the items that came in the kit?

1. Yes
2. No
98. Don't remember

[ASK IF Q4 = 1]

Q5. On a scale from 0 to 10, where 0 is not at all helpful and 10 is very helpful, how helpful were the instructions on how to install the items that came in the kit?

0. Not at all helpful
1.
2.
3.
4.
5.
6.
7.
8.
9.
10. Very helpful
98. Don't know

[ASK IF Q5<7]

Q6. What might have made the instructions more helpful?

[RECORD VERBATIM ANSWER]

Q7. Did you watch any of Duke Energy's online how-to videos on how to install the items that came in the kit?

1. Yes
2. No
98. Don't remember

[ASK IF Q7 = 1]

Q8. On a scale from 0 to 10, where 0 is not at all helpful and 10 is very helpful, how helpful were Duke Energy's online how-to videos on how to install the items that came in the kit?

0. Not at all helpful
1.
2.

3.
4.
5.
6.
7.
8.
9.
10. Very helpful
98. Don't know

[ASK IF Q8<7]

Q9. What might have made the instructional videos more helpful?

[RECORD VERBATIM ANSWER]

Assessing Measure Installation

[DISPLAY IF KIT_SIZE=SMALL]

We'd like to ask you about the energy and water saving items included in your kit. The kit contained a showerhead, faucet aerators for the bathroom and kitchen, and pipe wrap.

[DISPLAY IF KIT_SIZE=MEDIUM]

We'd like to ask you about the energy and water saving items included in your kit. The kit contained two showerheads, faucet aerators for the bathroom and kitchen, and pipe wrap.

Q10. Have you or anyone else installed any of those items in your home, even if they were taken out later?
[*Interviewer: Throughout interview, remind respondent as needed to report whether someone else in the home installed or uninstalled any items.*]

[SINGLE RESPONSE]

1. Yes
2. No [→ Q23]
98. Don't know [→ TERMINATE]

[ASK IF Q10 = 1]

Q11. Which of the items did you install, even if they were taken out later?

[MULTIPLE RESPONSE]
[*Interviewer: Record each response, then prompt with the list items.*]

a. Showerhead
b. Kitchen faucet aerator
c. Bathroom faucet aerator
d. Pipe wrap
e. I don't remember which items were installed [→ TERMINATE]

[ASK IF Q11A = 1 AND KIT_SIZE=MEDIUM]

Q12. Your kit contained two showerheads. Did you install one or both of the showerheads in the kit, even if one or both were taken out later?

[SINGLE RESPONSE]

1. I installed both
2. I only installed one showerhead
98. Don't know

[ASK IF Q11C = 1]

Q13. How many of the bathroom faucet aerators from the kit did you install in your home, even if one or more were taken out later?

[SINGLE RESPONSE]

1. One
2. Two
3. Three [*DISPLAY IF KIT_SIZE=MEDIUM*]
4. Four [*DISPLAY IF KIT_SIZE=MEDIUM*]
98. Don't know

[ASK IF Q11D = 1]

Q14. Did you install all of the pipe insulation that was included with the kit?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know

[ASK IF Q14 IS DISPLAYED]

Q15. About how many feet of the pipe extruding from your water heater did you wrap with the insulation **that came in the kit**? Please go over to your water heater if you need to

check.

[SINGLE RESPONSE]

1. About three feet or less
2. About five feet
3. About ten feet
4. About fifteen feet or more
98. Don't know

[ASK IF ANY PART OF Q11 = 1]

Q16. Overall, how satisfied are you with the item[s] you installed?
[DISPLAY IF MODE=PHONE] Please use a 0 to 10 scale, where 0 is very dissatisfied and 10 is very satisfied. How satisfied are you with...

DISPLAY IF	Item	Rating
Q11a = 1	a. Showerhead	0-10 with DK
Q11b = 1	b. Kitchen faucet aerator	0-10 with DK
Q11c = 1	c. Bathroom faucet aerator	0-10 with DK
Q11d = 1	d. Pipe wrap	0-10 with DK

[ASK IF ANY ITEMS IN Q16<7]

Q16a. Can you please explain any dissatisfaction you had with [DISPLAY ALL ITEMS IN Q16 THAT ARE <7]?

[OPEN END: RECORD VERBATIM]

Q17. Overall, how satisfied are you with Duke Energy's Save Energy and Water Kit Program?

[DISPLAY IF MODE=PHONE] [IF NEEDED: Please use that same 0 to 10 scale, where 0 is very dissatisfied and 10 is very satisfied.]

0.	0. Very dissatisfied
1.	1.
2.	2
3.	3
4.	4
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10. Very satisfied
98.	Don't Know

[ASK IF ANY PART OF Q11 = 1]

Q18. Have you (or anyone in your home) uninstalled any of the items from the kit that you had previously installed?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know

[ASK IF Q18 = 1]

Q19. Which of the items did you uninstall?
[*Interviewer: Record the response, then prompt with the list items.*]

[MULTIPLE RESPONSE]

1. [DISPLAY IF Q11a = 1] Showerhead[s]
2. [DISPLAY IF Q11b = 1] Kitchen faucet aerator
3. [DISPLAY IF Q11c = 1] Bathroom faucet aerator[s]
4. [DISPLAY IF Q11d = 1] Pipe wrap
98. Don’t know [*EXCLUSIVE ANSWER*]

[ASK IF Q19.1 = 1 AND Q12 = 1]

Q20. Did you uninstall one or both of the showerheads you had previously installed?

[SINGLE RESPONSE]

1. I uninstalled both
2. I only uninstalled one of the showerheads
98. Don't know

[ASK IF Q19.3 = 1 AND Q13 = 2-4]

Q21. How many bathroom faucet aerators did you uninstall?

[SINGLE RESPONSE]

1. One [*DISPLAY IF Q13 = 1-4*]
2. Two [*DISPLAY IF Q13 = 2-4*]

3. Three [*DISPLAY IF Q13 = 3-4*]
4. Four [*DISPLAY IF Q13 = 4*]

98. Don't know

[ASK IF ANY OF Q19.1-4 IS SELECTED]

Q22. Why were those items uninstalled?
[READ IF MODE=PHONE] Let's start with…
[*Interviewer: Read each item*]

[MULTIPLE RESPONSE]

DISPLAY ONLY THOSE 1-6 ITEMS THAT WERE SELECTED IN Q19	Item	Reason
	a. Showerhead	1. It was broken 2. I didn't like how it worked 3. I didn't like how it looked, or 96. Some other reason (specify: _____) 98. Don't know
	b. Kitchen faucet aerator	Repeat reason options
	c. Bathroom faucet aerator	Repeat reason options
	d. Pipe wrap	Repeat reason options

[ASK IF ANY ITEMS NOT SELECTED IN Q11, OR Q10 = 2]

Q23. You said you haven't installed the following items. Which of the following do you plan to install in the next three months?
[*Interviewer: Record the response, then prompt with the list items.*]

[MULTIPLE RESPONSE] [DISPLAY ALL IF Q10 = 2]

1. [DISPLAY IF NOT SELECTED IN Q11] Showerhead
2. [DISPLAY IF NOT SELECTED IN Q11] Kitchen faucet aerator
3. [DISPLAY IF NOT SELECTED IN Q11] Bathroom faucet aerator
4. [DISPLAY IF NOT SELECTED IN Q11] Pipe wrap
5. I'm not planning on installing any of these in the next three months [*EXCLUSIVE ANSWER*]

98. Don't know [*EXCLUSIVE ANSWER*]

[ASK IF ANY 1-6 OPTIONS WERE NOT SELECTED IN Q23 OR OPTION "NONE" WAS SELECTED]

Q24. What's preventing you from installing those items? Let's start with….
[*Interviewer: Read items*]

[MULTIPLE RESPONSE]

DISPLAY IF	Item	Reason
Q23a was not selected	a. Showerhead	Use multiple response options below
Q23b was not selected	b. Kitchen faucet aerator	Use multiple response options below

