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prepared for

INDIANA MICHIGAN POWER COMPANY

INDIANA MICHIGAN POWER℠
An AEP Company

2024 POTENTIAL STUDY

FINAL REPORT

March
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prepared by
GDS ASSOCIATES INC
BRIGHTLINE GROUP

1 EXECUTIVE SUMMARY

1.1 BACKGROUND & STUDY SCOPE

As part of their larger 2024 Integrated Resource Plan (IRP), Indiana-Michigan Power ("I&M") commissioned GDS Associates ("GDS") and Brightline Group, collectively "the GDS Team", to assess energy savings potential in both the Indiana and Michigan jurisdictions of the I&M service area to help inform future planning efforts. Separate estimates of electric energy efficiency, demand response, and distributed energy resource (DER) potential were developed.

This report focuses on the presentation of findings for the I&M Indiana service area. A separate report presents the findings for the I&M Michigan service area.

1.2 TYPES OF POTENTIAL ANALYZED

This potential study provides a roadmap for both policy makers and I&M as they develop strategies and programs for energy efficiency (EE), demand response (DR), and distributed energy resources (DERs) in the I&M service area. In addition to technical and economic potential estimates, the development of achievable and program potential estimates for a range of feasible measures is useful for program planning and modification purposes. Unlike achievable and program potential estimates, technical and economic potential estimates do not include customer acceptance considerations for measures, which are often among the most important factors when estimating the likely customer response to new programs. For this study, the GDS Team produced the following estimates of demand side management potential:

- Technical potential
- Economic potential
- Achievable potential
    - Maximum achievable potential ("MAP")
    - Realistically achievable potential ('RAP")
    - Enhanced realistic achievable potential ("Enhanced RAP")

1.3 APPROACH SUMMARY

The purpose of this market potential study is to provide a foundation for the continuation of utility-administered energy efficiency and demand response programs in the I&M service area, to determine the remaining opportunities for cost-effective energy savings, demand savings, and distributed energy resources for the I&M service area. This study has examined a full array of technologies, programs, and energy efficient building practices that are technically achievable.

The GDS Team used a bottom-up approach to estimate energy efficiency potential in the residential sector. Bottom-up approaches begin with characterizing the eligible equipment stock, estimating savings and screening for cost-effectiveness first at the measure level, then summing savings at the end-use and service area levels. In the commercial and industrial sectors, the GDS team utilized a top-down modeling approach to first estimate measure-level savings and costs as well as cost-effectiveness, and then applied cost-effective measure savings to all applicable shares of electric energy load. Bottom-up approaches were also used in the demand response and DER analyses for all sectors.

1.4 STUDY LIMITATIONS AND CAVEATS

As with any assessment of potential, this study necessarily builds on various assumptions and data sources, including the following:

- Energy efficiency measure lives, savings, and costs (total measure costs, incremental costs, and incentive costs)
- Projected penetration rates for energy efficiency measures
- Projections of energy avoided costs
- Future known changes to codes and standards
- End-use saturations and fuel shares

While the GDS Team has sought to use the best and most current available data (including the use of new primary market research in key market subsegments of interest based on stakeholder feedback) there are often reasonable alternative assumptions which would yield slightly different results. For instance, the analysis assumes that many existing measures, regardless of their current efficiency levels, can be eligible for future installation and savings opportunities. Other studies may select a narrower viewpoint, limiting the amount of potential from equipment that is already considered to be energy efficient. Additionally, the models used in this analysis must make several assumptions regarding program delivery and the timing of equipment replacement that may ultimately occur more rapidly (or more slowly) than currently forecasted.

Furthermore, while the lists of energy efficiency measures examined in this study analysis represent technologies available on the market today as well as a limited number of emerging technologies not currently offered by I&M, these measure lists may not be exhaustive. The GDS Team acknowledges that new efficient technologies may become available over the course of the 20-year study timeframe that could produce efficiency gains and costs at different levels than those currently assumed.

Last, where possible, the GDS Team and I&M collaborated to ensure consistency with assumptions and methodological considerations that are expected to be employed by during the program planning process. However, final program designs and implementation strategies may need additional flexibility to target specific or underserved markets, address equity concerns, or react to changing customer preferences.

1.5 POTENTIAL SAVINGS OVERVIEW

The following several sub-sections provide an overview of the energy efficiency potential as well as summary demand response potential and distributed energy resource potential. Chapters 3 through 5 of this report provide additional summary data and methodological considerations and descriptions.

1.5.1 Energy Efficiency Potential for Residential Market Rate Customers

Figure 1-1 provides the technical, economic, MAP and RAP results for the 5-year, 10-year, and 20-year timeframes. The cumulative annual 5-year technical potential is 17.6% of forecasted sales, and the economic potential is 14.6% of forecasted sales. The cumulative annual 5-year MAP is 4.5% and the RAP is 3.8%, as a percentage of forecasted sales. Over the duration of the study timeframe the technical and economic potential rise to 37% and 33% of forecasted sales, respectively. This indicates that a large portion of the technical potential is cost-effective. The MAP and RAP rise respectively to 16% and 13% of forecasted sales over the study timeframe. The gap between economic potential and MAP/RAP represents market barriers to prospective program participants, both financial and non-financial, to achieving the full amount of economic potential.

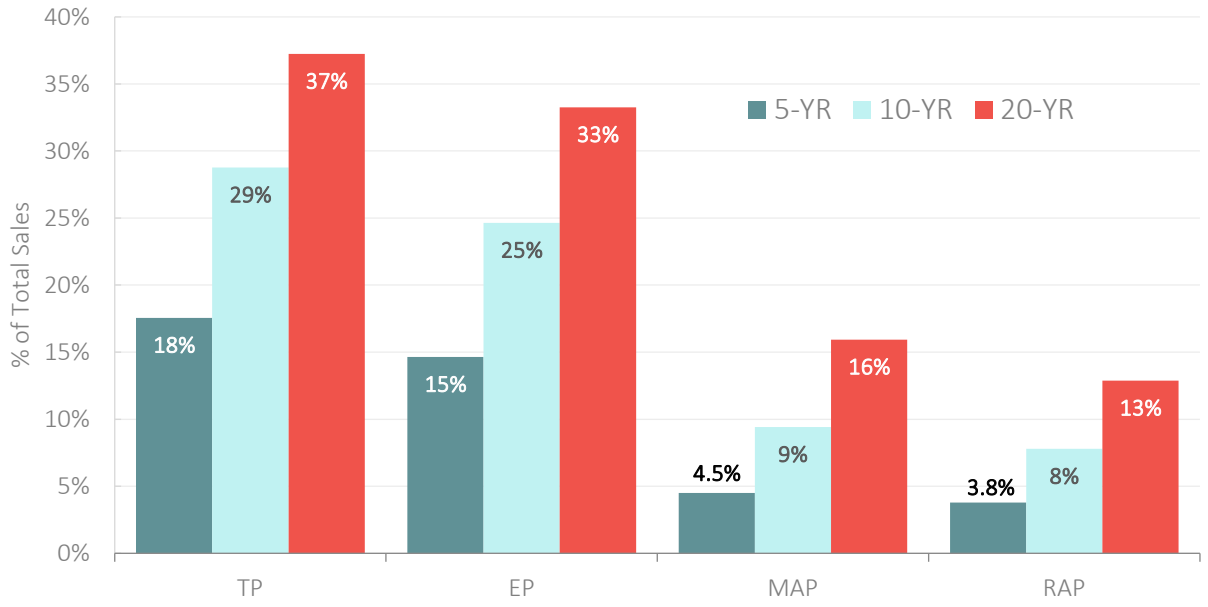


FIGURE 1-1: OVERVIEW OF RESIDENTIAL POTENTIAL

Table 1-1 provides additional details of the short-term residential potential, showing the incremental annual MWh and MW associated with technical, economic and achievable potential. The RAP rises from just over 36.000 MWh in 2026 to nearly 55,000 MWh by 2031, representing 0.8% up to 1.2% of sector-sales.

TABLE 1-1. SHORT-TERM RESIDENTIAL TECHNICAL, ECONOMIC, ACHIEABLE POTENTIAL SAVINGS (MWH, % SAVINGS, MW)

	2026	2027	2028	2029	2030	2031
Energy (MWh)						
Technical	223,618	219,755	216,929	214,572	208,261	206,014
Economic	183,325	180,981	179,313	177,781	172,323	170,926
MAP	42,260	46,708	51,630	55,378	59,855	63,287
RAP	36,136	39,912	44,263	47,792	51,805	54,783
Energy Savings (as % of Forecast)						
Technical	4.8%	4.7%	4.6%	4.6%	4.4%	4.4%
Economic	3.9%	3.9%	3.8%	3.8%	3.7%	3.6%
MAP	0.9%	1.0%	1.1%	1.2%	1.3%	1.3%
RAP	0.8%	0.9%	0.9%	1.0%	1.1%	1.2%
MW						
Technical	60	59	58	57	56	55
Economic	52	51	51	50	49	49
MAP	13	14	15	15	16	16
RAP	10	11	12	12	13	13

1.5.2 Energy Efficiency Potential for Commercial Customers

Figure 1-2. provides the technical, economic, MAP and RAP results for the 5-year, 10-year, and 20-year timeframes. The cumulative annual 5-year technical potential is 10.1% of forecasted sales, and the economic potential is also 10.1% of forecasted sales. The cumulative annual 5-year MAP is 7.5% and the RAP is 5.6%, as a percentage of forecasted sales. Over the duration of the study timeframe the technical and economic potential each rise to 27% forecasted sales. This indicates that essentially all of the technical potential is cost-effective. The MAP and RAP rise respectively to 18% and 13% of forecasted sales over the study timeframe. The gap between economic potential and MAP/RAP represents market barriers to prospective program participants, both financial and non-financial, to achieving the full amount of economic potential.

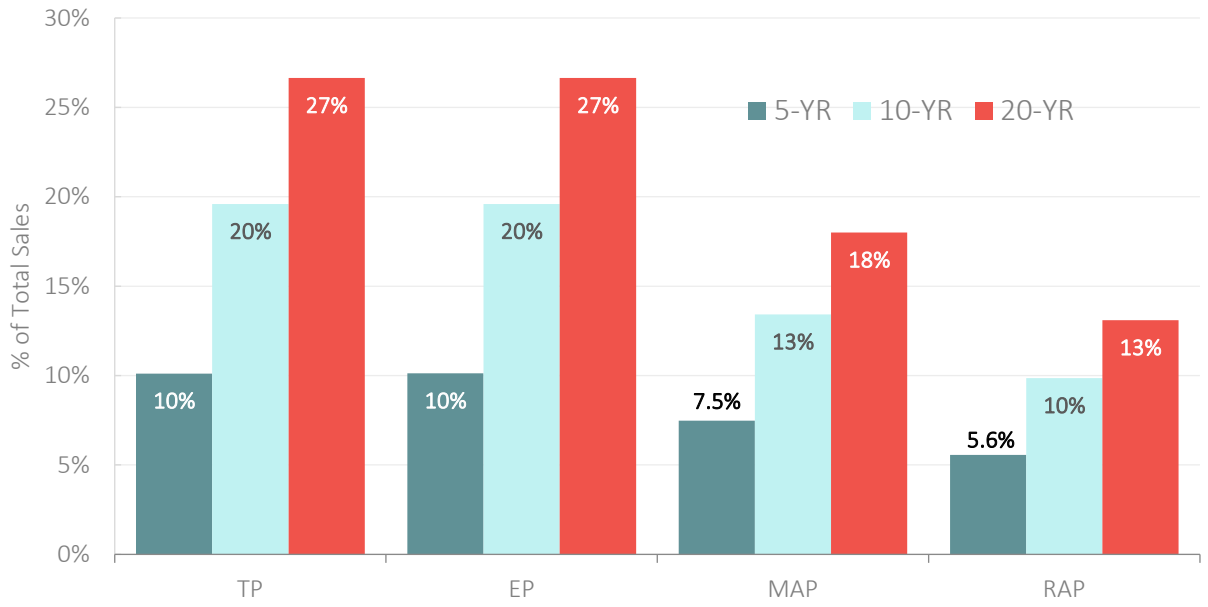


FIGURE 1-2: OVERVIEW OF NONRESIDENTIAL POTENTIAL

Table 1-2 provides additional details of the short-term nonresidential potential, showing the incremental annual MWh and MW associated with technical, economic and achievable potential. The RAP rises from close to 92,000 MWh in 2026 to more than 96,000 MWh by 2031, representing between 1.1% and 1.2% of sector-sales.

TABLE 1-2. SHORT-TERM NONRESIDENTIAL TECHNICAL, ECONOMIC, ACHIEVABLE POTENTIAL SAVINGS (MWH, % SAVINGS, MW)

	2026	2027	2028	2029	2030	2031
Energy (MWh)						
Technical	150,589	162,894	169,826	186,577	187,098	188,835
Economic	150,631	162,949	169,888	186,641	187,157	188,866
MAP	123,182	126,434	125,415	136,864	131,130	126,644
RAP	91,774	94,200	93,389	100,624	96,410	92,619
Energy Savings (as % of Forecast)						
Technical	1.9%	2.0%	2.1%	2.3%	2.3%	2.3%
Economic	1.9%	2.0%	2.1%	2.3%	2.3%	2.3%
MAP	1.6%	1.6%	1.6%	1.7%	1.6%	1.5%

	2026	2027	2028	2029	2030	2031
RAP	1.2%	1.2%	1.2%	1.2%	1.2%	1.1%
MW						
Technical	20	21	22	24	24	24
Economic	20	21	22	24	24	24
MAP	16	17	17	18	17	16
RAP	12	12	12	13	12	12

1.5.3 Demand Response Potential for All Customers

Figure 1-3 shows the annual demand response RAP potential for the Base Case by sector in Indiana. These demand reduction values are present at the customer meter level.

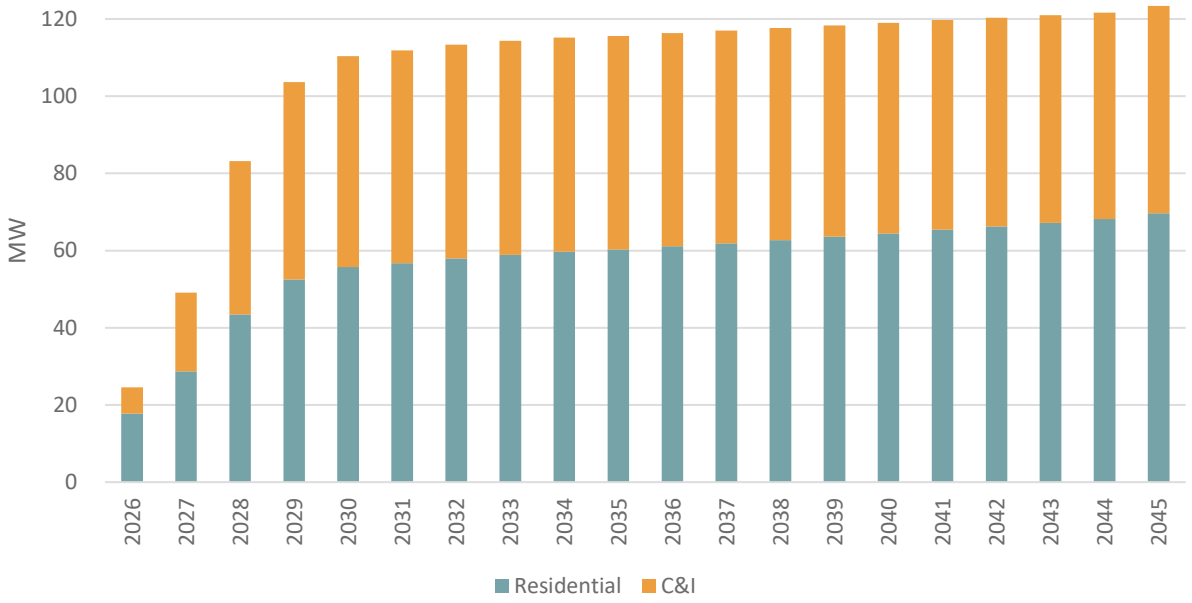


FIGURE 1-3 CUMULATIVE ANNUAL BASE CASE SUMMER PEAK MW RAP POTENTIAL BY SECTOR (IN)

1.5.4 Distributed Energy Resource Potential for All Customers

Figure 1-4 reflects the summary of MWh and PJM 5CP summer and winter MW contributions at the system level based on a business-as-usual (BAU, no program) case. The results are inclusive of estimated existing and forecasted impacts from these two technology categories. Additional details are provided below.