Q23c was not selected	c. Bathroom faucet aerator	Use multiple response options below
Q23d was not selected	d. Pipe wrap	Use multiple response options below

[MULTIPLE RESPONSE OPTIONS FOR Q24]

[PHONE CALLERS: DO NOT READ, CODE VERBATIM RESPONSES]

1. Didn't know what that was
2. Tried it, didn't fit [*DOES NOT DISPLAY FOR PIPE WRAP*]
3. Tried it, didn't work as intended (Please specify: _____)
4. Haven't gotten around to it
5. Current one is still working [*DOES NOT DISPLAY FOR PIPE WRAP*]
6. Takes too much time to install it/No time/Too busy
7. Too difficult to install it, don't know how to do it
8. Don't have the tools I need
9. Don't have the items any longer (threw away, gave away)
10. [DISPLAY IF Q23.1 was displayed but not selected] Already have efficient showerhead
    [DISPLAY IF Q23.2 was displayed but not selected] Already have efficient kitchen faucet aerator
    [DISPLAY IF Q23.3 was displayed but not selected] Already have efficient bathroom faucet aerators
    [DISPLAY IF Q23.4 was displayed but not selected] Already have pipe wrap on my hot water pipe

96. Other, please specify: [OPEN-ENDED RESPONSE]
98. Don't know [*EXCLUSIVE ANSWER*]

[ASK IF Q11b = 1 AND Q19 KITCHEN FAUCET AERATOR OPTION WAS NOT SELECTED]

Q25. Your efficient kitchen faucet aerator has three settings to adjust the flow of water. Have you adjusted this setting?

1. Yes
2. No
3. Don't know

Q26. [If Q25= Yes] What flow setting is the kitchen faucet aerator currently set at? Please go over to your kitchen sink if you need to check.

1. 0.5 GPM (lowest flow setting – "soaping mode")
2. 1.0 GPM (middle flow setting – "ecofriendly mode")

3. 1.5 GPM (highest flow setting – "power rinse mode")

4. Don't Know

Q27. [If Q26 = 1,2, or 3] How often do you use that flow setting?

1. Not very often
2. About half the time
3. Most of the time
4. All the time
98. Don't Know

Q28. [If Q27= 1 or 2] What flow setting do you use most regularly?

1. 0.5 GPM (lowest flow setting – "soaping mode")
2. 1.0 GPM (middle flow setting – "ecofriendly mode")
3. 1.5 GPM (highest flow setting – "power rinse mode")
98. Don't Know

[ASK IF Q11a = 1 AND AT LEAST ONE SHOWERHEAD STILL INSTALLED]

Q29. On average, what is the typical shower length in your household?

[SINGLE RESPONSE]

1. One minute or less
2. Two to four minutes
3. Five to eight minutes
4. Nine to twelve minutes
5. Thirteen to fifteen minutes
6. Sixteen to twenty minutes
7. Twenty-one to thirty minutes
8. More than thirty minutes
98. Don't know

[ASK IF AT LEAST ONE SHOWERHEAD STILL INSTALLED]

Q30. [DISPLAY IF TWO SHOWERHEADS STILL INSTALLED: Thinking of the efficient showerhead you installed that gets the most usage…]
[DISPLAY IF ONE SHOWERHEAD STILL INSTALLED: Thinking of the efficient showerhead currently installed in your home…]
On average, how many showers per day are taken in this shower?

[SINGLE RESPONSE]

1. Less than one
2. One
3. Two

4. Three
5. Four
6. Five
7. Six
8. Seven
9. Eight or more
98. Don't know

[ASK IF TWO SHOWERHEADS STILL INSTALLED]

Q31. Thinking of the other efficient showerhead you installed…
On average, how many showers per day are taken in this shower?

[SINGLE RESPONSE]

1. Less than one
2. One
3. Two
4. Three
5. Four
6. Five
7. Six
8. Seven
9. Eight or more
98. Don't know

Q32. [This question was moved to demographics section – but not renumbered for programming purposes]

NTG

[IF ANY PART OF Q11 = 1 AND IT'S NOT THE CASE THAT ALL PARTS OF Q19=SELECTED (THAT IS, THEY INSTALLED ANYTHING AND DID NOT UNINSTALL EVERYTHING THEY INSTALLED)]

Q33. If you had not received the free efficiency items in the kit, would you have purchased and installed any of these same items within the next year?

1. Yes
2. No
98. Don't know

[If Q33 = 1]

Q34. What items would you have purchased and installed within the next year?

[MULTIPLE RESPONSES]

1. [IF AT LEAST ONE SHOWERHEAD IS STILL INSTALLED] Energy-efficient showerhead[s]
2. [IF Q11b = 1 AND Q19.2 NOT SELECTED] Energy-efficient kitchen faucet aerator
3. [IF AT LEAST ONE BATHROOM AERATOR IS STILL INSTALLED] Energy-efficient bathroom faucet aerator[s]
4. [IF Q11d = 1 AND Q19.4 NOT SELECTED] Pipe wrap
98. Don't know [EXCLUSIVE ANSWER]

[ASK IF Q34.1=1 AND TWO SHOWERHEADS ARE STILL INSTALLED]

Q35. If you had not received them in your free kit, how many energy-efficient showerheads would you have purchased and installed within the next year?

[SINGLE RESPONSE]

1. One
2. Two
98. Don't know

[ASK Q34.3=1 AND IF MORE THAN ONE BATHROOM AERATOR IS STILL INSTALLED]

Q36. If you had not received them in your free kit, how many energy-efficient bathroom aerators would you have purchased and installed within the next year?

[SINGLE RESPONSE]

1. One
2. Two
3. Three [*DISPLAY IF AT LEAST THREE BATHROOM AERATORS ARE STILL INSTALLED*]
4. Four [*DISPLAY IF FOUR BATHROOM AERATORS ARE STILL INSTALLED*]
98. Don't know

[IF Q33 WAS DISPLAYED]

Q37. Now, thinking about the energy and water savings items that were provided in the kit - using a scale from 0 to 10, where 0 means “not at all influential” and 10 means “extremely influential,” how influential were the following factors on your decision to install the items from the kit? How influential was…

[*Interviewer: If respondent says, “Not applicable - I didn’t get/use that,” then follow up with: “So would you say it was “not at all influential?” and probe to code.*]

[MATRIX QUESTION: SCALE]

Elements	Responses
The fact that the items were free	0-10 scale with DK
The fact that the items were mailed to your house	0-10 scale with DK
Information provided by Duke Energy about how the items would save energy and water	0-10 scale with DK
Other information or advertisements from Duke Energy, including its website	0-10 scale with DK

Q38. Since receiving your kit from Duke Energy, what **new** behaviors has your household adopted to help save energy at home? Please only consider new **behaviors** that your household has adopted since receiving the kit.
[MULTIPLE RESPONSE] [*Interviewer: Do not read list. After each response ask, "Anything else?"*]

1. Not applicable - no new behaviors since receiving kit [EXCLUSIVE ANSWER]
2. Turn off lights when not in a room
3. Turn off furnace when not home
4. Turn off air conditioning when not home
5. Changed thermostat settings to use less energy
6. Used fans instead of air conditioning
7. Turn off electronics when we are not using them
8. Take shorter showers
9. Turned water heat thermostat down
10. Turn off water when brushing teeth
11. Other (specify: _____)
98. Don't know [EXCLUSIVE ANSWER]

Q39. On a scale of 0 to 10, where 0 means "not at all influential" and 10 means "extremely influential," how much influence did Duke Energy's kit and materials on saving energy have on your decision to [LIST ALL RESPONSES FROM Q38].

0 – Not at all influential	1	2	3	4	5	6	7	8	9	10 – Extremely influential	98 Don't know

Q40. Since receiving your kit from Duke Energy, have you purchased and installed any other products or made any improvements to your home to help save energy?

1. Yes
2. No
98. Don't know

[If Q40 = 1]

Q41. What **products** have you purchased and installed to help save energy in your home? [*Do not read list. After each response, ask, "Anything else?"*] [MULTIPLE RESPONSE]

1. Bought energy efficient appliances
2. Moved into an ENERGY STAR home
3. Bought efficient heating or cooling equipment
4. Bought efficient windows
5. Added insulation
6. Sealed air leaks in windows, walls, or doors
7. Sealed or insulated ducts
8. Bought LEDs
9. Bought CFLs
10. Installed an energy efficient water heater
11. None – no other actions taken
96. Other, please specify: _____
98. Don't know [EXCLUSIVE ANSWER]

[If Q41 = 2]

Q42. Is Duke Energy still your gas or electricity utility?

1. Yes
2. No
98. Don't know

[ASK IF Q41<>11, 98, OR 99]

Q43. Did you get a rebate from Duke Energy for any of those products or services? If so, which ones? Please select all products and services for which you received Duke Energy rebates. [MULTIPLE RESPONSE]

[LOGIC] Item
[IF Q41.1 IS SELECTED] 1. Bought energy efficient appliances
[IF Q41.2 IS SELECTED] 2. Moved into an ENERGY STAR home
[IF Q41.3 IS SELECTED] 3. Bought efficient heating or cooling equipment
[IF Q41.4 IS SELECTED] 4. Bought efficient windows
[IF Q41.5 IS SELECTED] 5. Added insulation
[IF Q41.6 IS SELECTED] 6. Sealed air leaks in windows, walls, or doors
[IF Q41.7 IS SELECTED] 7. Sealed or insulated ducts
[IF Q41.8 IS SELECTED] 8. Bought LEDs
[IF Q41.9 IS SELECTED] 9. Bought CFLs
IF Q41.10 IS SELECTED] 10. Installed an energy efficient water heater
[IF Q41.96 IS SELECTED] [**Q41 open ended response**]
I did not get any Duke rebates [*EXCLUSIVE ANSWER*]
Don't know [*EXCLUSIVE ANSWER*]

[IF Q41.8 IS SELECTED]

Q44. Duke Energy's website has a tool that helps you find discounted LEDs in your area. Duke Energy's website also has an online store where you can purchase discounted LEDs and have them shipped directly to your home. Did you use either of these Duke Energy services to acquire your LEDs?

1. Yes
2. No
98. Don't know

[IF Q41.9 IS SELECTED]

Q45. Duke Energy's website has a tool that helps you find discounted CFLs in your area. Duke Energy's website also has an online store where you can purchase discounted CFLs and have them shipped to your home. Did you use either of these Duke Energy services to acquire your CFLs?

1. Yes
2. No
98. Don't know

[ASK IF ANY ITEM IN Q41 WAS SELECTED]

Q46. On a scale of 0 to 10, where 0 means "not at all influential" and 10 means "extremely influential", how much influence did the Duke Energy Save Energy and Water Kit Program have on your decision to…

[MATRIX QUESTION: SCALE]

[LOGIC] Item	Response
[IF Q41.1 IS SELECTED] 1. Buy energy efficient appliances	0-10 scale with DK
[IF Q41.2 IS SELECTED] 2. Move into an ENERGY STAR home	0-10 scale with DK
[IF Q41.3 IS SELECTED] 3. Buy efficient heating or cooling equipment	0-10 scale with DK
[IF Q41.4 IS SELECTED] 4. Buy efficient windows	0-10 scale with DK
[IF Q41.5 IS SELECTED] 5. Add insulation	0-10 scale with DK
[IF Q41.6 IS SELECTED] 6. Seal air leaks in windows, walls, or doors	0-10 scale with DK
[IF Q41.7 IS SELECTED] 7. Seal or insulate ducts	0-10 scale with DK
[IF Q41.8 IS SELECTED] 8. Buy LEDs	0-10 scale with DK
[IF Q41.9 IS SELECTED] 9. Buy CFLs	0-10 scale with DK
IF Q41.10 IS SELECTED] 10. Install an energy efficient water heater	0-10 scale with DK
[IF Q41.96 IS SELECTED] [**Q41 open ended response**]	0-10 scale with DK

[ASK IF Q41.1 IS SELECTED AND Q46.1 <> 0]

Q47. What kinds of appliance(s) did you buy?

[*Do not read list*] [MULTIPLE RESPONSE]

1. Refrigerator
2. Stand-alone Freezer
3. Dishwasher
4. Clothes washer
5. Clothes dryer
6. Oven
7. Microwave
96. Other, please specify: _____
98. Don't know
99. Refused

[ASK IF Q47 = 1-96]

Q48. Was the [INSERT Q47 RESPONSE] an ENERGY STAR or high-efficiency model?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know
99. Refused

[REPEAT THIS QUESTION FOR EACH ITEM MENTIONED IN Q47]

[ASK IF Q47 = 5]

Q49. Does the new clothes dryer use natural gas?

1. Yes - it uses natural gas
2. No – does not use natural gas
98. Don't know
99. Refused

[ASK IF Q41.3 IS SELECTED AND Q46.3 > 0]

Q50. What type of heating or cooling equipment did you buy?
[*Do not read list*] [MULTIPLE RESPONSE]

1. Central air conditioner
2. Window/room air conditioner unit
3. Wall air conditioner unit
4. Air source heat pump
5. Geothermal heat pump

6. Boiler
7. Furnace
8. Wifi-enabled thermostat
96. Other, please specify: _____
98. Don't know
99. Refused

[ASK IF Q50= 6-7]

Q51. Does the new [INSERT Q50 RESPONSE] use natural gas?

1. Yes - it uses natural gas
2. No – does not use natural gas
98. Don’t know
99. Refused

[ASK IF Q50= 1-7, 96]

Q52. Was the [INSERT Q50 RESPONSE] an ENERGY STAR or high-efficiency model?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know
99. Refused

[REPEAT THIS QUESTION FOR EACH ITEM MENTIONED IN Q50, EXCLUDING wifi-enabled thermostat]

[ASK IF Q41.4 IS SELECTED AND Q46.4 > 0]

Q53. Do you know how many windows you installed??

1. Yes [*please specify how many you installed in the box below:* _____]
2. No

[ASK IF Q41.5 IS SELECTED AND Q46.5 > 0]

Q54. Please let us know what spaces you added insulation to. Also, let us know the proportion of each space you added insulation to (for example, if you added insulation that covered your entire attic space, you would type in 100%).

	Check here for each space you added insulation to	Use these boxes to type in the approximate proportion of each space you added insulation to

Attic		
Walls		
Below the floor		

[ASK IF Q41.8 IS SELECTED AND Q46.8 > 0]

Q55. Do you know how many LEDs you installed at your property?

1. Yes [*please specify how many you installed in the box below:* _____]
2. No

[ASK IF Q41.9 IS SELECTED AND Q46.9 > 0]

Q56. Do you know how many CFLs you installed at your property?

1. Yes [*please specify how many you installed in the box below:* _____]
2. No

[ASK IF Q41.10 IS SELECTED AND Q46.10 > 0]

Q57. Does the new water heater use natural gas?

1. Yes - it uses natural gas
2. No – does not use natural gas
98. Don’t know
99. Refused

[ASK IF Q41.10 IS SELECTED AND Q46.10 > 0]

Q58. Which of the following water heaters did you purchase?

1. A traditional water heater with a large tank that holds the hot water
2. A tankless water heater that provides hot water on demand
3. A solar water heater
4. Other, please specify: _____
98. Don’t know
99. Refused

[ASK IF Q41.10 IS SELECTED AND Q46.10 > 0]

Q59. Is the new water heater an ENERGY STAR model?

[SINGLE RESPONSE]

1. Yes
2. No

98. Don't know

99. Refused

Demographics

Lastly, we have some basic demographic questions for you. Please be assured that your responses are confidential and are for statistical purposes only.