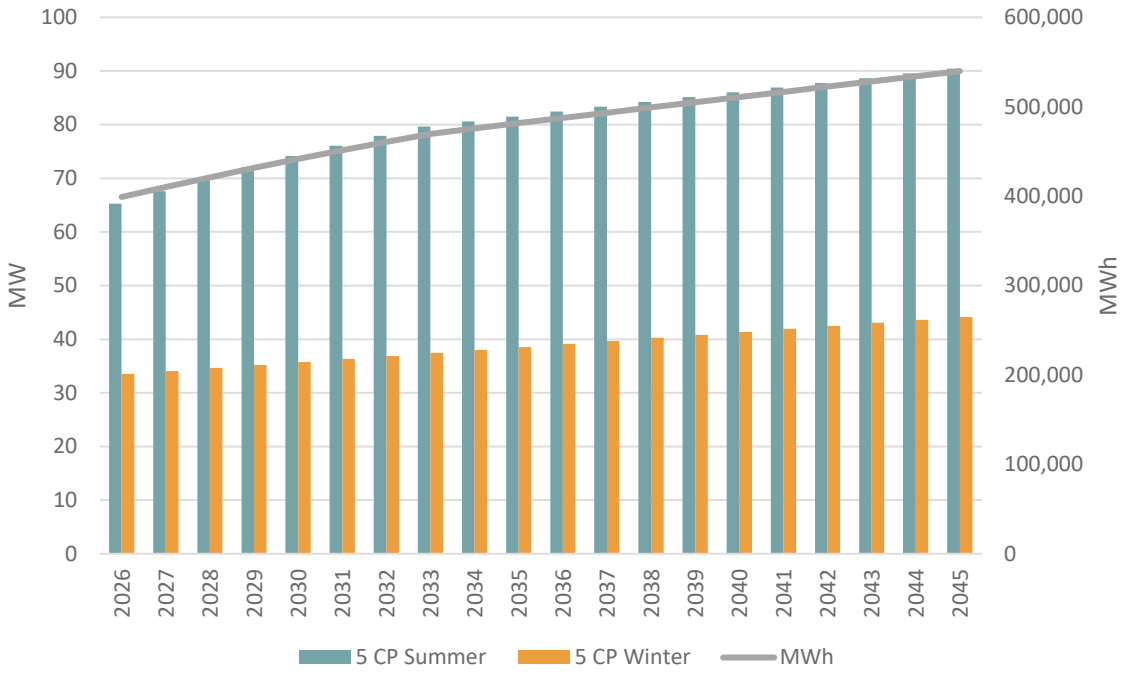


FIGURE 1-4 BAU IMPACTS OF SOLAR PV AND ENGINE GENERATOR DERS 2026-2045

In the BAU case, summer contributions to capacity are roughly double winter. In the analysis, backup generators and solar PV were estimated to contribute no MW to winter 5CP hours. MWh production is dominated by parallel generation systems due to expected substantial runtime hours and capacity. However, solar PV is forecasted to provide approximately 18 percent of MWh impacts and is a source of growth, particularly early in the forecast period..

2 BASELINE FORECAST

The load forecast is a critical input into I&M's 2024 DSM Market Potential Study, having various uses in estimation of residential and business sector potential. The chapter describes the various ways in which the forecast is used for this study, presents the baseline and disaggregated forecasts, and describes the methodology and data sources used by GDS for the purposes of generating the load forecasts that were used in the potential analysis.

2.1 I&M LOAD FORECASTING SYSTEM

I&M employs a sophisticated load forecasting system that uses econometric and Statistically Adjusted End-Use ("SAE") models to project number of consumers, average consumption per consumer, and total energy sales by class. Residential, Commercial, and Industrial consumers are projected using traditional econometric techniques. Residential average usage and commercial energy sales are projected using SAE model specifications. Industrial energy sales are projected using econometric techniques.

A residential SAE model specification takes end-use data drawn from utility, regional, and even national sources and develops monthly end-use indices designed to predict average household consumption. The end-use data includes market shares of key electric consuming appliances, average device efficiency trends, average building shell efficiency trends, price elasticity of demand, income elasticity of demand, and elasticity associated with the average number of people per household. A cooling index is developed to represent space cooling load and is further modified by Cooling Degree Days to incorporate summer weather into the model. Likewise, a heating index representing space heating is modified by Heating Degree Days. Finally, a base index is developed to represent consumption of all other end-uses in the home.

A commercial SAE model specification is very similar to a residential specification, except end-use energy intensity indices are developed for each commercial building type based on area employment in various industry codes. National and regional commercial data is used to estimate end-use consumption for various industries (for example, restaurants will have higher cooking usage shares than offices).

2.2 ADJUSTMENTS TO THE I&M INDIANA LOAD FORECAST

Before assessing the future potential for energy efficiency, demand response, or distributed energy resources in the I&M Indiana service area, a few modifications to I&M's 2023-vintage forecast were necessary to create an adjusted baseline forecast. These modifications are addressed in more detail below.

2.2.1 Code Frozen Efficiency Adjustments

The base case forecast I&M developed uses the appliance efficiency forecast published in the Energy Information Administration's (EIA) Annual Energy Outlook (AEO) as inputs for the various end-use indices contained within the SAE models. While this is the best practice for developing a base case forecast, to determine potential impacts of DSM/EE programs it is helpful to understand how energy sales would be impacted if appliance efficiencies were held constant at the prevailing U.S. code level. If the base case efficiency level is below code in a given year, the base case forecasted energy sales will be adjusted downward in said year, and if the base case efficiency level is above code in a given year, forecasted energy sales will be adjusted upward. The process for the code frozen efficiency adjustments follows, using residential cooling load as an example. The "code frozen" forecast allows for a comparison to the base case

forecast so that energy savings due to above or below code appliances can be isolated and accounted for separately from DSM/EE programs.

A forecasted number of customers is multiplied by the cooling end-use market share saturation and the year over year change in the number of appliances to determine the number of cooling end-use appliances in the I&M service territory. The change in the number of appliances from year to year is then multiplied by the prevailing U.S code efficiency level in that year, while the number of existing appliances is multiplied by the base year efficiency level. The result is a weighted average of existing and new stock appliances and their efficiencies, creating the code frozen efficiency level for the I&M Indiana service territory. Next, the percent difference between the Base Case efficiency level and the Code Frozen efficiency level is multiplied by the base case energy consumption for cooling load, resulting in the adjustment applicable to the base case forecast for cooling load. The results of the code frozen efficiency adjustments are shown below in Figure 2-1 and Figure 2-2.

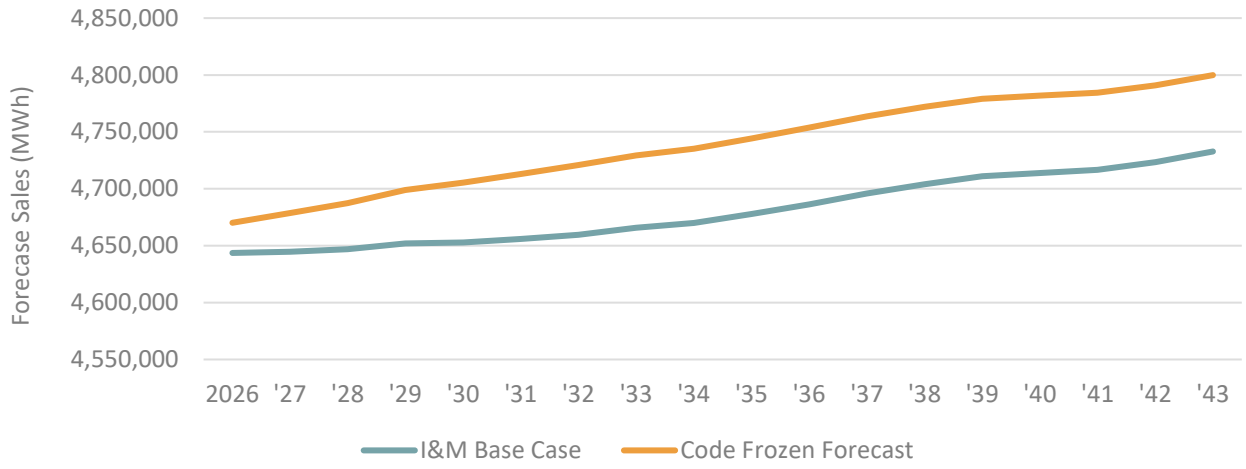


FIGURE 2-1. INDIANA RESIDENTIAL SECTOR FORECAST TRENDS

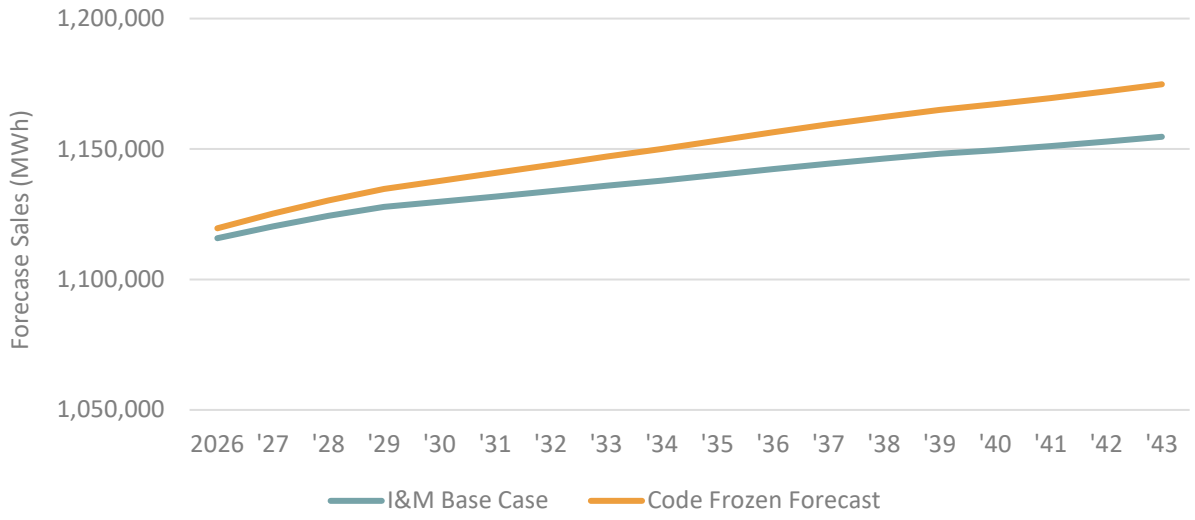


FIGURE 2-2. INDIANA COMMERCIAL SECTOR FORECAST TRENDS

2.2.2 Adjustment for Large C&I Opt-Out Customers

The 2019 I&M Indiana business sector customer database containing usage and demographic data for all C&I customers, with indication for large customer opt-out of DSM/EE programs status was utilized to determine how to adjust for opt-out customers. The number of customers and total energy use was calculated both including and excluding opt-out customers. The load forecast for the C&I sectors was adjusted down by the percent of load attributed to opt-out customers from the customer database, in effect excluding from the potential analysis any load of opt-out customers. The opt-out adjustment was held constant for all years of the load forecast. In total, GDS removed approximately 7% of commercial energy sales and 50% of industrial energy sales due to large customer opt-out.

2.2.3 Reclassification of Load

The 2019 I&M Indiana C&I sector customer database designated commercial and industrial rate code based on current tariff definition. When only using the account type/tariff definition to classify customers as either commercial or industrial, there were several manufacturing type premises classified as commercial, as well as several customers that GDS typically classifies as commercial classified as industrial, (i.e. a retail service building coded as an industrial account).

2.3 LOAD FORECAST DISAGGREGATION

The baseline forecasts represent projected total energy sales by class. For the potential studies, it is useful to have the class forecasts disaggregated in several different ways. This section presents the forecast disaggregation scenarios used by GDS to determine intensity by end-use.

2.3.1 Residential Sector

The residential electric calibration effort led to an end-use intensity breakdown as shown below in Figure 2-3. Overall, the estimated per home consumption to be 11,104 kWh per year. The "Other" end use is the leading end-use which includes plug loads such water heating, electronics and miscellaneous small appliances. This reflects the increasing prominence of electronics and other plug-in load devices.

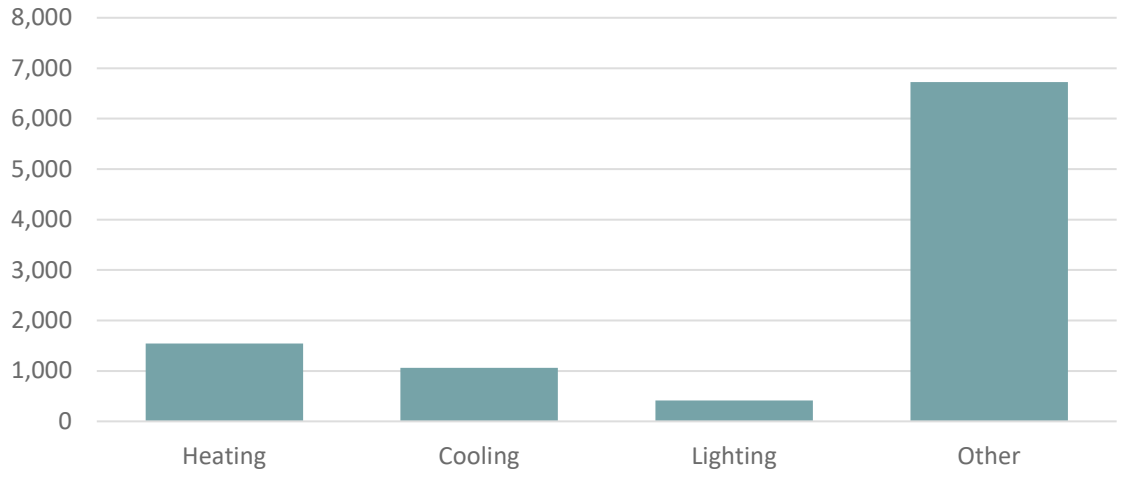


FIGURE 2-3. RESIDENTIAL ELECTRIC END-USE BREAKDOWN

2.3.2 C&I Sector

In the C&I sector, disaggregated forecast data provides the foundation for the development of energy efficiency potential estimates. GDS received a base case sales forecast from I&M for the residential, commercial and industrial sectors. SIC information from I&M, along with CBECS building type consumption tables, was then used to segment the forecast into building types. Figure 2-4 provides a breakdown of commercial electric sales by building type and industrial sales.[1]

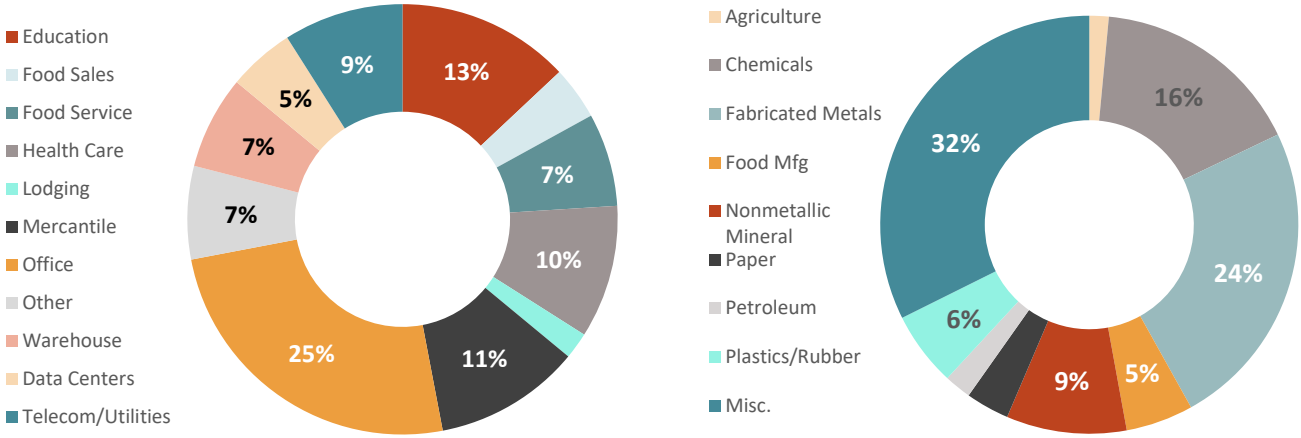


FIGURE 2-4. COMMERCIAL ELECTRIC SALES BREAKDOWN BY BUILDING TYPE[2]

The forecast was further segmented into end-uses by building type using both AEP end-use forecast for I&M Indiana as well as 2022 EIA Annual Energy Outlook data. Figure 2-5 provides an illustration of the leading end-uses across all building types in the commercial sector. Lighting, space cooling, and ventilation are the primary end-uses with a significant share of load across most building types. Shares of refrigeration and office/computing are often dependent on the type of building, with refrigeration loads greatest in food sales and food service while office/computing loads are greatest in offices and education.