Q60. Which of the following types of housing units would you say best describes your home? It is . . .?

1. Single-family detached house
2. Single-family attached home (such as a townhouse or condo)
3. Duplex, triplex or four-plex
4. Apartment or condominium with 5 units or more
5. Manufactured or mobile home
6. Other _____
98. Don't know
99. Prefer not to say

Q61. How many showers are in your home? Please include both stand-up showers and bathtubs with showerheads.

1. One
2. Two
3. Three
4. Four
5. Five or more
98. Don't know

Q62. How many bathroom sink faucets are in your home? (Keep in mind that some bathrooms may have multiple bathroom sink faucets in them)

1. One
2. Two
3. Three
4. Four
5. Five
6. Six
7. Seven
8. Eight or more
98. Don't know

Q63. How many kitchen faucets are in your home?

1. One
2. Two
3. Three
4. Four or more
98. Don't know

[Q32] What fuel type does your water heater use?

5. Electric
6. Natural Gas
7. Other, please specify: [OPEN-ENDED RESPONSE]
98. Don't know

Q64. How many square feet of living space are there in your residence, including bathrooms, foyers and hallways (exclude garages, unfinished basements, and unheated porches)?

1. Less than 500 square feet
2. 500 to under 1,000 square feet
3. 1,000 to under 1,500 square feet
4. 1,500 to under 2,000 square feet
5. 2,000 to under 2,500 square feet
6. 2,500 to under 3,000 square feet
7. Greater than 3,000 square feet
98. Don't know
99. Prefer not to say

Q65. Do you or members of your household own your home, or do you rent it?

1. Own / buying
2. Rent / lease
3. Occupy rent-free
98. Don't know
99. Prefer not to say

Q66. Including yourself, how many people currently live in your home year-round?

1. I live by myself
2. Two people
3. Three people
4. Four people
5. Five people
6. Six people
7. Seven people
8. Eight or more people
98. Don't know

99. Prefer not to say

Q67. What was your total annual household income for 2016, before taxes?

1. Under $20,000
2. 20 to under $30,000
3. 30 to under $40,000
4. 40 to under $50,000
5. 50 to under $60,000
6. 60 to under $75,000
7. 75 to under $100,000
8. 100 to under $150,000
9. 150 to under $200,000
10. $200,000 or more
98. Don't know
99. Prefer not to say

Q68. What is the highest level of education achieved among those living in your household?

1. Less than high school
2. Some high school
3. High school graduate or equivalent (such as GED)
4. Trade or technical school
5. Some college (including Associate degree)
6. College degree (Bachelor's degree)
7. Some graduate school
8. Graduate degree, professional degree
9. Doctorate
98. Don't know
99. Prefer not to say

Appendix F DEO Participant Survey Results

F.1 Program Staff In-Depth Interview Guide

Introduction

Today, we'll be discussing your role in the SEWKP or water kit program. We would like to learn about your experiences in administering this program.

Your comments are confidential. If I ask you about areas you don't know about, please feel free to tell me that and we will move on. Also, if you want to refer me to specific documents to answer any of my questions, that's great – I'm happy to look things up if I know where to get the information.

I would like to record this interview for my note-taking purposes. Do I have your permission?

Roles & Responsibilities

Q1. Please describe your position at Duke Energy and your role in the water kit program.

Q2. How long have you been in this role?

Program Delivery

Next, I'd like to learn more about how this program was delivered since your involvement. If the program implementation is different in 2017, please let me know.

Q3. How is Duke Energy targeting households to participate in this program? Does this vary by jurisdiction?

[*IF NEEDED*:]

1. What marketing and outreach activities did Duke Energy conduct in the 2016 program year? [*Interviewer: we know they market the program through direct-mail campaign. Probe to inquire if they market the program in any other way.*]
2. In 2016, what proportion requested a kit among those targeted by the direct mail campaign? Are you satisfied with this response rate? If not, why not?
3. In terms of marketing, what is planned for 2017? [*If not mentioned:* Do you all plan to have a customer facing website for the program? If yes, when and what would it entail? If not, why not?]

Q4. What feedback, if any, did you receive from kit recipients on why they decided to request a kit?

Q5. Please describe the kit distribution process, including the responsibilities of your vendors: Relationship 1 (R1) and EFI.

[*IF NEEDED*:]

1. Can the kit form be submitted online? If not, is Duke considering this option?
2. Who checks whether customers who submitted the kit form are eligible for the program? What is the eligibility criteria?
3. How do you identify customers who have an electric water heating? [*Interviewer: Prior evaluation states that customers with electric water heating are eligible for this program.*]
4. Who tracks kit processing and distribution?
5. How are kits customized? [*IF NEEDED:*] Can you describe what is included in the small, medium, and large kit? (Confirm kit contents as seen below)

Kit 1 (small)	bath aerator	2
	kitchen aerator	1
	shower head	1
	pipe wrap	5
Kit 2 (medium)	bath aerator	4
	kitchen aerator	1
	shower head	2
	pipe wrap	5
Kit 3 (large)	bath aerator	5
	kitchen aerator	1
	shower head	3
	pipe wrap	5

6. [*If not mentioned*] Are large kits still offered to customers? (If so, does this vary by jurisdiction?)
7. Prior to January 2016, documentation shows the kitchen aerator to have 1.0 GPM, but according to a Duke staff person, the aerator is now rated at 1.5 GPM. Can you please confirm the current GPM for kitchen aerators, and when that changed over (if at all)?
8. What energy saving educational materials are included in the kit?

Q6. What type of feedback have you received from kit recipients about the measures in the kit? [*IF ANY ISSUES REPORTED:*] How have you addressed those issues?

Program Goals

Q7. In 2016 and 2017 program year, what were/are Duke Energy targets in terms of:

1. Number of water kits distributed in Carolinas, Progress, Ohio, Indiana, and Kentucky
2. Number of kits distributed by customer segments – if applicable

3. Cost of distributing the kits [*Probe: Does this vary by jurisdiction?*]
4. Anything else?

Q8. How were those targets set, and by whom?

Q9. Compared to the previous program years, have these targets been the same or have they changed? [*If changed:*] Why have they changed?

Q10. Were/are you on track to meet 2016/2017 targets? [*If not on track, probe why not on track and how far behind are they in meeting their targets.*]

1. Number of water kits distributed in each jurisdiction
2. Number of kits distributed by customer segments – if applicable
3. Cost of distributing the kits
4. Anything else?

Q11. How about savings targets? Are you on track to meet the savings targets in Carolinas, Progress, Ohio, Indiana, and Kentucky? If not, why not?

Q12. Does the program have any process or non-impact goals? *(Probe: low-income, renter, or non-English speaking population targeting, increased kit recipient knowledge of how to save energy, etc.)*

[*IF YES:*]

1. How are these goals established?
2. How are they measured?

Communication

Q13. Can you describe how your vendors communicate about the program with Duke Energy? Who do you communicate with, how often, and what about? Does this vary by jurisdiction?

Q14. How often do you or vendors have to resolve an issue with kits? What types of issues come up?

Data Tracking of Kits

Let's talk about the kits a little bit.

Q15. Were there any changes to the items in the small, medium, or large kit during 2016 and 2017 program year? Any changes for 2018 program year? Are these changes for all jurisdictions?

Q16. We heard that customers must complete a short survey/form to receive a kit. Would it be possible to receive/see this survey data?

Q17. From the moment a customer requests a kit, how long does it take to receive a kit? Is this time frame typical in terms of how long it takes to receive a kit? [*IF NOT TYPICAL, PROBE to get more information on this topic.*] Does it vary by jurisdiction?

Q18. Can you tell us how your vendor reports the number of kits sent out to customers to Duke Energy? Is there information on kit distribution that you need but are not getting? What?

We are almost done. I have a few more questions.

Wrap Up

Q19. What would you say are the greatest strengths of this program?

Q20. What would you say is the biggest challenge in administering this program?

Q21. How can this program be improved?

Q22. Is there anything else about the program that we have not discussed that you feel should be mentioned?

Q23. What would you like to learn from the program evaluation?

Those are all of my questions. Thank you very much for your time.

F.2 Implementer Staff In-Depth Interview Guide

Introduction

[*Note: Research Into Action staff will schedule calls ahead of time through email contact.*]

[*If needed:*] We are conducting an evaluation of Duke Energy Save Energy and Water Kit Program (SEWKP). Because your organization is involved with this program, we would like to get your perspective on how the program works to help guide us in our efforts.

I would like to record this interview for my note-taking purposes. Do I have your permission?

Roles & Responsibilities

Q1. Can you describe your role in the SEWKP or water kit program?

Q2. Can you describe your program processes? (From receipt of kit forms to notifying EFI to send kits)

Q3. We have been told that your organization processes kit submission forms for Duke Energy water kit program. Do you provide any other services to Duke Energy?

1. Do you provide these services in all jurisdictions where this program is offered: Progress, Carolinas, Ohio, Indiana, and Kentucky?

Program Goals

Q4. In jurisdictions where you are providing services to Duke Energy, do you know what are Duke Energy targets in terms of:

1. Number of water kits distributed
2. Cost of the kits
3. Education goals
4. Anything else?

Q5. Do you know if Duke Energy is on track to achieve those targets? If so, how do you know?

Data Tracking of Kits and Eligibility

Q6. Based on what we heard, households must complete a short survey/form to receive a kit. Do you track the information that is on the survey form in a database? If so, what exactly do you track?

1. Do you track the same information for each jurisdiction?

2. How do you report this information to Duke Energy?
3. [*If not addressed:*] Do you maintain a dashboard that tracks number of kits and possibly other information. If so, can you send us a screen shot of that dashboard so we can see what is tracked on that dashboard?
4. Could you provide us with one of the forms so we can see what participants are filling out?

Q7. Can you describe to us who is eligible to receive the kit – that is, eligibility criteria? Do eligibility criteria vary by jurisdiction?

Q8. Can you tell us what proportion of households who sent in a kit survey form were ineligible to receive a kit in 2016 in each jurisdiction? What are the most common reasons as to why customers are ineligible? Do you think the proportion of ineligible applications will increase in 2017? If so, why?

Q9. From the moment households request a kit, do you know how long it takes to receive a kit? Is this time frame typical in terms of how long it takes to receive a kit? [*IF NOT TYPICAL, PROBE to get more information on this topic.*]

Q10. What challenges have you encountered with processing of the kit forms? [*Probe about missing information or other errors.*] [*If challenges:*] What could be done to address these challenges? Any suggestions on how to change the form? Are some of these challenges more prevalent in certain jurisdictions? If so, why?

Q11. How many forms, on average, do you process per week or annually?

Q12. [*If not addressed:*] What demographic data do you collect from households that request the kits? Which demographic segments are more likely to request the kits? Does this vary by jurisdiction?

Communication

Q13. Can you describe how you communicate with Duke Energy about the kit form submissions or anything else? Who do you communicate with, how often, and what about?

Q14. Have there been any challenges in your interactions with Duke Energy? If so, what were they? How did you address them? Were they resolved? If not, what do you think might resolve them?

Wrap Up

I have only a couple of more questions left.

Q15. What would you say is the biggest challenge in processing kit submission forms and distributing kits? What could be done to improve this process?

Q16. Is there anything else about the program that we have not discussed that you feel should be mentioned?

Those are all of my questions. Thank you very much for your time.

F.3 Participant Survey

Introduction/ Screening

[READ IF MODE=PHONE]

Q1. Hi, I'm _____, calling on behalf of Duke Energy. We are calling about the Save Energy and Water Kit you got from Duke Energy.

This kit included faucet aerators, one or two showerheads, and pipe wrap that can help you save water and energy in your home. Do you recall receiving this kit?

1. Yes
2. No [If no: Can I speak with someone who may know something about this kit?]
98. Don't know [If DK: Can I speak with someone who may know something about this kit?]

[INTERVIEWER INSTRUCTIONS: *If no adults are able to speak about the kit, thank and terminate.*]

Q2. [DISPLAY IF MODE=WEB]

We are conducting surveys about the Save Energy and Water Kit you got from Duke Energy. This kit included faucet aerators, one or two showerheads, and pipe wrap that can help you save water and energy in your home.

Do you recall receiving this kit?

1. Yes
2. No [TERMINATE]
98. Don't know [TERMINATE]

Motivation and Collateral

Q3. What motivated you to request a free Save Energy and Water Kit from Duke Energy?

[MULTIPLE RESPONSE]

1. Wanted to conserve electricity
2. Wanted to conserve water
3. It was free
4. It was easy
5. It was offered by Duke Energy
6. Other – please specify: [OPEN-ENDED RESPONSE]
98. Don't know [*EXCLUSIVE ANSWER*]

Q4. Did you read the included instructions on how to install the items that came in the kit?

1. Yes
2. No
98. Don't remember

[ASK IF Q4 = 1]

Q5. On a scale from 0 to 10, where 0 is not at all helpful and 10 is very helpful, how helpful were the instructions on how to install the items that came in the kit?

0. Not at all helpful
1.
2.
3.
4.
5.
6.
7.
8.
9.
10. Very helpful
98. Don't know

[ASK IF Q5<7]

Q6. What might have made the instructions more helpful?

[RECORD VERBATIM ANSWER]

Q7. Did you watch any of Duke Energy's online how-to videos on how to install the items that came in the kit?

1. Yes
2. No
98. Don't remember

[ASK IF Q7 = 1]

Q8. On a scale from 0 to 10, where 0 is not at all helpful and 10 is very helpful, how helpful were Duke Energy's online how-to videos on how to install the items that came in the kit?

0. Not at all helpful
1.
2.

3.
4.
5.
6.
7.
8.
9.
10. Very helpful
98. Don't know

[ASK IF Q8<7]

Q9. What might have made the instructional videos more helpful?

[RECORD VERBATIM ANSWER]

Assessing Measure Installation

[DISPLAY IF KIT_SIZE=SMALL]

We'd like to ask you about the energy and water saving items included in your kit. The kit contained a showerhead, faucet aerators for the bathroom and kitchen, and pipe wrap.

[DISPLAY IF KIT_SIZE=MEDIUM]

We'd like to ask you about the energy and water saving items included in your kit. The kit contained two showerheads, faucet aerators for the bathroom and kitchen, and pipe wrap.

Q10. Have you or anyone else installed any of those items in your home, even if they were taken out later?
[*Interviewer: Throughout interview, remind respondent as needed to report whether someone else in the home installed or uninstalled any items.*]

[SINGLE RESPONSE]

1. Yes
2. No [→ Q23]
98. Don't know [→ TERMINATE]

[ASK IF Q10 = 1]

Q11. Which of the items did you install, even if they were taken out later?

[MULTIPLE RESPONSE]
[*Interviewer: Record each response, then prompt with the list items.*]

a. Showerhead
b. Kitchen faucet aerator
c. Bathroom faucet aerator
d. Pipe wrap
e. I don't remember which items were installed [→ TERMINATE]

[ASK IF Q11A = 1 AND KIT_SIZE=MEDIUM]

Q12. Your kit contained two showerheads. Did you install one or both of the showerheads in the kit, even if one or both were taken out later?

[SINGLE RESPONSE]

1. I installed both
2. I only installed one showerhead
98. Don't know

[ASK IF Q11C = 1]

Q13. How many of the bathroom faucet aerators from the kit did you install in your home, even if one or more were taken out later?