[1] "Other" commercial building types include buildings that engage in several different activities, a majority of which are commercial (e.g. retail space), though the single largest activity may be industrial or agricultural; "other" also includes miscellaneous buildings that do not fit into any other category.
[2] Data labels not shown represent sales of less than 5% of total.

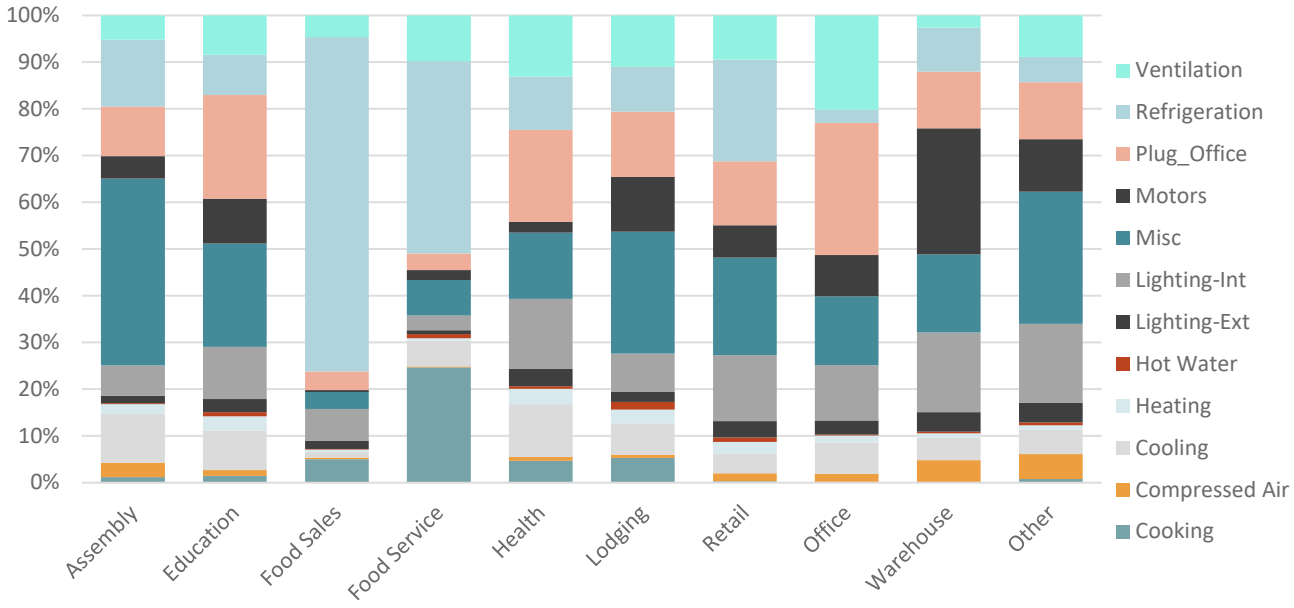


FIGURE 2-5. COMMERCIAL ELECTRIC END-USE BREAKDOWN BY BUILDING TYPE

Industrial sales were also segmented by end-use based on the overall distribution of sales by industry type and EIA MECS data on end-use consumption by industrial segment. Figure 2-6 provides a breakdown of the sales by end-use. Overall, the weighted average industrial sales by end-use in the I&M Indiana service area was roughly 38% Machine Drive, 16% Process Heat, 10% HVAC, 9% Compressed Air, 9% Lighting, and 7% Process Refrigeration. The remaining 12% was split between other process and other facility loads.

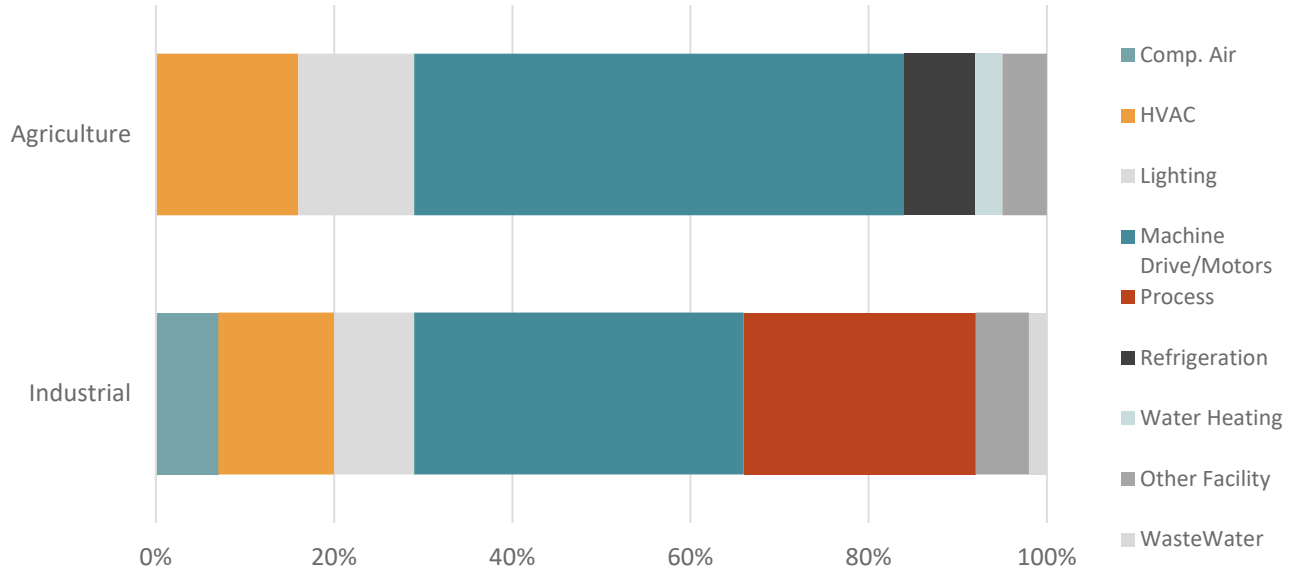


FIGURE 2-6. INDUSTRIAL AND AGRICULTURAL SECTOR END-USE BREAKDOWN

3 ENERGY EFFICIENCY POTENTIAL ANALYSIS AND RESULTS

This section describes the overall methodology utilized to assess the electric energy efficiency potential in the I&M service area. The main objectives of the energy efficiency potential analysis were to estimate the technical, economic, maximum, and realistic achievable potential savings from energy efficiency in the I&M Indiana service territory; and to quantify these estimates of potential in terms of MWh and MW savings, for each level of energy efficiency potential. This document describes the general steps and methods that were used at each stage of the analytical process necessary to produce the various estimates of energy efficiency potential.

Energy efficiency potential studies involve several analytical steps to produce estimates of each type of energy efficiency potential. This study utilizes benefit/cost screening tools for the residential and non-residential sectors to assess the cost-effectiveness of energy efficiency measures. These cost effectiveness screening tools are built-in to Excel-based models that integrate technology-specific impacts and costs, customer characteristics, and utility avoided cost forecasts. The modeling platform provides transparency to the estimation process. The major analytical steps and an overview of the potential savings are summarized below, and specific changes in methodology from one sector to another have been noted throughout this section.

3.1 OVERVIEW OF APPROACH

For the residential sector, GDS utilized a bottom-up approach to the modeling of energy efficiency potential, whereby measure-level estimates of costs, savings, and useful lives were used as the basis for developing the technical, economic, and achievable potential estimates. The measure data was used to build-up the technical potential, by applying the data to each relevant market segment. The measure data allowed for benefit-cost screening to assess economic potential, which was in turn used as the basis for achievable potential, taking into consideration incentives and estimates of annual adoption rates. For the C&I sector, GDS employed a bottom-up modeling approach to first estimate measure-level savings, costs, and cost-effectiveness, and then applied measure savings to all applicable shares of energy load.

3.2 MARKET CHARACTERIZATION

The initial step in the analysis was to gather a clear understanding of the current market segments in the I&M Indiana service area. The GDS team coordinated with I&M to gather utility sales and customer data and existing market research to define appropriate market sectors, market segments, vintages, saturation data and end uses. This information served as the basis for completing a forecast disaggregation and market characterization of both the residential and nonresidential sectors.

3.2.1 Forecast Disaggregation

As noted in Chapter 3, through the development of the baseline forecasts, the GDS Team produced disaggregated forecasts by sector and end-use. The resulting aggregate baseline forecasts were disaggregated by sector and then further segmented as follows:

- *Residential.* The residential forecast was broken out by housing type between existing income qualified and market-rate customers as well as new construction.
- *Commercial.* Typically based on major EIA CBECS business types: retail, warehouse, food sales, office, lodging, health, food service, education, and miscellaneous.

- *Industrial.* As determined by actual load consumption shares and major industry types as defined by EIA's Manufacturing Energy Consumption Survey (MECS) data.

The segmentation analysis was performed by applying I&M Indiana-specific segment and end-use consumption shares, derived from I&M's customer database and SIC code analysis (building segmentation), and by EIA CBECS and MECS data (end-use segmentation) to forecast year sales. Within the residential, commercial, and industrial market segments, the sector level disaggregated forecasts were further segmented by the major end uses shown in Table 3-1.

TABLE 3-1. ELECTRIC END-USE LOADS

Residential	C&I	
	Commercial	Industrial
Appliances	Compressed Air	Compressed Air
Behavioral	Cooking	HVAC
Consumer Electronics	Cooling	Lighting
Electric Vehicle Charging	Lighting	Motors
HVAC Equipment	Hot Water	Process Heat
Lighting	Miscellaneous	Process Refrigeration
New Construction	Motors	Process Other
Pools/Pumps	Plug Office	Whole Building
Shell	Refrigeration	Water / Wastewater
Water Heating	Ventilation	
	Whole Building	

3.2.1.1 Eligible Opt-Out Customers

In Indiana, individual commercial or industrial customer sites with a peak load greater than 1MW are eligible to opt out of utility-funded electric energy efficiency programs. In the I&M Indiana service area, approximately 7% of total retail commercial sales have opted out of utility-funded electric energy efficiency programs, while roughly 46% of total retail industrial sales have opted out.

Figure 3-1 shows the total sales for the C&I sectors, as well as the sales, by sector, that have currently opted out of paying the charge levied to support utility-administered energy efficiency programs. The portion of sales that have not opted out include both ineligible load (i.e., does not meet the 1 MW peak demand requirement) as well as eligible load that has not yet opted out.

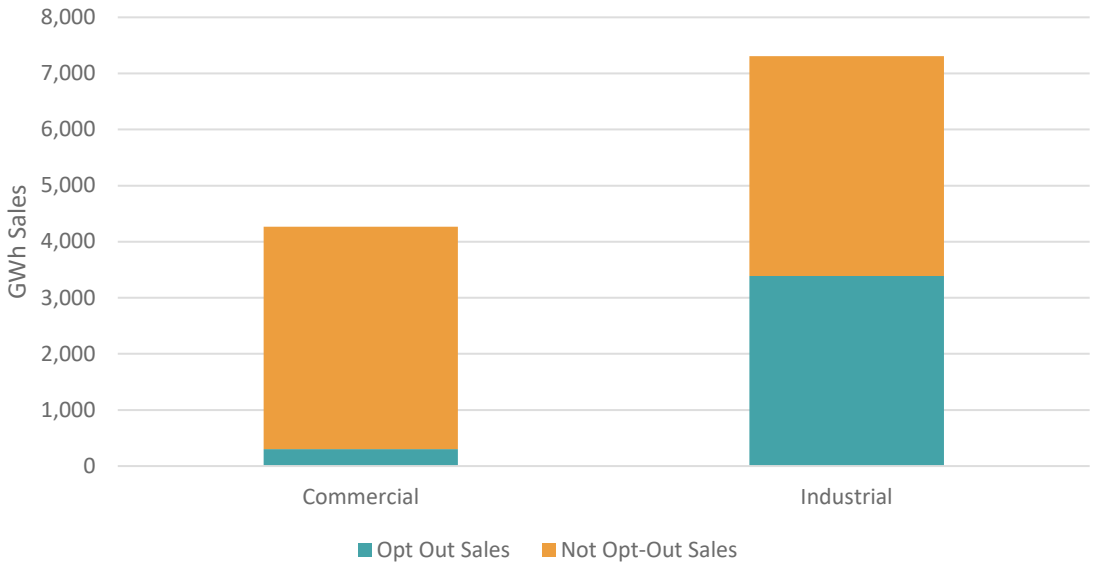


FIGURE 3-1. OPT-OUT SALES BY C&I SECTOR

GDS removed the sales from opt-out customers in the assessment of technical, economic, and achievable potential reflected in this report. As a sensitivity (included in Appendix A), GDS also examined the full potential in the C&I sector if these customers were no longer able to opt-out of utility-funded electric energy efficiency programs.

3.2.1.2 Building Stock/Equipment Saturation

To assess the potential electric energy efficiency savings available, estimates of the current saturation of baseline equipment and energy efficiency measures are necessary.

3.2.1.2.1 Residential Sector

For the residential sector, GDS relied on the primary research from the 2021 MPS, as well as the 2021 I&M Indiana Residential Appliance Saturation Survey. The GDS Team was able to characterize the baseline and efficiency saturations of the residential sector using housing-type specific data. Other data sources included ENERGY STAR unit shipment data, I&M evaluation reports, and the EIA Residential Energy Consumption Survey data from 2020. The ENERGY STAR unit shipment data filled data gaps related to the increased saturation of energy efficient equipment across the U.S. in the last decade.

3.2.1.2.2 Business Sector

For the commercial sector, building stock and equipment saturation data was informed from the 2021 MPS primary market research, as well as other available regional or national data. This data helped inform the disaggregation of the end-use sales forecast further into measure groups consistent with the measures included in the potential analysis as well as saturation of energy efficient equipment.

Beyond the primary data collection, EIA regional data, as well as national studies on commercial energy consumption were used to inform consumption in the remaining end-uses where data from the primary market research was even more limited.[3] These sources typically informed estimates of base equipment saturation for cooking, refrigeration, water heating, plug loads, and other miscellaneous end-uses.

[3] Examples of secondary research include: Energy Savings Potential RD&D Opportunities for Commercial Building Appliances. 2016. DOE and Energy Star Shipment Data.

For the industrial sector, the analysis employed a top-down analysis at the end-use level. Accordingly, it was not critical to disaggregate the industrial sales at a measure-level. Instead, measures were developed to estimate savings at a total end-use level.

3.2.1.3 Remaining Factor

The remaining factor is the proportion of a given market segment that is not yet efficient and can still be converted to an efficient alternative. It is the inverse of the saturation of an energy efficient measure, prior to any adjustments. In this study, two key adjustments were made in order to recognize that the energy efficient saturation does not necessarily always fully represent the state of market transformation. First, while a percentage of installed measures may already be efficient, some customers may backslide (i.e. revert to standard technologies, or otherwise less efficient alternatives in the future, based on considerations like measure cost and availability and customer preferences). For example, some customers have disliked the water pressure associated with low flow showerheads and have removed them in favor of standard flow showerheads. These situations represent an opportunity to regain those savings with the installation of higher quality low flow showerhead measures.