[SINGLE RESPONSE]

1. One
2. Two
3. Three [*DISPLAY IF KIT_SIZE=MEDIUM*]
4. Four [*DISPLAY IF KIT_SIZE=MEDIUM*]
98. Don't know

[ASK IF Q11D = 1]

Q14. Did you install all of the pipe insulation that was included with the kit?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know

[ASK IF Q14 IS DISPLAYED]

Q15. About how many feet of the pipe extruding from your water heater did you wrap with the insulation **that came in the kit**? Please go over to your water heater if you need to

check.

[SINGLE RESPONSE]

1. About three feet or less
2. About five feet
3. About ten feet
4. About fifteen feet or more
98. Don't know

[ASK IF ANY PART OF Q11 = 1]

Q16. Overall, how satisfied are you with the item[s] you installed?
[DISPLAY IF MODE=PHONE] Please use a 0 to 10 scale, where 0 is very dissatisfied and 10 is very satisfied. How satisfied are you with...

DISPLAY IF	Item	Rating
Q11a = 1	a. Showerhead	0-10 with DK
Q11b = 1	b. Kitchen faucet aerator	0-10 with DK
Q11c = 1	c. Bathroom faucet aerator	0-10 with DK
Q11d = 1	d. Pipe wrap	0-10 with DK

[ASK IF ANY ITEMS IN Q16<7]

Q16a. Can you please explain any dissatisfaction you had with [DISPLAY ALL ITEMS IN Q16 THAT ARE <7]?

[OPEN END: RECORD VERBATIM]

Q17. Overall, how satisfied are you with Duke Energy's Save Energy and Water Kit Program?

[DISPLAY IF MODE=PHONE] [IF NEEDED: Please use that same 0 to 10 scale, where 0 is very dissatisfied and 10 is very satisfied.]

0.	0. Very dissatisfied
1.	1.
2.	2
3.	3
4.	4
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10. Very satisfied
98.	Don't Know

[ASK IF ANY PART OF Q11 = 1]

Q18. Have you (or anyone in your home) uninstalled any of the items from the kit that you had previously installed?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know

[ASK IF Q18 = 1]

Q19. Which of the items did you uninstall?
[*Interviewer: Record the response, then prompt with the list items.*]

[MULTIPLE RESPONSE]

1. [DISPLAY IF Q11a = 1] Showerhead[s]
2. [DISPLAY IF Q11b = 1] Kitchen faucet aerator
3. [DISPLAY IF Q11c = 1] Bathroom faucet aerator[s]
4. [DISPLAY IF Q11d = 1] Pipe wrap
98. Don't know [*EXCLUSIVE ANSWER*]

[ASK IF Q19.1 = 1 AND Q12 = 1]

Q20. Did you uninstall one or both of the showerheads you had previously installed?

[SINGLE RESPONSE]

1. I uninstalled both
2. I only uninstalled one of the showerheads
98. Don't know

[ASK IF Q19.3 = 1 AND Q13 = 2-4]

Q21. How many bathroom faucet aerators did you uninstall?

[SINGLE RESPONSE]

1. One [*DISPLAY IF Q13 = 1-4*]
2. Two [*DISPLAY IF Q13 = 2-4*]

3. Three [*DISPLAY IF Q13 = 3-4*]
4. Four [*DISPLAY IF Q13 = 4*]

98. Don't know

[ASK IF ANY OF Q19.1-4 IS SELECTED]

Q22. Why were those items uninstalled?
[READ IF MODE=PHONE] Let's start with…
[*Interviewer: Read each item*]

[MULTIPLE RESPONSE]

DISPLAY ONLY THOSE 1-6 ITEMS THAT WERE SELECTED IN Q19	Item	Reason
	a. Showerhead	1. It was broken 2. I didn't like how it worked 3. I didn't like how it looked, or 96. Some other reason (specify: _____) 98. Don't know
	b. Kitchen faucet aerator	Repeat reason options
	c. Bathroom faucet aerator	Repeat reason options
	d. Pipe wrap	Repeat reason options

[ASK IF ANY ITEMS NOT SELECTED IN Q11, OR Q10 = 2]

Q23. You said you haven't installed the following items. Which of the following do you plan to install in the next three months?
[*Interviewer: Record the response, then prompt with the list items.*]

[MULTIPLE RESPONSE] [DISPLAY ALL IF Q10 = 2]

1. [DISPLAY IF NOT SELECTED IN Q11] Showerhead
2. [DISPLAY IF NOT SELECTED IN Q11] Kitchen faucet aerator
3. [DISPLAY IF NOT SELECTED IN Q11] Bathroom faucet aerator
4. [DISPLAY IF NOT SELECTED IN Q11] Pipe wrap
5. I'm not planning on installing any of these in the next three months [*EXCLUSIVE ANSWER*]

98. Don't know [*EXCLUSIVE ANSWER*]

[ASK IF ANY 1-6 OPTIONS WERE NOT SELECTED IN Q23 OR OPTION "NONE" WAS SELECTED]

Q24. What's preventing you from installing those items? Let's start with….
[*Interviewer: Read items*]

[MULTIPLE RESPONSE]

DISPLAY IF	Item	Reason
Q23a was not selected	a. Showerhead	Use multiple response options below
Q23b was not selected	b. Kitchen faucet aerator	Use multiple response options below

Q23c was not selected	c. Bathroom faucet aerator	Use multiple response options below
Q23d was not selected	d. Pipe wrap	Use multiple response options below

[MULTIPLE RESPONSE OPTIONS FOR Q24]

[PHONE CALLERS: DO NOT READ, CODE VERBATIM RESPONSES]

1. Didn't know what that was
2. Tried it, didn't fit [*DOES NOT DISPLAY FOR PIPE WRAP*]
3. Tried it, didn't work as intended (Please specify: _____)
4. Haven't gotten around to it
5. Current one is still working [*DOES NOT DISPLAY FOR PIPE WRAP*]
6. Takes too much time to install it/No time/Too busy
7. Too difficult to install it, don't know how to do it
8. Don't have the tools I need
9. Don't have the items any longer (threw away, gave away)
10. [DISPLAY IF Q23.1 was displayed but not selected] Already have efficient showerhead
    [DISPLAY IF Q23.2 was displayed but not selected] Already have efficient kitchen faucet aerator
    [DISPLAY IF Q23.3 was displayed but not selected] Already have efficient bathroom faucet aerators
    [DISPLAY IF Q23.4 was displayed but not selected] Already have pipe wrap on my hot water pipe

96. Other, please specify: [OPEN-ENDED RESPONSE]
98. Don't know [*EXCLUSIVE ANSWER*]

[ASK IF Q11b = 1 AND Q19 KITCHEN FAUCET AERATOR OPTION WAS NOT SELECTED]

Q25. Your efficient kitchen faucet aerator has three settings to adjust the flow of water. Have you adjusted this setting?

1. Yes
2. No
3. Don't know

Q26. [If Q25= Yes] What flow setting is the kitchen faucet aerator currently set at? Please go over to your kitchen sink if you need to check.

1. 0.5 GPM (lowest flow setting – "soaping mode")
2. 1.0 GPM (middle flow setting – "ecofriendly mode")

3. 1.5 GPM (highest flow setting – "power rinse mode")

4. Don't Know

Q27. [If Q26 = 1,2, or 3] How often do you use that flow setting?

1. Not very often
2. About half the time
3. Most of the time
4. All the time
98. Don't Know

Q28. [If Q27= 1 or 2] What flow setting do you use most regularly?

1. 0.5 GPM (lowest flow setting – "soaping mode")
2. 1.0 GPM (middle flow setting – "ecofriendly mode")
3. 1.5 GPM (highest flow setting – "power rinse mode")
98. Don't Know

[ASK IF Q11a = 1 AND AT LEAST ONE SHOWERHEAD STILL INSTALLED]

Q29. On average, what is the typical shower length in your household?

[SINGLE RESPONSE]

1. One minute or less
2. Two to four minutes
3. Five to eight minutes
4. Nine to twelve minutes
5. Thirteen to fifteen minutes
6. Sixteen to twenty minutes
7. Twenty-one to thirty minutes
8. More than thirty minutes
98. Don't know

[ASK IF AT LEAST ONE SHOWERHEAD STILL INSTALLED]

Q30. [DISPLAY IF TWO SHOWERHEADS STILL INSTALLED: Thinking of the efficient showerhead you installed that gets the most usage…]
[DISPLAY IF ONE SHOWERHEAD STILL INSTALLED: Thinking of the efficient showerhead currently installed in your home…]
On average, how many showers per day are taken in this shower?

[SINGLE RESPONSE]

1. Less than one
2. One
3. Two

4. Three
5. Four
6. Five
7. Six
8. Seven
9. Eight or more
98. Don't know

[ASK IF TWO SHOWERHEADS STILL INSTALLED]

Q31. Thinking of the other efficient showerhead you installed…
On average, how many showers per day are taken in this shower?

[SINGLE RESPONSE]

1. Less than one
2. One
3. Two
4. Three
5. Four
6. Five
7. Six
8. Seven
9. Eight or more
98. Don't know

Q32. [This question was moved to demographics section – but not renumbered for programming purposes]

NTG

[IF ANY PART OF Q11 = 1 AND IT'S NOT THE CASE THAT ALL PARTS OF Q19=SELECTED (THAT IS, THEY INSTALLED ANYTHING AND DID NOT UNINSTALL EVERYTHING THEY INSTALLED)]

Q33. If you had not received the free efficiency items in the kit, would you have purchased and installed any of these same items within the next year?

1. Yes
2. No
98. Don't know

[If Q33 = 1]

Q34. What items would you have purchased and installed within the next year?

[MULTIPLE RESPONSES]

1. [IF AT LEAST ONE SHOWERHEAD IS STILL INSTALLED] Energy-efficient showerhead[s]
2. [IF Q11b = 1 AND Q19.2 NOT SELECTED] Energy-efficient kitchen faucet aerator
3. [IF AT LEAST ONE BATHROOM AERATOR IS STILL INSTALLED] Energy-efficient bathroom faucet aerator[s]
4. [IF Q11d = 1 AND Q19.4 NOT SELECTED] Pipe wrap
98. Don't know [EXCLUSIVE ANSWER]

[ASK IF Q34.1=1 AND TWO SHOWERHEADS ARE STILL INSTALLED]

Q35. If you had not received them in your free kit, how many energy-efficient showerheads would you have purchased and installed within the next year?

[SINGLE RESPONSE]

1. One
2. Two
98. Don't know

[ASK Q34.3=1 AND IF MORE THAN ONE BATHROOM AERATOR IS STILL INSTALLED]

Q36. If you had not received them in your free kit, how many energy-efficient bathroom aerators would you have purchased and installed within the next year?

[SINGLE RESPONSE]

1. One
2. Two
3. Three [*DISPLAY IF AT LEAST THREE BATHROOM AERATORS ARE STILL INSTALLED*]
4. Four [*DISPLAY IF FOUR BATHROOM AERATORS ARE STILL INSTALLED*]
98. Don't know

[IF Q33 WAS DISPLAYED]

Q37. Now, thinking about the energy and water savings items that were provided in the kit - using a scale from 0 to 10, where 0 means “not at all influential” and 10 means “extremely influential,” how influential were the following factors on your decision to install the items from the kit? How influential was…

[*Interviewer: If respondent says, “Not applicable - I didn’t get/use that,” then follow up with: “So would you say it was “not at all influential?” and probe to code.*]

[MATRIX QUESTION: SCALE]

Elements	Responses
The fact that the items were free	0-10 scale with DK
The fact that the items were mailed to your house	0-10 scale with DK
Information provided by Duke Energy about how the items would save energy and water	0-10 scale with DK
Other information or advertisements from Duke Energy, including its website	0-10 scale with DK

Q38. Since receiving your kit from Duke Energy, what **new** behaviors has your household adopted to help save energy at home? Please only consider new **behaviors** that your household has adopted since receiving the kit.
[MULTIPLE RESPONSE] [*Interviewer: Do not read list. After each response ask, "Anything else?"*]

1. Not applicable - no new behaviors since receiving kit [EXCLUSIVE ANSWER]
2. Turn off lights when not in a room
3. Turn off furnace when not home
4. Turn off air conditioning when not home
5. Changed thermostat settings to use less energy
6. Used fans instead of air conditioning
7. Turn off electronics when we are not using them
8. Take shorter showers
9. Turned water heat thermostat down
10. Turn off water when brushing teeth
11. Other (specify: _____)
98. Don't know [EXCLUSIVE ANSWER]

Q39. On a scale of 0 to 10, where 0 means "not at all influential" and 10 means "extremely influential," how much influence did Duke Energy's kit and materials on saving energy have on your decision to [LIST ALL RESPONSES FROM Q38].

0 – Not at all influential	1	2	3	4	5	6	7	8	9	10 – Extremely influential	98 Don't know

Q40. Since receiving your kit from Duke Energy, have you purchased and installed any other products or made any improvements to your home to help save energy?

1. Yes
2. No
98. Don't know

[If Q40 = 1]

Q41. What **products** have you purchased and installed to help save energy in your home? [*Do not read list. After each response, ask, "Anything else?"*] [MULTIPLE RESPONSE]

1. Bought energy efficient appliances
2. Moved into an ENERGY STAR home
3. Bought efficient heating or cooling equipment
4. Bought efficient windows
5. Added insulation
6. Sealed air leaks in windows, walls, or doors
7. Sealed or insulated ducts
8. Bought LEDs
9. Bought CFLs
10. Installed an energy efficient water heater
11. None – no other actions taken
96. Other, please specify: _____
98. Don't know [EXCLUSIVE ANSWER]

[If Q41 = 2]

Q42. Is Duke Energy still your gas or electricity utility?

1. Yes
2. No
98. Don't know

[ASK IF Q41<>11, 98, OR 99]

Q43. Did you get a rebate from Duke Energy for any of those products or services? If so, which ones? Please select all products and services for which you received Duke Energy rebates. [MULTIPLE RESPONSE]

[LOGIC] Item
[IF Q41.1 IS SELECTED] 1. Bought energy efficient appliances
[IF Q41.2 IS SELECTED] 2. Moved into an ENERGY STAR home
[IF Q41.3 IS SELECTED] 3. Bought efficient heating or cooling equipment
[IF Q41.4 IS SELECTED] 4. Bought efficient windows
[IF Q41.5 IS SELECTED] 5. Added insulation
[IF Q41.6 IS SELECTED] 6. Sealed air leaks in windows, walls, or doors
[IF Q41.7 IS SELECTED] 7. Sealed or insulated ducts
[IF Q41.8 IS SELECTED] 8. Bought LEDs
[IF Q41.9 IS SELECTED] 9. Bought CFLs
IF Q41.10 IS SELECTED] 10. Installed an energy efficient water heater
[IF Q41.96 IS SELECTED] [**Q41 open ended response**]
I did not get any Duke rebates [*EXCLUSIVE ANSWER*]
Don't know [*EXCLUSIVE ANSWER*]

[IF Q41.8 IS SELECTED]

Q44. Duke Energy's website has a tool that helps you find discounted LEDs in your area. Duke Energy's website also has an online store where you can purchase discounted LEDs and have them shipped directly to your home. Did you use either of these Duke Energy services to acquire your LEDs?

1. Yes
2. No
98. Don't know

[IF Q41.9 IS SELECTED]

Q45. Duke Energy's website has a tool that helps you find discounted CFLs in your area. Duke Energy's website also has an online store where you can purchase discounted CFLs and have them shipped to your home. Did you use either of these Duke Energy services to acquire your CFLs?