Second, for measures categorized as market opportunity (i.e. replace-on-burnout), we assumed that 50% of the instances in which an efficient measure is already installed, the burnout or failure of those measures would be eligible for inclusion in the estimate of future savings potential. This adjustment assumes that 50% of the market is transformed, and no future savings potential exists, whereas the remaining 50% of the market is not transformed and could backslide without the intervention of an I&M program and an incentive. Similarly, for retrofit measures, we assumed that only 10% of the instances in which an efficient measure is already installed, the burnout or failure of those measures would be eligible for inclusion in the estimate of future savings potential. This recognizes the more proactive nature of retrofit measures, as the implementation of these measures are more likely to be elective in nature, compared to market opportunity measures, which are more likely to be needs-based. The uncertainty in these assumptions are appropriate, as they factor in a key component of natural customer decision making.

3.2.2 Measure Characterization

3.2.2.1 Measure Lists

The study's sector-level energy efficiency measure lists were informed by a range of sources including the MEMD, the Illinois and Indiana TRMs, current I&M Indiana program offerings, and commercially viable emerging technologies, among others. Measure list development was a collaborative effort in which GDS developed draft lists that were shared with I&M and stakeholders. The final measure lists ultimately included in the study reflected the informed comments and considerations from the parties that participated in the measure list review process.

In total, GDS analyzed 364 measure types for this study. Several measures were included with multiple permutations to account for different specific market segments, such as different building types, efficiency levels, and replacement options. In total, GDS developed 2,343 measure permutations for this study. Each permutation was screened for cost-effectiveness under the UCT cost test. The parameters for cost-effectiveness under the UCT are discussed in detail later in Section 3.2.5.

TABLE 3-2. NUMBER OF ELECTRIC MEASURES EVALUATED

	# of Measures	Total # of Measure Permutations
I&M Indiana		
Residential	180	1,047
Nonresidential	184	1,296
Total	364	2,343

3.2.2.2 Emerging and Innovative Technologies

GDS considered several specific emerging technologies as part of analyzing future potential. In the residential sector, these technologies include high performance windows, energy recovery ventilators, integrated HVAC controls, and several smart technologies. In the nonresidential sector, specific emerging technologies that were considered as part of the analysis include energy recovery ventilators, strategic energy management, building integrated energy management systems, and triple pane windows, among other things. While this is likely not an exhaustive list of possible emerging technologies over the next twenty years it does consider many of the known technologies that are available today but may not yet have widespread market acceptance and/or product availability.

In addition to these specific technologies, GDS acknowledges that there could be future opportunities for new technologies as equipment standards improve and market trends occur. To address this consideration, GDS also included a set of measures characterized in this study as "innovative" and are anticipated to potentially become commercially available during the study timeframe. These measures were phased into the study after 6 years, using the best available estimates of costs and savings to project long-term potential. While these may also be considered emerging technologies, the lack of commercial availability in the near-term necessitates a more long-term view of their potential, which is why GDS determined it was appropriate to include these measures but assume any savings would not accrue until 2032.

3.2.2.3 Assumptions & Sources

A significant amount of data is needed to estimate the electric savings potential for individual energy efficiency measures or programs across the residential and nonresidential customer sectors. GDS utilized data specific to I&M Indiana when it was available and current. GDS used the Indiana TRM, the Illinois TRM, the most recent I&M Indiana evaluation report findings (as well as I&M Indiana program planning documents), the Michigan Energy Measures Database ("MEMD"), for a large amount of the data requirements. Additional source documents included American Council for an Energy-Efficient Economy (ACEEE) research reports covering topics like emerging technologies.

Measure Savings: GDS relied on the Illinois TRM, the IN TRM, and the MEMD to inform calculations supporting estimates of annual measure savings as a percentage of base equipment usage. For custom measures and measures not included in the MEMD, GDS estimated savings from a variety of sources, including:

- Existing I&M evaluation report findings,
- Other regional/state TRMs
- Secondary sources such as the ACEEE, Department of Energy (DOE), EIA, ENERGY STAR©, and other technical potential studies

Measure Costs: Measure costs represent either incremental or full costs. These costs typically include the incremental cost of measure installation, when appropriate based on the measure definition. For purposes of this study, nominal measure costs held constant over time.

GDS obtained measure cost estimates primarily the Indiana TRM, the Illinois TRM and the MEMD. GDS also used the following supplementary data sources:

- Other regional/state TRMs
- Secondary sources such as the ACEEE, ENERGY STAR, and NREL

Costs and savings for new construction and replace on burnout measures were calculated as the incremental difference between the code minimum equipment and the energy efficiency measure. This approach was utilized because the consumer must select an efficiency level that is at least the code minimum equipment when purchasing new equipment. The incremental cost is calculated as the difference between the cost of high efficiency and standard efficiency (code compliant) equipment. However, for retrofit or direct install measures, the measure cost was the "full" cost of the measure, as the baseline scenario assumes the consumer would not make energy efficiency improvements in the absence of a program. In general, the savings for retrofit measures are calculated as the difference between the energy use of the removed equipment and the energy use of the new high efficiency equipment (until the removed equipment would have reached the end of its useful life).

Measure Life: Measure life represents the number of years that energy using equipment is expected to operate. GDS obtained measure life estimates from the Indiana TRM, the Illinois TRM and the MEMD: Other sources reviewed include:

- Other regional/state TRMs
- Manufacturer data
- Savings calculators and life-cycle cost analyses

All measure savings, costs, and useful life assumption sources are documented in the Appendices volume of this report.

3.2.2.4 Treatment of Codes & Standards

Although this analysis does not attempt to predict how energy codes and standards will change over time, the analysis does attempt to reflect the latest legislated improvements to federal codes and standards. Where possible, improvements to baseline equipment standards can typically be met with incremental improvements to efficient equipment standards.

3.2.2.5 Net to Gross

All estimates of technical, economic, and achievable potential, as well as measure level cost-effectiveness screening were conducted in terms of gross savings to reflect the absence of program design considerations in these phases of the analysis. The impacts of free-riders (participants who would have installed the high efficiency option in the absence of the program) and spillover customers (participants who install efficiency measures due to program activities, but never receive a program incentive) were considered in the development of subsequent inputs for integrated resource planning and preliminary program savings estimates.

3.2.3 Types of Potential

This section reviews the types of potential analyzed in this report, as well as some key methodological considerations in the development of technical, economic, and achievable potential.

The first two types of potential, technical and economic, provide a theoretical upper bound for energy savings from energy efficiency measures. Still, even the best-designed portfolio of programs is unlikely to capture 100% of the technical or economic potential. Therefore, achievable potential attempts to estimate what savings can be realistically achieved through market interventions, when it can be captured, and how much it would cost to do so. Figure 3-2 illustrates the types of energy efficiency potential considered in this analysis.

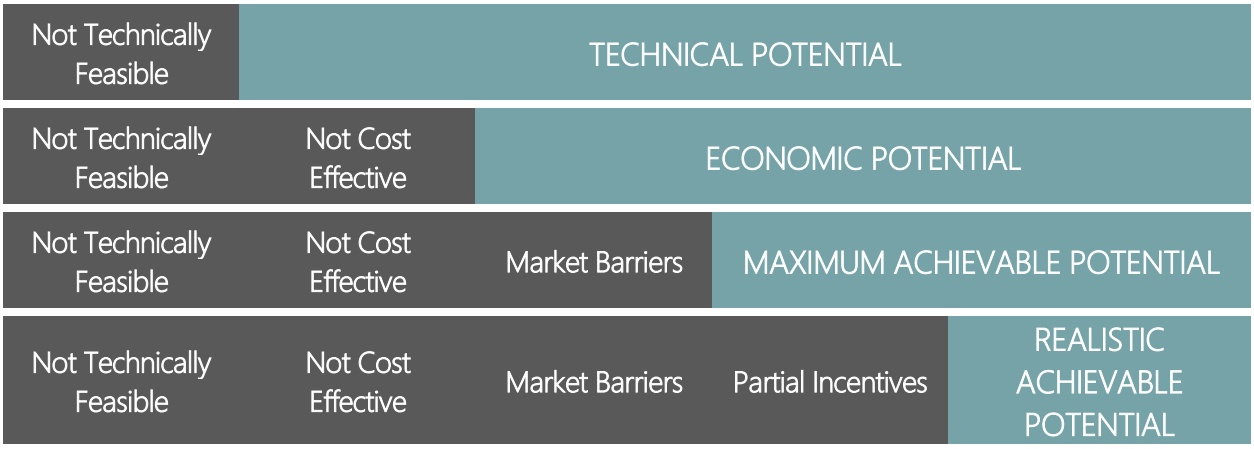


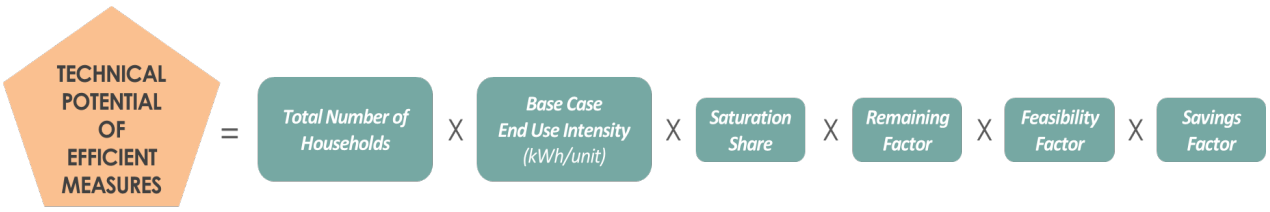
FIGURE 3-2 TYPE OF ENERGY EFFICIENCY POTENTIAL[4]

3.2.4 Technical Potential

Technical potential is the theoretical maximum amount of energy use that could be displaced by efficiency, disregarding all non-engineering constraints such as cost-effectiveness and the willingness of end users to adopt the efficiency measures. Technical potential is only constrained by factors such as technical feasibility and applicability of measures. Under technical potential, GDS assumed that 100% of new construction and market opportunity measures are adopted as those opportunities become available (e.g., as new buildings are constructed, they immediately adopt efficiency measures, or as existing measures reach the end of their useful life). For retrofit measures, implementation was assumed to be resource constrained and that it was not possible to install all retrofit measures all at once. Rather, retrofit opportunities were assumed to be replaced incrementally until 100% of stock was converted to the efficient measure over a period of no more than 20 years (study timeframe).

The core equation used in the residential sector energy efficiency technical potential analysis for each individual efficiency measure is shown in Equation 3-1 below. The C&I sector employs a similar analytical approach.

EQUATION 3-1 CORE EQUATION FOR RESIDENTIAL SECTOR TECHNICAL POTENTIAL



Where…

4 Reproduced from "Guide to Resource Planning with Energy Efficiency." November 2007. US Environmental Protection Agency (EPA). Figure 2-1. Modified to depict the additional levels of achievable and program potential included in this study.

Base Case Equipment End-Use Intensity = the electricity used per customer per year by each base-case technology in each market segment. In other words, the base case equipment end-use intensity is the consumption of the electrical energy using equipment that the efficient technology replaces or affects.

Saturation Share = the fraction of the end-use electrical energy that is applicable for the efficient technology in a given market segment. For example, for residential water heating, the saturation share would be the fraction of all residential electric customers that have electric water heating in their household.

Remaining Factor = the fraction of equipment that is not considered to already be energy efficient. To extend the example above, the fraction of electric water heaters that is not already energy efficient.

Feasibility Factor = (also functions as the applicability factor) the fraction of the applicable units that is technically feasible for conversion to the most efficient available technology from an engineering perspective (e.g., it may not be possible to install heat pump water heaters in all homes because of space limitations).

Savings Factor = the percentage reduction in electricity consumption resulting from the application of the efficient technology.

3.2.4.1 Competing Measures & Interactive Effects Adjustments

GDS prevents double-counting of savings, and accounts for competing measures and interactive savings effects, through three primary adjustment factors:

Baseline Saturation Adjustment. Competing measure shares are factored into the baseline saturation estimates. For example, nearly all homes can receive insulation, but the analysis creates multiple measure permutations to account for varying impacts of different heating equipment types and have applied baseline saturations to reflect proportions of households with each heating equipment type.

Applicability Factor Adjustment. Combined measures into measure groups, where total applicability factor across measures is set to 100%. In instances where there are two (or more) competing technologies for the same electrical end use, such as central air conditioners with different tiers of efficiency, an applicability factor aids in determining the proportion of the available population assigned to each measure. In general, measure applicability was assigned based on cost-effectiveness screening results. For example, if one competing measure had a TRC benefit-cost ratio of 2.0, and another competing measure had a UCT ratio of 1.0, the measure with the higher TRC score would receive 66% applicability, with the secondary competing measure receiving the remaining 34% applicability.

Interactive Savings Adjustment. As savings are introduced from select measures, the per-unit savings from other measures need to be adjusted (downward) to avoid over-counting. For example, the savings from installing high efficiency space heating equipment in the residential sector would impact the baseline consumption that remaining building shell efficiency measures could affect.

3.2.5 Economic Potential

Economic potential refers to the subset of the technical potential that is economically cost-effective (based on screening with the UCT) as compared to conventional supply-side energy resources.

3.2.5.1 Utility Cost Test & Incentive Levels

The economic potential assessment included a screen for cost-effectiveness using the UCT at the measure level. In the I&M territory, the UCT considers electric energy, capacity, and transmission & distribution (T&D) savings as benefits, and utility incentives and direct install equipment expenses as the cost. Consistent with application of

economic potential according to the National Action Plan for Energy Efficiency, the measure level economic screening does not consider non-incentive/measure delivery costs (e.g. admin, marketing, evaluation etc.) in determining cost-effectiveness.[5]

Apart from the low-income segment of the residential sector, all measures were required to have a UCT benefit-cost ratio greater than 1.0 to be included in economic potential and all subsequent estimates of energy efficiency potential. Low-income measures were not required to be cost-effective.

For both the calculation of the measure-level UCT, as well as the determination of RAP, historical incentive levels (as a % of incremental measure cost) were calculated for current measure offerings. GDS relied on the prior I&M DSM plan estimates and historical I&M Indiana evaluation reports files to map current measure offerings to their historical incentive levels.

- In the residential sector, incentives ranged from 10% to 100% and averaged 50%. If measures are not currently assigned to a program, the incentive level was generally set to 25%.
- In the non-residential sector, prescriptive incentives ranged from $0.047 to $0.106. per first-year kWh saved. Custom measures received incentives equal to $0.076 per first-year kWh saved.
- In the MAP scenario, incentives were increased up to 100% of the incremental measure cost.[6]

3.2.5.2 Avoided Costs

Avoided energy supply costs are used to assess the value of energy savings. Avoided cost values for electric energy, electric capacity, and avoided T&D were provided by I&M as part of an initial data request. Electric energy is based on an annual system marginal cost. For years outside of the avoided cost forecast timeframe, future year avoided costs are escalated by the rate of inflation.

I&M provided the GDS Team with monthly on and off-peak avoided energy costs. GDS used this data to create 8,760 avoided cost values for each forecast year. GDS then applied these avoided costs to the 8,760 savings from each measure based on assigned end-use load shapes[7] to determine the value of measures that save more energy during peak periods than those that might saving during off-peak periods. In addition, the avoided capacity and T&D avoided costs were applied to the estimated coincident peak demand savings for each measure.

3.2.6 Achievable Potential

Achievable potential is the amount of energy that can realistically be saved given various market barriers. Achievable potential considers real-world barriers to encouraging end users to adopt efficiency measures; the non-measure costs of delivering programs (for administration, marketing, analysis, and EM&V); and the capability of programs and administrators to boost program activity over time. Barriers include financial, customer awareness and WTP in programs, technical constraints, and other barriers the "program intervention" is modeled to overcome. Additional considerations include political and/or regulatory constraints. The potential study evaluated two achievable potential scenarios:

[5] National Action Plan for Energy Efficiency: Understanding Cost-Effectiveness of Energy Efficiency Programs. *Note: Non-incentive delivery costs are included in the assessment of achievable potential.*

[6] The GDS team lowered MAP incentives to less than 100% of measure incremental cost in some cases if 100% incentives would preclude the measure from being cost-effective. MAP incentives were lowered to either 75% or 50% of the incremental measure cost if either of those incentive levels would allow for a measure to remain cost-effective.

[7] End-use load shapes were derived from building energy simulation models created by housing type and building type, specific to the I&M Indiana service area.

- *MAP* estimates achievable potential on paying incentives equal to up to 100% of measure incremental costs and aggressive adoption rates.[8]
- *RAP* estimates achievable potential with I&M paying incentive levels (as a percentage of incremental measure costs) closely calibrated to historical levels but is not constrained by any previously determined spending levels.
- *Enhanced RAP* estimates achievable potential by adjusting incentive levels to more savings than in the RAP scenario. In some cases incentives were lowered to improve cost-effectiveness and in others, incentives were increased to boost adoption rates as long as this did not change measure-level cost-effectiveness screening.[9]

3.2.6.1 Market Adoption Rates

The GDS Team coordinated with I&M to assess whether any new primary market research would be collected as part of the Market Potential Study (MPS) refresh. The 2021 MPS analysis included online surveys with residential and nonresidential customers to collect limited building/equipment stock characteristics, as well as customer willingness-to-participate surveys to understand potential adoption rates at various incentive levels and across a variety of major building end-uses (i.e., lighting, hvac, shell, etc.). This data was analyzed and discussed in the 2021 MPS reports for I&M.

For the 2024 MPS, I&M opted to task the GDS Team with conducting additional survey research focused on the residential sector. The scope of work included collecting primary data through online surveys with AEP Indiana-Michigan market rate and income-qualified customers. The purpose of the data collection effort was to gather data on customers' awareness of incentives available through the Inflation Reduction Act (IRA), barriers to energy efficiency upgrades that go beyond cost, and willingness-to-purchase energy efficiency and DER projects with assistance from AEP and the IRA funds.

Table 3-3 provides the results of the willingness to participate research used in the analysis for applicable EE measures.[10] The table below shows summary level results by state, home type, and income type.

TABLE 3-3 SUMMARY RESULTS OF WTP RESEARCH

	Annual Incentive (% of incremental measure cost)				
	0%	30%	50%	80%	100%
Indiana					
Heat Pump (HVAC)	10%	23%	39%	45%	64%
Heat Pump (Water Heater)	16%	31%	40%	49%	66%
Insulation/Air Sealing	19%	29%	42%	52%	69%
Heat Pump Dryer (Appliances)	17%	32%	39%	51%	65%
Michigan					
Heat Pump (HVAC)	15%	27%	42%	54%	68%
Heat Pump (Water Heater)	18%	27%	37%	51%	66%
Insulation/Air Sealing	20%	32%	44%	53%	68%
Heat Pump Dryer (Appliances)	13%	31%	40%	54%	66%
Single Family					

[8] ibid.

[9] This only applies to the nonresidential sector and was done for the purpose of supporting cost-effective selection of nonresidential energy efficiency in the IRP. The residential sector was excluded from this scenario analysis, based on coordination between GDS, I&M and interested Stakeholders.

[10] The market research included additional willingness-to-participate research for a select few DER options that focused on storage and back-up capabilities. These were developed to provide I&M with market insights on these technologies but did not directly inform the adoption rates for solar DER potential analysis discussed in Chapter 5.

	Annual Incentive (% of incremental measure cost)				
	0%	30%	50%	80%	100%
Heat Pump (HVAC)	11%	24%	40%	47%	65%
Heat Pump (Water Heater)	16%	30%	40%	51%	67%
Insulation/Air Sealing	19%	30%	43%	52%	69%
Heat Pump Dryer (Appliances)	16%	32%	40%	52%	65%
Multifamily					
Heat Pump (HVAC)	13%	22%	34%	46%	57%
Heat Pump (Water Heater)	14%	26%	30%	32%	43%
Insulation/Air Sealing	24%	30%	37%	48%	58%
Heat Pump Dryer (Appliances)	21%	29%	33%	43%	62%
Market Rate (Non-IQ)					
Heat Pump (HVAC)	12%	26%	43%	48%	66%
Heat Pump (Water Heater)	18%	34%	43%	51%	67%
Insulation/Air Sealing	21%	33%	47%	56%	71%
Heat Pump Dryer (Appliances)	17%	34%	41%	53%	65%
Income Qualified					
Heat Pump (HVAC)	8%	18%	30%	44%	63%
Heat Pump (Water Heater)	11%	18%	28%	45%	61%
Insulation/Air Sealing	15%	22%	31%	42%	61%
Heat Pump Dryer (Appliances)	14%	27%	36%	48%	65%

The survey data also asked about the importance of an incentive timeframe and the impact of not receiving an incentive at point of sale, to better understand the potential impact of a receiving a tax credit in lieu of a point-of-sale rebate. The question specifically asked about the willingness to participate given an instant rebate at time of purchase compared to a tax credit 6 to 12 months after the initial purchase.

Overall respondents indicated they were less likely to purchase and install a measure if they were to receive a tax credit (after 6+ months) compared to a direct rebate. The average difference in the response carried a numerical value of 1.6 (out of 4). This difference was then used to calculate the percent reduction in likelihood to adopt due to the timeframe associated with waiting for a tax credit. Measures that were eligible for tax credits and an I&M rebate were then assigned an adoption rate that reflects both the utility rebate and the tax credit. The additional increase in the estimated adoption associated with the tax credit is demonstrated in Table 3-4 below.

TABLE 3-4 DEMONSTRATION OF TAX CREDIT FACTOR CALCULATION

Heat Pump Water Heater Example - Indiana	Annual Incentive (% of incremental measure cost)					Tax Credit Factor
	0%	30%	50%	80%	100%	
Heat Pump (Water Heater)	16%	31%	40%	49%	66%	60%
Original Adoption Rate w/ 50% incentive	40%					
Adjusted Adoption Rate with 50% incentive + Tax Credit covering the remaining 50%	56%	*= 40% + (66%-40%) * 60%*				

Table 3-5 below shows how the results of the WTP research and tax credit factors were used to model adoption rates in the residential sector, at an end use, income type, and housing type level for Indiana. Measures outside of

the Water Heating, Insulation, Major Appliances, and Heating Cooling end-uses in the table were assigned to one of these end-use level adoption rates.

TABLE 3-5 RESIDENTIAL LONG-TERM MARKET ADOPTION RATES AT DISCRETE INCENTIVE LEVELS

End Use	0% Incentive	25% Incentive	50% Incentive	75% Incentive	100% Incentive
Water Heating _SF-IN	17%	35%	44%	52%	69%
Water Heating _MF-IN	15%	30%	33%	32%	44%
Water Heating _SF-IN-IQ	9%	17%	28%	47%	63%
Water Heating _MF-IN-IQ	12%	19%	27%	38%	51%
Insulation _SF-IN	20%	31%	45%	55%	72%
Insulation _MF-IN	26%	32%	40%	51%	61%
Insulation _SF-IN-IQ	16%	23%	31%	43%	62%
Insulation _MF-IN-IQ	9%	18%	19%	26%	41%
Major Appliances _SF-IN	18%	34%	41%	53%	64%
Major Appliances _MF-IN	24%	31%	34%	43%	62%
Major Appliances _SF-IN-IQ	14%	26%	36%	49%	68%
Major Appliances _MF-IN-IQ	19%	28%	31%	37%	53%
Heating and Cooling_SF-IN	10%	26%	42%	45%	65%
Heating and Cooling_MF-IN	13%	23%	36%	45%	57%
Heating and Cooling_SF-IN-IQ	8%	16%	30%	45%	63%
Heating and Cooling_MF-IN-IQ	19%	25%	27%	35%	53%

Table 3-6 presents the long-term market adoption rates used in the nonresidential sector. Again, the adoption scores were primarily informed by the I&M Indiana-specific WTP research. GDS included a 20-year payback performance level to reflect reduced adoption rates for measures with extremely long payback performance levels. The 20-year payback performance was set to 2/3rd of the 10-year level.

TABLE 3-6 NONRESIDENTIAL LONG-TERM MARKET ADOPTION RATES AT DISCRETE PAYBACK INTERVALS

End-Use	20 Year Payback Period	10 Year Payback Period	5 Year Payback Period	3 Year Payback Period	1 Year Payback Period	0 Year Payback Period
Lighting	34%	51%	61%	71%	79%	84%
HVAC	24%	36%	46%	56%	67%	74%
Refrigeration	20%	30%	39%	51%	63%	71%
Water Heat	35%	55%	64%	73%	82%	86%
Other	30%	46%	56%	66%	75%	81%

In the maximum achievable potential scenario, incentives were assumed to represent 100% of the measure cost (0-year payback). GDS then estimated initial year adoption rates by reviewing the current saturation levels of efficient technologies and (if necessary) calibrating the estimates of 2026 annual potential to recent historical levels achieved

by I&M's current DSM portfolio. The calibration was only considered if recent historical savings outpaced the estimated near-term potential. GDS then assumed a non-linear ramp rate from the initial year market adoption rate to the various long-term market adoption rates for each specific end-use.

3.2.6.2 Non-Incentive Costs

Consistent with National Action Plan for Energy Efficiency (NAPEE) guidelines[11], utility non-incentive costs were included in the overall assessment of cost-effectiveness at the RAP scenario. Non-incentive costs were calibrated to recent I&M Indiana levels and set at: the levels shown in Table 3-7 below.

TABLE 3-7 NON-INCENTIVE COST ASSUMPTIONS – BY PROGRAM

Program	Cost per kWh
Home Energy Products	$0.124
Income Qualified Weatherproofing	$0.952
Home Appliance Recycling	$0.310
Residential Multi-Family Direct Install	$0.105
Home Energy Engagement	$0.013
Midstream	$0.154
Residential Online Energy Check-up	$0.155
Income Qualified HEAR[12]	$0.154
Work Prescriptive	$0.047
Work Custom	$0.076
Work Midstream	$0.097
Work Direct Install	$0.106
Work SEM	$0.020

3.3 RESIDENTIAL ENERGY EFFICIENCY POTENTIAL FINDINGS

Figure 3-3 provides the technical, economic, MAP and RAP results for the 5-year, 10-year, and 20-year timeframes. The cumulative annual 5-year technical potential is 17.6% of forecasted sales, and the economic potential is 14.6% of forecasted sales. The cumulative annual 5-year MAP is 4.5% and the RAP is 3.8%, as a percentage of forecasted sales. Over the duration of the study timeframe the technical and economic potential rise to 37% and 33% of forecasted sales, respectively. This indicates that a large portion of the technical potential is cost-effective. The MAP and RAP rise respectively to 16% and 13% of forecasted sales

[11] National Action Plan for Energy Efficiency (2007). Guide for Conducting Energy Efficiency Potential Studies. Prepared by Optimal Energy. This study notes that economic potential only considers the cost of efficiency measures themselves, ignoring programmatic costs. Conversely, achievable potential should consider the non-measures costs of delivering programs. Pg. 2-4.

[12] The Income Qualified HEAR program heading (formerly referred to as Home Electrification and Appliance Rebates associated with legislation passed by Congress in 2022 known as the Inflation Reduction Act) is associated with savings that are included in RAP but are largely removed from subsequent assumptions about what can be achieved through I&M programs because these savings are assumed to be tied to incentives associated with federal funds. 10% of IQ HEAR savings and costs are retained to account for the possibility that I&M IQW program will be able to accommodate a limited equipment retrofits despite the current per-home spending caps.

over the study timeframe. The gap between economic potential and MAP/RAP represents market barriers to prospective program participants, both financial and non-financial, to achieving the full amount of economic potential.

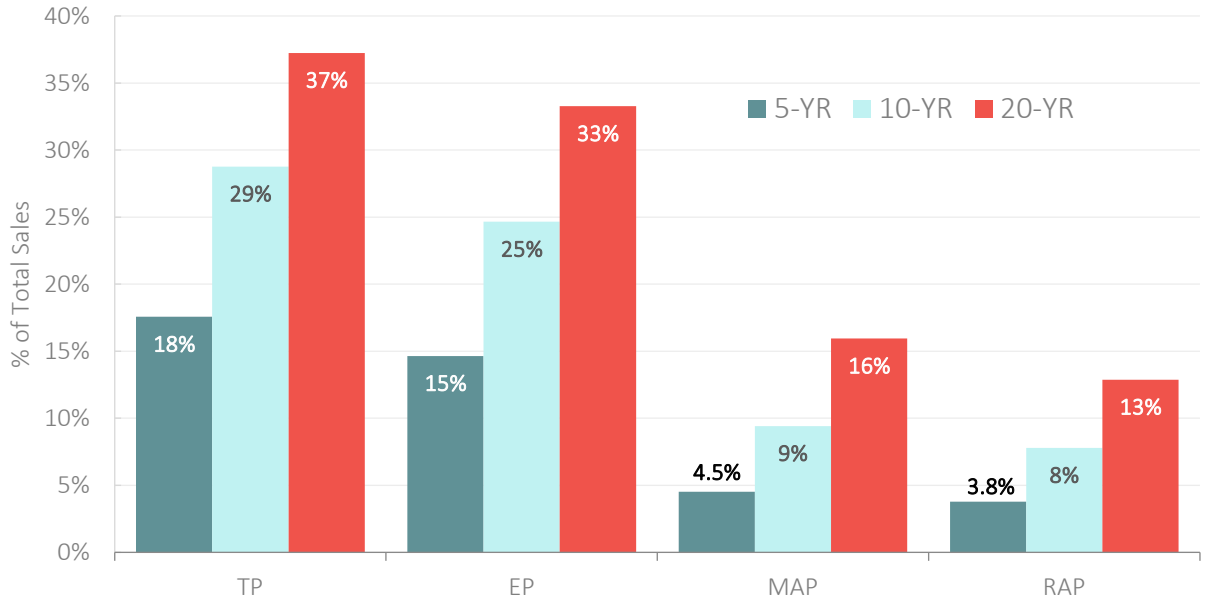


FIGURE 3-3: OVERVIEW OF RESIDENTIAL POTENTIAL

Table 3-8 provides additional details of the long-term residential potential, showing the cumulative annual MWh and MW associated with technical, economic and achievable potential. The 20-yr cumulative annual MAP and RAP are over 768,000 MWh and over 620,000, respectively, with additional 186 and 138 MW savings from energy efficiency in the MAP and RAP scenarios.

TABLE 3-8. LONG-TERM TECHNICAL, ECONOMIC, ACHIEABABLE POTENTIAL SAVINGS (MWH, % SAVINGS, MW)

	5-YR	10-YR	20-YR
Energy (MWh)			
Technical	826,370	1,364,962	1,794,427
Economic	688,924	1,169,361	1,602,719
MAP	212,204	446,732	768,106
RAP	177,931	369,464	620,404
Energy Savings (as % of Forecast)			
Technical	17.6%	28.8%	37.2%
Economic	14.6%	24.6%	33.3%
MAP	4.5%	9.4%	15.9%
RAP	3.8%	7.8%	12.9%
MW			
Technical	227	358	450
Economic	202	326	417
MAP	67	122	186

	5-YR	10-YR	20-YR
RAP	52	96	138

Table 3-9 provides additional details of the short-term residential potential, showing the incremental annual MWh and MW associated with technical, economic and achievable potential. The RAP rises from just over 36.000 MWh in 2026 to nearly 55,000 MWh by 2031, representing 0.8% up to 1.2% of sector-sales.

TABLE 3-9. SHORT-TERM TECHNICAL, ECONOMIC, ACHIEABABLE POTENTIAL SAVINGS (MWH, % SAVINGS, MW)

	2026	2027	2028	2029	2030	2031
Energy (MWh)						
Technical	223,618	219,755	216,929	214,572	208,261	206,014
Economic	183,325	180,981	179,313	177,781	172,323	170,926
MAP	42,260	46,708	51,630	55,378	59,855	63,287
RAP	36,136	39,912	44,263	47,792	51,805	54,783
Energy Savings (as % of Forecast)						
Technical	4.8%	4.7%	4.6%	4.6%	4.4%	4.4%
Economic	3.9%	3.9%	3.8%	3.8%	3.7%	3.6%
MAP	0.9%	1.0%	1.1%	1.2%	1.3%	1.3%
RAP	0.8%	0.9%	0.9%	1.0%	1.1%	1.2%
MW						
Technical	60	59	58	57	56	55
Economic	52	51	51	50	49	49
MAP	13	14	15	15	16	16
RAP	10	11	12	12	13	13

3.3.1 Technical/Economic Potential

Figure 3-4 provides additional annual savings data for the technical and economic potential. The technical potential starts off at nearly 224,000 MWh in 2026 and rises to almost 1.8 million MWh by 2045. The economic potential starts off at more than 183,000 MWh in 2026 and rises to more than 1.6 million MWh by 2045.