1. Yes
2. No
98. Don't know

[ASK IF ANY ITEM IN Q41 WAS SELECTED]

Q46. On a scale of 0 to 10, where 0 means "not at all influential" and 10 means "extremely influential", how much influence did the Duke Energy Save Energy and Water Kit Program have on your decision to…

[MATRIX QUESTION: SCALE]

[LOGIC] Item	Response
[IF Q41.1 IS SELECTED] 1. Buy energy efficient appliances	0-10 scale with DK
[IF Q41.2 IS SELECTED] 2. Move into an ENERGY STAR home	0-10 scale with DK
[IF Q41.3 IS SELECTED] 3. Buy efficient heating or cooling equipment	0-10 scale with DK
[IF Q41.4 IS SELECTED] 4. Buy efficient windows	0-10 scale with DK
[IF Q41.5 IS SELECTED] 5. Add insulation	0-10 scale with DK
[IF Q41.6 IS SELECTED] 6. Seal air leaks in windows, walls, or doors	0-10 scale with DK
[IF Q41.7 IS SELECTED] 7. Seal or insulate ducts	0-10 scale with DK
[IF Q41.8 IS SELECTED] 8. Buy LEDs	0-10 scale with DK
[IF Q41.9 IS SELECTED] 9. Buy CFLs	0-10 scale with DK
IF Q41.10 IS SELECTED] 10. Install an energy efficient water heater	0-10 scale with DK
[IF Q41.96 IS SELECTED] [**Q41 open ended response**]	0-10 scale with DK

[ASK IF Q41.1 IS SELECTED AND Q46.1 <> 0]

Q47. What kinds of appliance(s) did you buy?

[*Do not read list*] [MULTIPLE RESPONSE]

1. Refrigerator
2. Stand-alone Freezer
3. Dishwasher
4. Clothes washer
5. Clothes dryer
6. Oven
7. Microwave
96. Other, please specify: _____
98. Don't know
99. Refused

[ASK IF Q47 = 1-96]

Q48. Was the [INSERT Q47 RESPONSE] an ENERGY STAR or high-efficiency model?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know
99. Refused

[REPEAT THIS QUESTION FOR EACH ITEM MENTIONED IN Q47]

[ASK IF Q47 = 5]

Q49. Does the new clothes dryer use natural gas?

1. Yes - it uses natural gas
2. No – does not use natural gas
98. Don't know
99. Refused

[ASK IF Q41.3 IS SELECTED AND Q46.3 > 0]

Q50. What type of heating or cooling equipment did you buy?
[*Do not read list*] [MULTIPLE RESPONSE]

1. Central air conditioner
2. Window/room air conditioner unit
3. Wall air conditioner unit
4. Air source heat pump
5. Geothermal heat pump

6. Boiler
7. Furnace
8. Wifi-enabled thermostat
96. Other, please specify: _____
98. Don't know
99. Refused

[ASK IF Q50= 6-7]

Q51. Does the new [INSERT Q50 RESPONSE] use natural gas?

1. Yes - it uses natural gas
2. No – does not use natural gas
98. Don't know
99. Refused

[ASK IF Q50= 1-7, 96]

Q52. Was the [INSERT Q50 RESPONSE] an ENERGY STAR or high-efficiency model?

[SINGLE RESPONSE]

1. Yes
2. No
98. Don't know
99. Refused

[REPEAT THIS QUESTION FOR EACH ITEM MENTIONED IN Q50, EXCLUDING wifi-enabled thermostat]

[ASK IF Q41.4 IS SELECTED AND Q46.4 > 0]

Q53. Do you know how many windows you installed??

1. Yes [*please specify how many you installed in the box below:* _____]
2. No

[ASK IF Q41.5 IS SELECTED AND Q46.5 > 0]

Q54. Please let us know what spaces you added insulation to. Also, let us know the proportion of each space you added insulation to (for example, if you added insulation that covered your entire attic space, you would type in 100%).

	Check here for each space you added insulation to	Use these boxes to type in the approximate proportion of each space you added insulation to

Attic		
Walls		
Below the floor		

[ASK IF Q41.8 IS SELECTED AND Q46.8 > 0]

Q55. Do you know how many LEDs you installed at your property?

1. Yes [*please specify how many you installed in the box below:* _____]
2. No

[ASK IF Q41.9 IS SELECTED AND Q46.9 > 0]

Q56. Do you know how many CFLs you installed at your property?

1. Yes [*please specify how many you installed in the box below:* _____]
2. No

[ASK IF Q41.10 IS SELECTED AND Q46.10 > 0]

Q57. Does the new water heater use natural gas?

1. Yes - it uses natural gas
2. No – does not use natural gas
98. Don’t know
99. Refused

[ASK IF Q41.10 IS SELECTED AND Q46.10 > 0]

Q58. Which of the following water heaters did you purchase?

1. A traditional water heater with a large tank that holds the hot water
2. A tankless water heater that provides hot water on demand
3. A solar water heater
4. Other, please specify: _____
98. Don’t know
99. Refused

[ASK IF Q41.10 IS SELECTED AND Q46.10 > 0]

Q59. Is the new water heater an ENERGY STAR model?

[SINGLE RESPONSE]

1. Yes
2. No

98. Don't know

99. Refused

Demographics

Lastly, we have some basic demographic questions for you. Please be assured that your responses are confidential and are for statistical purposes only.

Q60. Which of the following types of housing units would you say best describes your home? It is . . .?

1. Single-family detached house
2. Single-family attached home (such as a townhouse or condo)
3. Duplex, triplex or four-plex
4. Apartment or condominium with 5 units or more
5. Manufactured or mobile home
6. Other _____
98. Don't know
99. Prefer not to say

Q61. How many showers are in your home? Please include both stand-up showers and bathtubs with showerheads.

1. One
2. Two
3. Three
4. Four
5. Five or more
98. Don't know

Q62. How many bathroom sink faucets are in your home? (Keep in mind that some bathrooms may have multiple bathroom sink faucets in them)

1. One
2. Two
3. Three
4. Four
5. Five
6. Six
7. Seven
8. Eight or more
98. Don't know

Q63. How many kitchen faucets are in your home?

1. One
2. Two
3. Three
4. Four or more
98. Don't know

[Q32] What fuel type does your water heater use?

5. Electric
6. Natural Gas
7. Other, please specify: [OPEN-ENDED RESPONSE]
98. Don't know

Q64. How many square feet of living space are there in your residence, including bathrooms, foyers and hallways (exclude garages, unfinished basements, and unheated porches)?

1. Less than 500 square feet
2. 500 to under 1,000 square feet
3. 1,000 to under 1,500 square feet
4. 1,500 to under 2,000 square feet
5. 2,000 to under 2,500 square feet
6. 2,500 to under 3,000 square feet
7. Greater than 3,000 square feet
98. Don't know
99. Prefer not to say

Q65. Do you or members of your household own your home, or do you rent it?

1. Own / buying
2. Rent / lease
3. Occupy rent-free
98. Don't know
99. Prefer not to say

Q66. Including yourself, how many people currently live in your home year-round?

1. I live by myself
2. Two people
3. Three people
4. Four people
5. Five people
6. Six people
7. Seven people
8. Eight or more people
98. Don't know

99. Prefer not to say

Q67. What was your total annual household income for 2016, before taxes?

1. Under $20,000
2. 20 to under $30,000
3. 30 to under $40,000
4. 40 to under $50,000
5. 50 to under $60,000
6. 60 to under $75,000
7. 75 to under $100,000
8. 100 to under $150,000
9. 150 to under $200,000
10. $200,000 or more
98. Don't know
99. Prefer not to say

Q68. What is the highest level of education achieved among those living in your household?

1. Less than high school
2. Some high school
3. High school graduate or equivalent (such as GED)
4. Trade or technical school
5. Some college (including Associate degree)
6. College degree (Bachelor’s degree)
7. Some graduate school
8. Graduate degree, professional degree
9. Doctorate
98. Don't know
99. Prefer not to say