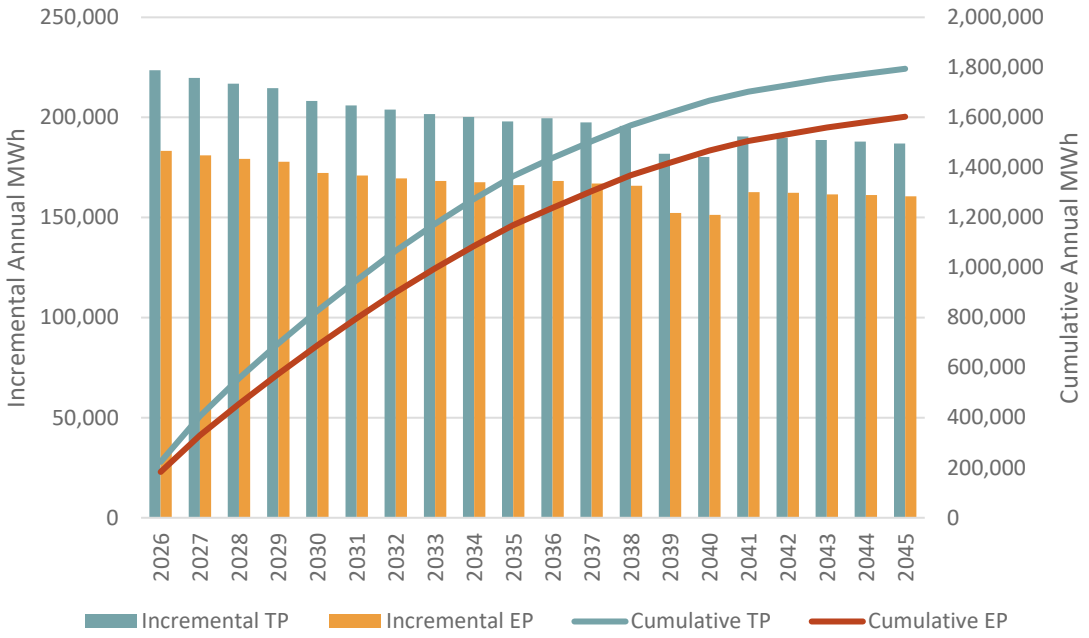


FIGURE 3-4: RESIDENTIAL TECHNICAL AND ECONOMIC POTENTIAL

3.3.2 Achievable Potential

Figure 3-5 provides the MAP and RAP across the 20-yr timeframe of the study. The green and red bars provide the respective incremental annual MAP and RAP in MWh per year energy savings. The green and orange lines provide the corresponding cumulative annual MAP and RAP as a percentage of forecasted annual sales. The MAP rises to 16% by 2042, and the RAP rises to 13%.

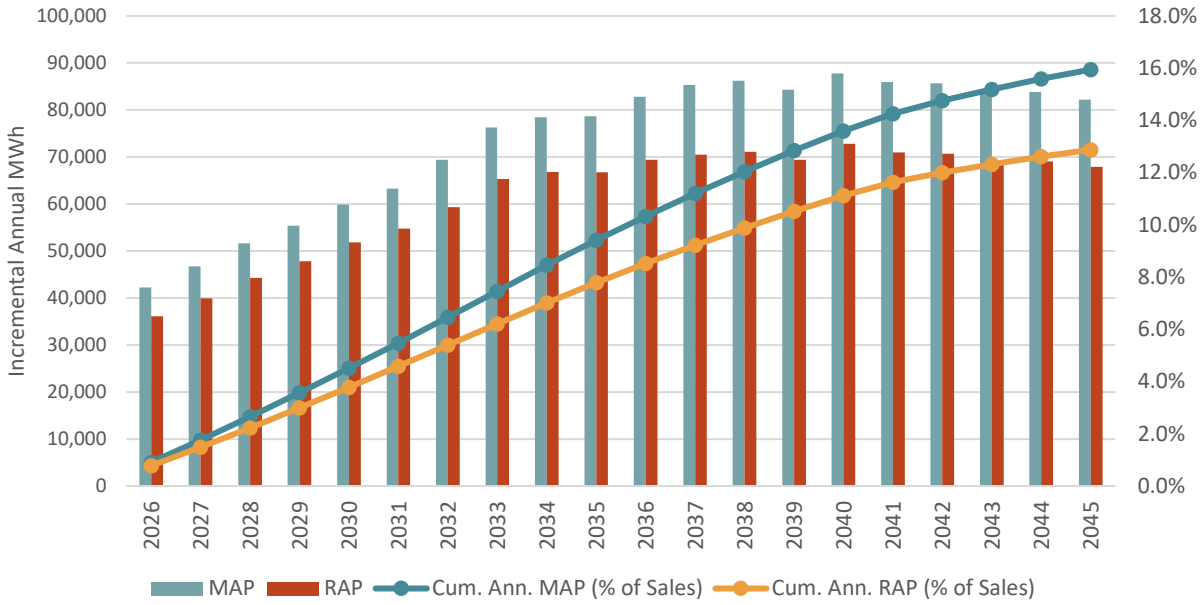


FIGURE 3-5: RESIDENTIAL MAXIMUM AND REALISTIC ACHIEVABLE POTENTIAL

Figure 3-6 provides a breakdown of the RAP potential in 2045 across end-uses and building type market segments. The end-use pie chart shows the savings potential from existing measures by end use, as well as among measures classified as emerging and innovative as described in Section 3.2 above. Among existing

measures, the leading end uses are HVAC Equipment at 23% and Water Heating at 20% of RAP. Emerging and innovative measures account for 26% of the long-term RAP. Among income and home type classifications, the single-family market rate housing segment represents 75% of the potential, with another 20 % from single-family low-income homes. The multifamily segment represents 4% of the potential across market rate and low-income customers. The new construction segment accounts for 1% of potential.

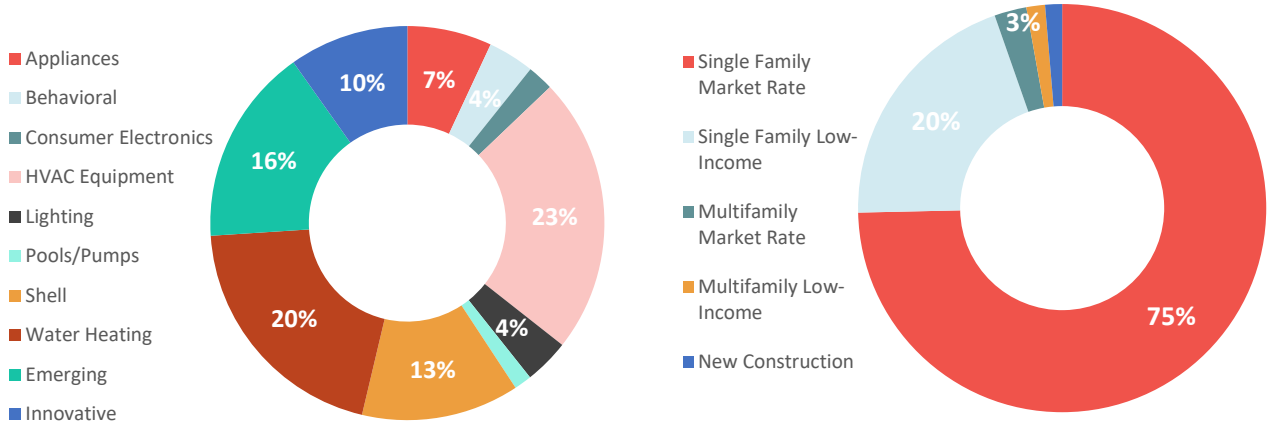


FIGURE 3-6: RESIDENTIAL POTENTIAL BY END-USE AND BUILDING/INCOME TYPE – RAP 2045[13]

Table 3-10 provides incremental annual energy savings by end use for MAP and RAP across the next six years. The data reflects the pie chart above, with HVAC and Water Heating measures leading the way. Other end-uses with significant savings potential in the near-term include Behavioral, Shell and emerging technology measures.

TABLE 3-10 RESIDENTIAL MAP & RAP POTENTIAL – BY END USE

End-Use	2026	2027	2028	2029	2030	2031
MAP						
Appliances	3,562	3,967	4,150	4,290	4,443	4,778
Behavioral	6,536	8,240	10,136	12,138	14,144	16,047
Consumer Electronics	3,748	3,006	2,357	1,816	1,384	1,002
Electric Vehicle Charging	1	1	2	3	5	6
HVAC Equipment	10,488	10,625	10,627	10,609	10,469	10,177
Lighting	2,037	2,188	2,937	2,865	3,504	3,421
Pools/Pumps	779	869	945	1,001	1,031	1,035
Shell	5,616	6,600	7,669	8,613	9,274	9,533
Water Heating	5,797	6,604	7,539	8,141	9,012	9,790
Emerging	3,697	4,608	5,268	5,902	6,589	7,499
RAP						
Appliances	2,964	3,223	3,351	3,449	3,549	3,750
Behavioral	6,536	8,240	10,136	12,138	14,144	16,047

[13] End uses or market segments less than 3% are not labeled.

End-Use	2026	2027	2028	2029	2030	2031
Consumer Electronics	3,719	2,982	2,337	1,799	1,370	995
Electric Vehicle Charging	1	1	2	3	4	6
HVAC Equipment	8,514	8,738	8,864	8,979	8,966	8,800
Lighting	1,591	1,691	2,284	2,222	2,726	2,639
Pools/Pumps	629	707	773	820	842	840
Shell	4,887	5,764	6,712	7,551	8,138	8,372
Water Heating	4,386	4,977	5,695	6,209	6,894	7,472
Emerging	2,911	3,587	4,110	4,622	5,172	5,863

Figure 3-7 shows the annual budget associated with the MAP and RAP scenarios in the residential sector. The MAP budgets increase from about $20 million to close to $40 million over the timeframe of the study. The RAP budgets increase from close to $13 million up to nearly $23 million, with about 60% of spending on incentives and the remaining 40% on non-incentive costs.

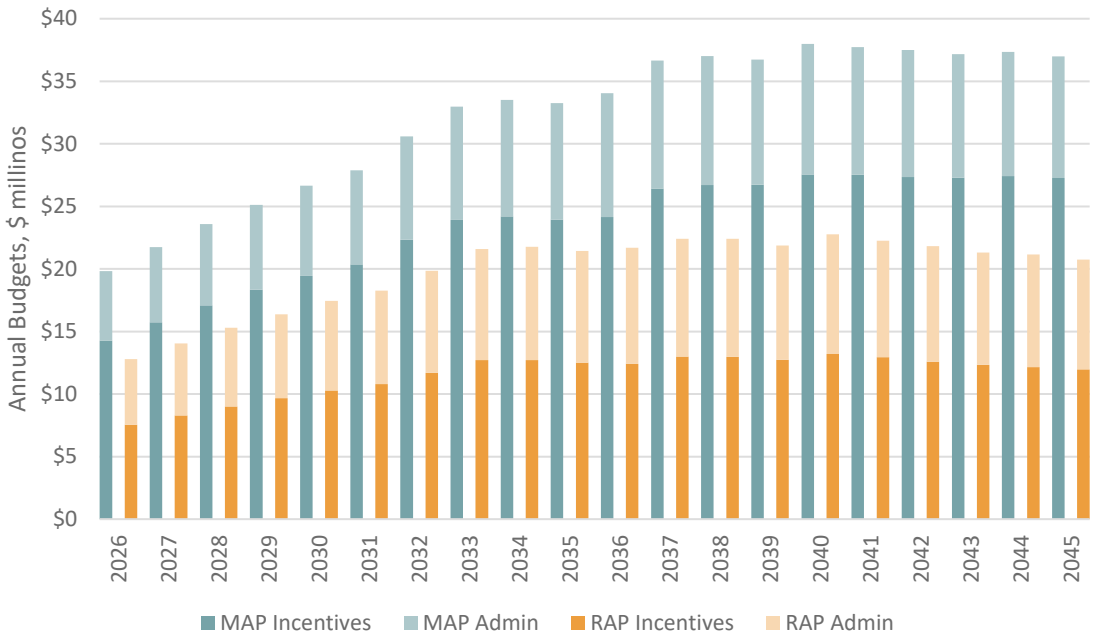


FIGURE 3-7: RESIDENTIAL ANNUAL BUDGETS IN THE MAP AND RAP SCENARIOS

Table 3-8 below shows the NPV benefits and costs associated with the MAP and RAP scenarios. The MAP scenario has $344 million of NPV benefits with a UCT ratio of 1.01. The RAP scenario has $274 million of NPV benefits with a UCT ratio of 1.40.

TABLE 3-11 RESIDENTIAL MAP & RAP POTENTIAL BENEFITS AND COSTS

Scenario	NPV Benefits	NPV Costs	UCT Ratio
MAP	$344,014,979	$339,395,207	1.01
RAP	$273,508,376	$195,711,398	1.40

3.4 NONRESIDENTIAL ENERGY EFFICIENCY POTENTIAL

Figure 3-8 provides the technical, economic, MAP and RAP results for the 5-year, 10-year, and 20-year timeframes. The cumulative annual 5-year technical potential is 10.1% of forecasted sales, and the economic potential is also 10.1% of forecasted sales. The cumulative annual 5-year MAP is 7.5% and the RAP is 5.6%, as a percentage of forecasted sales. Over the duration of the study timeframe the technical and economic potential each rise to 27% forecasted sales. This indicates that essentially all of the technical potential is cost-effective. The MAP and RAP rise respectively to 18% and 13% of forecasted sales over the study timeframe. The gap between economic potential and MAP/RAP represents market barriers to prospective program participants, both financial and non-financial, to achieving the full amount of economic potential.

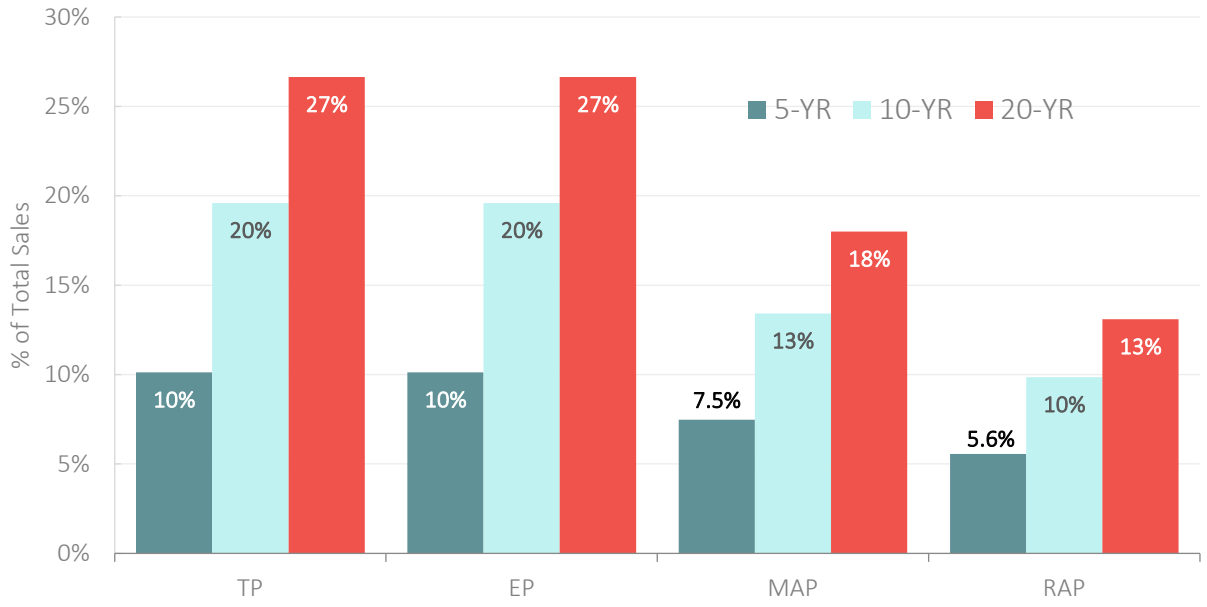


FIGURE 3-8: OVERVIEW OF NONRESIDENTIAL POTENTIAL

Table 3-12 provides additional details of the long-term nonresidential potential, showing the cumulative annual MWh and MW associated with technical, economic and achievable potential. The 20-yr cumulative annual MAP and RAP are over 1.5 million MWh and over 1.1 million MWh, respectively, with additional 300 and 204 MW savings from energy efficiency in the MAP and RAP scenarios.

TABLE 3-12. LONG-TERM TECHNICAL, ECONOMIC, ACHIEABLE POTENTIAL SAVINGS (MWH, % SAVINGS, MW)

	5-YR	10-YR	20-YR
Energy (MWh)			
Technical	823,857	1,639,758	2,320,222
Economic	824,138	1,640,129	2,320,193
MAP	608,267	1,122,828	1,567,656
RAP	452,481	824,348	1,140,212
Energy Savings (as % of Forecast)			
Technical	10.1%	19.6%	26.6%
Economic	10.1%	19.6%	26.6%

	5-YR	10-YR	20-YR
MAP	7.5%	13.4%	18.0%
RAP	5.6%	9.9%	13.1%
MW			
Technical	107	263	430
Economic	107	263	429
MAP	80	202	300
RAP	59	138	204

Table 3-13 provides additional details of the short-term nonresidential potential, showing the incremental annual MWh and MW associated with technical, economic and achievable potential. The RAP rises from close to 92,000 MWh in 2026 to more than 96,000 MWh by 2031, representing between 1.1% and 1.2% of sector-sales.

TABLE 3-13. SHORT-TERM TECHNICAL, ECONOMIC, ACHIEABABLE POTENTIAL SAVINGS (MWH, % SAVINGS, MW)

	2026	2027	2028	2029	2030	2031
Energy (MWh)						
Technical	150,589	162,894	169,826	186,577	187,098	188,835
Economic	150,631	162,949	169,888	186,641	187,157	188,866
MAP	123,182	126,434	125,415	136,864	131,130	126,644
RAP	91,774	94,200	93,389	100,624	96,410	92,619
Energy Savings (as % of Forecast)						
Technical	1.9%	2.0%	2.1%	2.3%	2.3%	2.3%
Economic	1.9%	2.0%	2.1%	2.3%	2.3%	2.3%
MAP	1.6%	1.6%	1.6%	1.7%	1.6%	1.5%
RAP	1.2%	1.2%	1.2%	1.2%	1.2%	1.1%
MW						
Technical	20	21	22	24	24	24
Economic	20	21	22	24	24	24
MAP	16	17	17	18	17	16
RAP	12	12	12	13	12	12

3.4.1 Technical/Economic Potential

Figure 3-9 provides additional annual savings data for the technical and economic potential. The incremental annual technical potential starts off at more than 150,000 MWh in 2026 and rises to almost 260,000 million MWh by 2041. The economic potential is nearly identical to the technical potential.

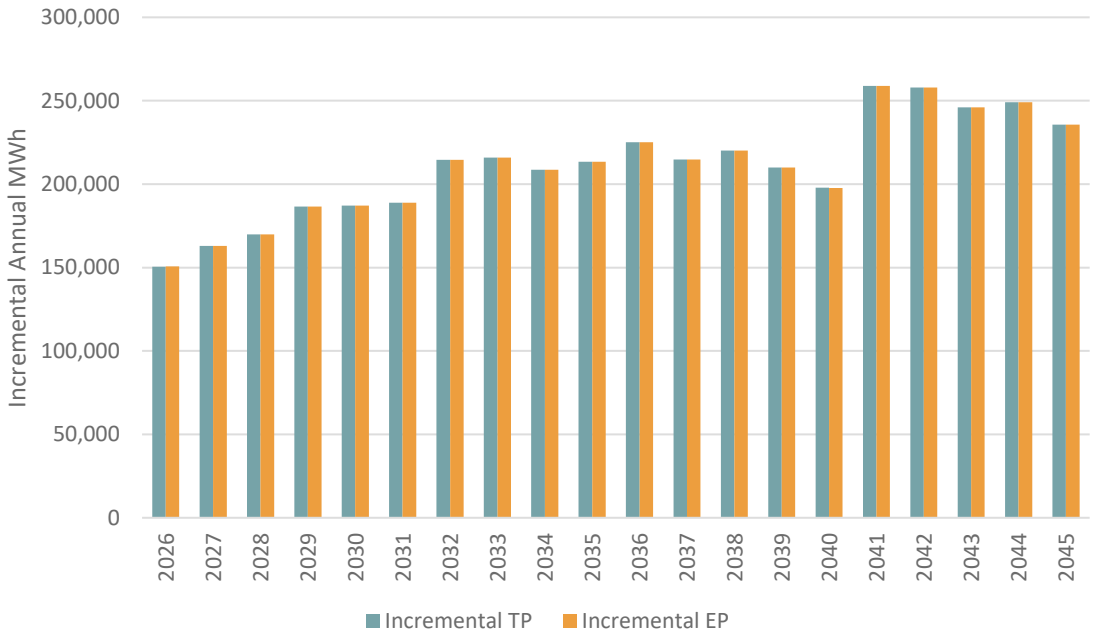


FIGURE 3-9: NONRESIDENTIAL TECHNICAL AND ECONOMIC POTENTIAL

3.4.2 Achievable Potential

Figure 3-10 provides the MAP and RAP across the 20-yr timeframe of the study. The green and red bars provide the respective incremental annual MAP and RAP in MWh per year energy savings. The green and orange lines provide the corresponding cumulative annual MAP and RAP as a percentage of forecasted annual sales. The MAP rises to 18% by 2042, and the RAP rises to 13%.

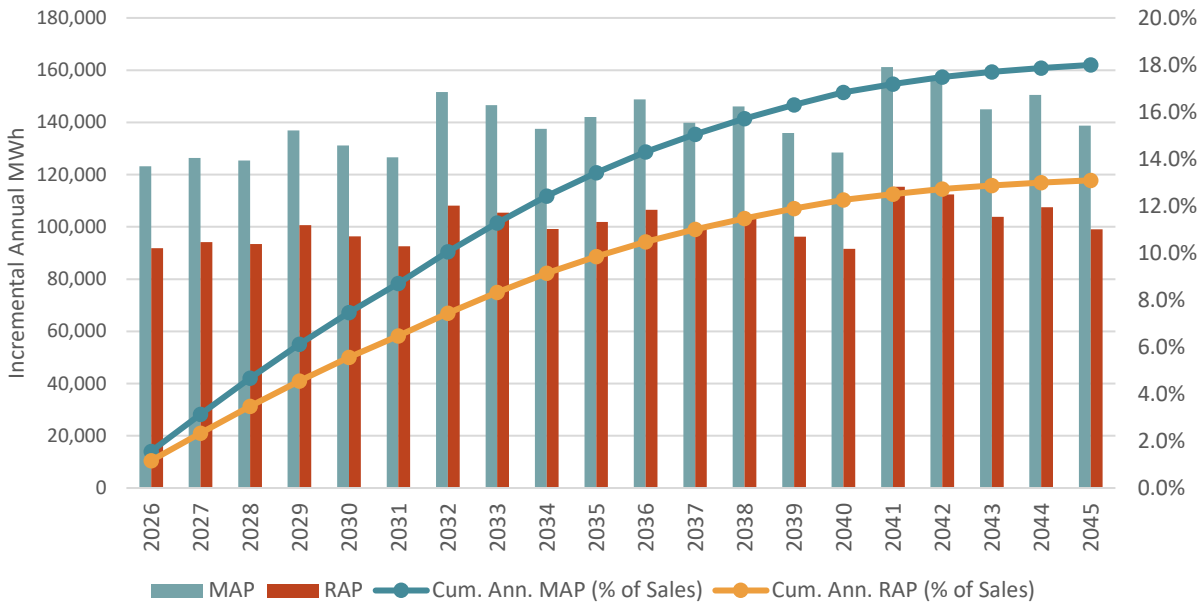


FIGURE 3-10: NONRESIDENTIAL MAXIMUM AND REALISTIC ACHIEVABLE POTENTIAL

Figure 3-11 provides a breakdown of the RAP potential in 2045 across end-uses and building types. The end-use pie chart shows the savings potential from existing measures by end use, as well as among measures classified as emerging and innovative as described in Section 3.2 above. Among existing

measures, the leading end uses are Lighting (22%), HVAC (11%), and Motors (11%). Emerging and innovative measures account for 17% of the long-term RAP. Among building types, industrial buildings represents 31% of the potential, with another 21% Offices. Education, Health, and Retail buildings each contributed 7% or more of the potential.

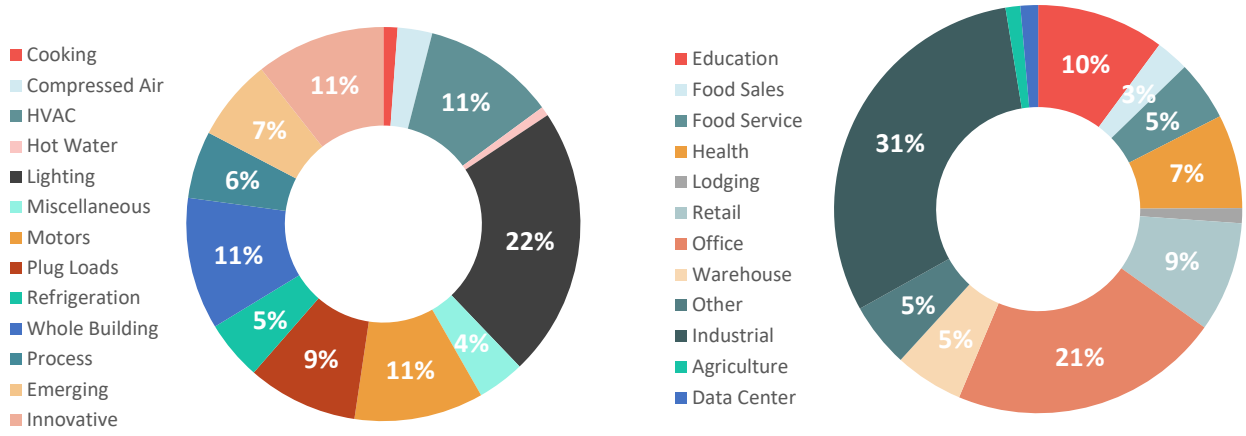


FIGURE 3-11: NONRESIDENTIAL POTENTIAL BY END-USE AND BUILDING TYPE – RAP 2045

Table 3-14 provides incremental annual energy savings by end use for MAP and RAP across the next six years. The data reflects the pie chart above, with Lighting and HVAC leading the way. Other end-uses with significant savings potential in the near-term include Whole Building and Refrigeration measures.

TABLE 3-14 NONRESIDENTIAL MAP & RAP POTENTIAL – BY END USE

End-Use	2026	2027	2028	2029	2030	2031
MAP						
Cooking	785	862	931	990	1,038	1,078
Compressed Air	4,416	4,622	4,642	7,540	7,292	7,135
HVAC	18,058	17,625	16,768	17,621	16,347	14,380
Hot Water	451	401	376	241	292	541
Lighting	40,913	39,506	36,872	33,489	29,624	25,426
Miscellaneous	4,897	5,556	6,114	6,503	6,660	6,672
Motors	9,718	10,858	11,685	15,468	15,811	15,719
Plug Loads	8,664	9,935	10,891	11,383	11,341	10,802
Refrigeration	10,398	10,078	9,489	8,087	7,914	10,030
Whole Building	14,059	15,120	14,596	19,591	17,556	16,704
Process	6,653	7,338	7,820	9,967	10,162	10,119
Emerging	4,169	4,533	5,231	5,984	7,093	8,039
RAP						
Cooking	678	743	801	850	891	924
Compressed Air	3,125	3,238	3,209	5,461	5,238	5,046
HVAC	12,264	11,933	11,351	11,861	11,029	9,572

End-Use	2026	2027	2028	2029	2030	2031
Hot Water	422	375	351	223	270	505
Lighting	34,672	33,621	31,517	28,744	25,551	22,069
Miscellaneous	2,861	3,260	3,603	3,848	3,953	4,009
Motors	6,268	7,007	7,544	10,054	10,286	10,233
Plug Loads	7,946	9,112	9,987	10,434	10,387	9,879
Refrigeration	7,608	7,372	6,973	5,879	5,985	7,299
Whole Building	9,475	10,423	10,139	13,464	12,105	11,712
Process	3,726	4,119	4,395	5,776	5,895	5,865
Emerging	2,729	2,999	3,517	4,030	4,819	5,505

Figure 3-12 shows the annual budget associated with the MAP and RAP scenarios in the nonresidential sector. The MAP budgets increase from about $35 million to more than $40 million over the timeframe of the study. The RAP budgets increase from close to $12 million up to more than $14 million, with about 50% of spending on incentives and the remaining 50% on non-incentive costs.

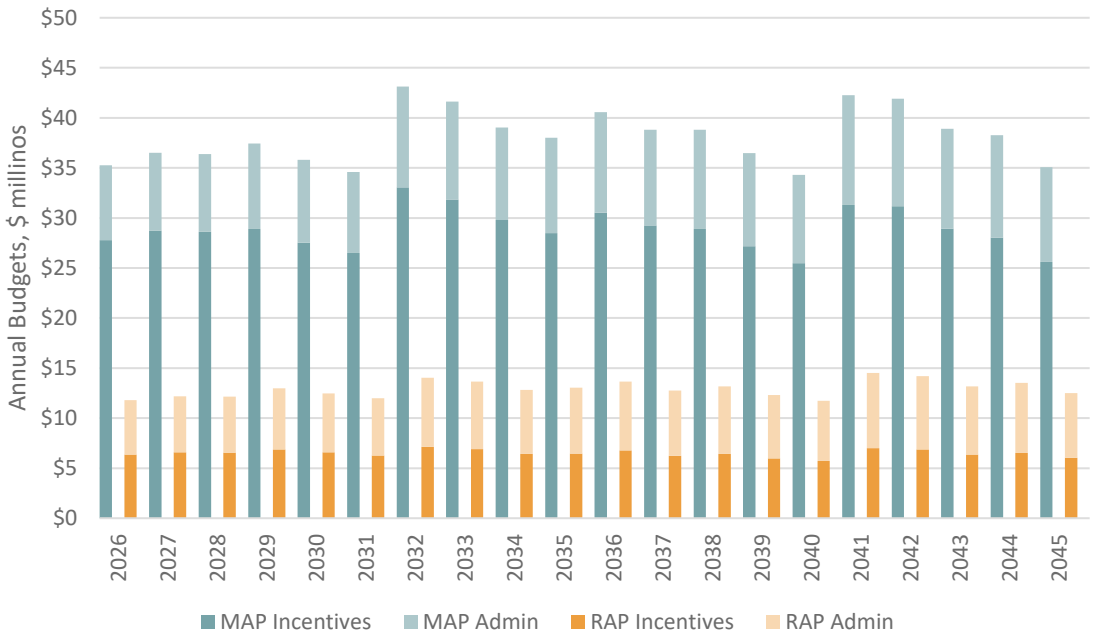


FIGURE 3-12: NONRESIDENTIAL ANNUAL BUDGETS IN THE MAP AND RAP SCENARIOS

Table 3-15 below shows the NPV benefits and costs associated with the MAP and RAP scenarios. The MAP scenario has $344 million of NPV benefits with a UCT ratio of 1.01. The RAP scenario has $274 million of NPV benefits with a UCT ratio of 1.40.

TABLE 3-15 NONRESIDENTIAL MAP & RAP POTENTIAL BENEFITS AND COSTS

Scenario	NPV Benefits	NPV Costs	UCT Ratio
MAP	$581,719,638	$424,729,066	1.37
RAP	$417,539,724	$142,610,805	2.93

3.4.2.1 Enhanced RAP in the Nonresidential Sector

As noted in Chapter 3, the nonresidential sector included a third scenario called Enhanced RAP. The table below shows the savings and costs of the Enhanced RAP scenario, with a comparison to the RAP scenario also provided. The Enhanced RAP yielded savings 5% higher than the RAP scenario in the near-term (2026-2028) with a total cost per first year kWh of $177/MWh compared to $129 in the RAP scenario over that timeframe. The results of the Enhanced RAP scenario were ultimately used in developing subsequent energy efficiency inputs for the nonresidential sector into the IRP models.

TABLE 3-16 NONRESIDENTIAL RAP POTENTIAL VS ENHANCED RAP – SAVINGS AND COSTS

End-Use	Enhanced RAP Savings	Enhanced RAP Budget	RAP Savings	RAP Budget
MAP				
2026	96,340	$16,939,863	91,774	$11,811,272
2027	98,742	$17,527,995	94,200	$12,190,489
2028	97,770	$17,510,180	93,389	$12,163,525
2029	104,770	$18,062,933	100,624	$12,973,378
2030	100,272	$17,376,278	96,410	$12,476,552
2031	96,097	$16,688,552	92,619	$11,998,209
2032	111,801	$19,456,790	108,181	$14,047,186
2033	108,920	$18,931,224	105,480	$13,646,488
2034	102,368	$17,859,993	99,123	$12,826,284
2035	104,633	$17,503,094	101,828	$13,029,937
2036	109,337	$18,310,800	106,578	$13,640,513
2037	102,507	$17,467,180	99,492	$12,749,039
2038	106,723	$17,575,317	103,780	$13,162,362
2039	99,065	$16,450,767	96,254	$12,292,972
2040	94,242	$15,654,272	91,588	$11,723,489
2041	118,747	$19,570,318	115,356	$14,514,333
2042	115,947	$19,384,425	112,443	$14,210,363
2043	107,180	$18,083,613	103,888	$13,172,427
2044	110,596	$17,977,258	107,460	$13,522,669
2045	101,949	$16,617,757	99,036	$12,505,671

3.5 PROGRAM-LEVEL POTENTIAL

The tables below provide annual savings and budgets by program in the near-term (2026-2031). While GDS aligned the measures in the study with current and prospective I&M Indiana offerings, the magnitude of savings from future I&M DSM Plans will have to consider the results of the IRP and how much energy efficiency is ultimately selected, and whether alternative delivery strategies could lead to updated savings and/or costs. Therefore, the reader is cautioned to review the results in these tables as preliminary and

illustrative of the relative magnitude of savings and costs across program types and sectors as identified in the MPS.

Table 3-17 provides the annual savings by program within each sector. In the residential sector, the four leading programs are the Home Energy Products program, the Home Energy Engagement (behavioral) program, the Midstream Program, and the Residential Online Energy Check-up program. In the nonresidential sector, the Work Prescriptive and Work Custom programs continue to be the dominant source of savings.

TABLE 3-17. ESTIMATED SAVINGS BY PROGRAM

Sector/Program	2026	2027	2028	2029	2030	2031
Residential						
Home Energy Products	18,086	19,183	20,404	21,638	22,732	23,445
Income Qualified Weatherproofing	640	654	666	677	687	687
Home Appliance Recycling	379	569	632	677	746	933
Residential Multi-Family Direct Install	585	491	467	375	359	276
Home Energy Engagement	6,536	8,240	10,136	12,138	14,144	16,047
Midstream	4,673	5,056	5,239	5,419	5,518	5,707
Residential Online Energy Check-up	4,302	4,653	5,534	5,575	6,235	6,224
Income Qualified HEAR[14]	936	1,066	1,185	1,292	1,385	1,465
Nonresidential (based on Enhanced RAP)						
Work Prescriptive	57,237	57,948	56,558	54,143	50,880	47,386
Work Custom	28,257	30,130	31,045	37,844	37,378	37,977
Work Midstream	3,604	3,203	2,871	2,616	2,441	1,875
Work Direct Install	3,888	4,016	3,974	3,794	3,511	3,173
Work SEM	3,355	3,445	3,323	6,373	6,062	5,685

Table 3-18 provides the annual savings by program within each sector. In the residential sector, the four leading programs are the Home Energy Products program, the Home Energy Engagement (behavioral) program, the Midstream Program, and the Residential Online Energy Check-up program. In the nonresidential sector, the Work Prescriptive and Work Custom programs continue to be the dominant source of savings.

TABLE 3-18. ESTIMATED COSTS BY PROGRAM

Sector/Program	2026	2027	2028	2029	2030	2031
Residential						
Home Energy Products	$7,706,405	$8,517,631	$9,403,518	$10,286,919	$11,074,478	$11,652,159

[14] Savings and costs allocated here do not represent what is assumed to be achieved through I&M programs because these savings are assumed to be tied to incentives associated with federal funds. 10% of IQ HEAR savings and costs are retained to account for the possibility that I&M IQW program will be able to accommodate a limited equipment retrofits despite the current per-home spending caps.

Sector/Program	2026	2027	2028	2029	2030	2031
Income Qualified Weatherproofing	$1,008,100	$1,022,542	$1,036,039	$1,048,265	$1,059,092	$1,050,288
Home Appliance Recycling	$143,786	$215,679	$239,643	$256,761	$282,726	$353,856
Residential Multi-Family Direct Install	$144,166	$122,340	$109,446	$89,441	$78,399	$62,915
Home Energy Engagement	$84,964	$107,124	$131,764	$157,800	$183,870	$208,607
Midstream	$1,749,006	$1,851,542	$1,850,646	$1,851,444	$1,835,298	$1,891,624
Residential Online Energy Check-up	$1,035,493	$1,152,461	$1,355,291	$1,403,219	$1,551,026	$1,581,396
Income Qualified HEAR[15]	$918,277	$1,048,260	$1,169,735	$1,279,768	$1,377,204	$1,462,108
Nonresidential						
Work Prescriptive	$9,720,924	$10,000,726	$9,875,339	$9,435,690	$8,908,388	$8,372,871
Work Custom	$5,023,171	$5,387,686	$5,590,009	$6,472,321	$6,445,144	$6,550,785
Work Midstream	$948,977	$835,831	$740,188	$664,515	$609,260	$448,303
Work Direct Install	$1,014,975	$1,062,514	$1,069,778	$1,042,422	$985,038	$907,311
Work SEM	$231,816	$241,238	$234,865	$447,985	$428,447	$409,280

[15] Savings and costs allocated here do not represent what is assumed to be achieved through I&M programs because these savings are assumed to be tied to incentives associated with federal funds. 10% of IQ HEAR savings and costs are retained to account for the possibility that I&M IQW program will be able to accommodate a limited equipment retrofits despite the current per-home spending caps.

4 DEMAND RESPONSE POTENTIAL ANALYSIS AND RESULTS

4.1 ANALYSIS APPROACH

This section provides an overview of the demand response potential methodology. Summary results of the demand response analysis are provided in Section 4.2.

4.1.1 Definition of Demand Response

According to the Federal Energy Regulatory Commission (FERC), demand response is defined as changes in electric usage by demand-side resources from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.

PJM defines a demand response program as providing end-use customers with the ability to manage their electricity use in response to conditions in the wholesale market. In short, resources must be dispatchable and measurable. Demand response rate options such as TOU rates do not meet these requirements. However, these rates can provide value for I&M by lowering their peak demand requirements.

This study uses the broader FERC definition of demand response so that all potential DR, including rate options, are identified. I&M's integrated resource planning team will analyze and adjust as necessary the identified DR potential for what can be counted in the PJM market and/or how DR potential will be used to construct alternative resource plans.

4.1.2 Demand Response Program Options

Table 4-1 provides a brief description of the demand response (DR) program options that were considered as part of the base analysis and identifies the eligible customer segment for each demand response program to be considered in this study. The list of DR options was determined based on a review of I&M's current and/or planned offerings, offerings of other peer utilities, and market research into emerging DR technologies. The base case analysis includes direct load control (DLC), rate design, and aggregator options.

TABLE 4-1 DEMAND RESPONSE BASE CASE PROGRAM OPTIONS AND ELIGIBLE MARKETS

DR Program Option	Program Description	Eligible Markets
Central AC DLC (Existing Home AC Program)	The compressor of the air conditioner is remotely shut off (cycled) by the system operator for periods that may range from 7 ½ to 15 minutes during every 30-minute period (i.e., 25%-50% duty cycle).	Residential Income-Qualified Customers with Central AC
Connected Thermostat (Existing Home Energy Management – Smart Thermostat Program)	The system operator can remotely raise the AC's thermostat set point during peak load conditions, lowering AC and/or heating load.	Residential and C&I Customers with Central AC and Wifi
Smart Water Heater	The system operator can remotely change the water heater's set point or shut off the water heater during peak load conditions.	Residential and C&I Customers with electric WH

DR Program Option	Program Description	Eligible Markets
DHW DLC (Existing Water Heater and Small Business DLC Programs)	The water heater is remotely shut off by the system operator for periods normally ranging from 2 to 8 hours.	Residential Income-Qualified and C&I Customers with electric WH
Room AC DLC	The compressor of the air conditioner is remotely shut off (cycled) by the system operator for periods that may range from 7 ½ to 15 minutes during every 30-minute period (i.e., 25%-50% duty cycle)	Residential Customers with Room AC
Smart Appliance	Direct utility control of smart appliances, such as ovens, dishwashers, washers, and dryers.	Residential Customers with Smart Appliances
Electric Vehicle Charging Control	Direct utility control of electric vehicle charging stations.	Residential and C&I Customers with EVs
DLC Lighting	A portion of the lighting load is remotely shut off by the system operator for periods normally ranging from 2 to 4 hours.	C&I Customers
Connected Energy Management System	The system operator can remotely shut off or setback a portion of a building's loads controlled through the connected energy management system.	C&I Customers
Thermal Storage	The use of a cold storage medium such as ice, chilled water, or other liquids. Off-peak energy is used to produce chilled water or ice for use in cooling during peak hours. The cool storage process is limited to off-peak periods.	Residential and C&I Customers
Battery Storage	The system operator remotely calls for energy stored in batteries to be discharged to the grid during peak conditions.	Single Family Residential and C&I Customers
Behavioral (Existing iControl Program)	The system operator uses electronic messaging, like text messaging or email, to alert participating customers to an upcoming peak event. Customers receive incentives for reducing their usage during the peak window but are not penalized for lack of participation.	Residential Customers
Electric Vehicle Off-Peak Charging Rate	Special rate service for electric vehicles that charge off-peak.	Residential and C&I Customers with EVs
Time-of-use (TOU) Rate	A retail rate with different prices for usage during different blocks of time. Daily pricing blocks could include on-peak, mid-peak, and off-peak periods. Pricing is pre-defined, and once established, does not vary with actual cost conditions.	Residential and C&I Customers
Time-of-use (TOU) Rate with Enabling Technology	A retail rate with different prices for usage during different blocks of time. Daily pricing blocks could include on-peak, mid-peak, and off-peak periods. Pricing is pre-defined, and once established, does not vary with actual cost conditions. Participants are required to have enabling technology (assumed to be a smart thermostat) to help more consistently control the load during peak hours.	Residential and C&I Customers with Central AC and Wifi
Critical peak pricing (CPP) Rate	A retail rate in which an extra-high price for electricity is provided during a limited number of critical periods of the year. Market-based prices are typically provided on a day-ahead basis, or an hour ahead basis.	Residential and C&I Customers

DR Program Option	Program Description	Eligible Markets
Critical peak pricing (CPP) Rate with Enabling Technology	A retail rate in which an extra-high price for electricity is provided during a limited number of critical periods of the year. Market-based prices are typically provided on a day-ahead basis, or an hour ahead basis. Participants are required to have enabling technology (assumed to be a smart thermostat) to help more consistently control the load during peak hours.	Residential and C&I Customers with Central AC and Wifi
Peak Time Rebates (PTR) Rate	A program where customers are rewarded if they reduce electricity consumption during peak times with monetary rebates.	Residential and C&I Customers
Capacity Bidding Programs (Large C&I Aggregator)	CBP is a flexible bidding program offering qualified businesses payments for agreeing to reduce when a CBP event is called. Businesses make monthly nominations and receive capacity payments based on the amount of capacity reduction nominated each month, plus energy payments based on your actual kilowatt-hour (kWh) energy reduction when an event is called. Penalties occur if load nominations are not met.	C&I Customers
Demand Bidding Programs (Small C&I Aggregator)	DBP is a year-round, flexible, Internet-based bidding program that offers business customers credits for voluntarily reducing power when a DBP event is called.	C&I Customers

Double-counting savings from demand response programs that affect the same end uses is a common issue that must be addressed when calculating the demand response savings potential. For example, a direct load control (DLC) program of air conditioning and a rate program both assume load reduction of the customers' air conditioners. For this reason, it is typically assumed that customers cannot participate in programs that affect the same end uses.

4.1.3 Demand Response Potential Assessment Approach Overview

The analysis of DR, where possible, closely follows the approach outlined for energy efficiency. The framework for assessing the cost-effectiveness of demand response programs is based on A Framework for Evaluating the Cost-Effectiveness of Demand Response, prepared for the National Forum on the National Action Plan (NAPA) on Demand Response. Additionally, the GDS Team reviewed the May 2017 National Standard Practice Manual published by the National Efficiency Screening Project. The GDS Team utilized this guide to define avoided ancillary services and energy and/or capacity price suppression benefits.

The demand response program potential for I&M was analyzed using a spreadsheet-based tool incorporating segment forecasts, program performance and economic definitions, and measure applicability estimates. The DR model determines the estimated savings for each demand response program by performing a review of all benefits and cost associated with each program. The GDS Team developed the model such that the value of future programs could be determined and will help facilitate demand response program planning strategies. The model contains approximately 50 required inputs for each program including: expected life, coincident peak ("CP") kW load reductions, proposed rebate levels, program related expenses such as vendor service fees, marketing and evaluation cost and on-going O&M expenses.

The UCT Test was used to determine the cost-effectiveness of each demand response program. Benefits are based on avoided generation capacity, energy (including load shifting) and T&D infrastructure costs. Costs include incentive costs, increased supply costs, fixed program capital costs (such as the cost of a central controller), program administrative, marketing and evaluation costs.

The demand response analysis includes estimates of technical, economic, achievable, and program potential. Achievable potential is broken into maximum and realistic potential in this study:

MAP represents an estimate of the maximum cost-effective demand response potential that can be achieved over the study period. For this study, this will be defined as customer participation in demand response program options that reflect a "best practice" estimate of what could eventually be achieved. MAP assumes no barriers to effective delivery of programs.

RAP represents an estimate of the amount of demand response potential that can be realistically achieved over the study period. For this study, this will be defined as achieving customer participation in demand response program options that reflect a realistic estimate of what could eventually be achieved assuming typical or "average" industry experience. RAP is a discounted MAP, by considering program barriers that limit participation, therefore reducing savings that could be achieved. Both MAP and RAP include the impact of energy efficiency gains realized in the Energy Efficiency Potential study. These gains account for peak demand reductions achieved as the population adopts more energy efficient equipment. Yearly energy efficiency gains were developed for the space cooling end use and for whole building impacts, which were applied for rate programs that affect multiple end uses.

4.1.4 Avoided Costs

Demand response avoided costs are consistent with those utilized in the energy efficiency potential analysis and were provided by I&M. The primary benefit of demand response is avoided generation capacity, resulting from a reduction in the need for new peaking generation capacity and/or additional market-based capacity resources. Demand response also produces avoided energy related benefits and potentially delay the upgrade or new construction of transmission and distribution lines and facilities, reflected as avoided T&D costs.

If the demand response option is considered "load shifting", such as direct load control of electric water heating, the consumption of energy is shifted from the control period to the period immediately following the period of control. If the program is not considered to be "load shifting" the measure is turned off during peak control hours, and the energy is saved altogether. For demand response program options where event participation also results in energy savings, such as lighting control programs, the energy savings benefit was included in the analysis. The number of annual control hours for all direct load control programs was determined by the GDS Team in collaboration with I&M.

4.1.5 Demand Response Program Assumptions

This section briefly discusses the general assumptions and sources that will be used to complete the demand response potential analysis.

Load Reduction: Demand reductions were based on various secondary data sources including I&M evaluation reports, other peer program evaluation reports, and other industry reports, including demand response potential studies. Direct load control options are typically calculated based on a per-unit kW demand reduction whereas rate-based DR options and aggregator programs are typically assumed to

reduce a percentage of the total facility peak load. Table 4-2 below provides the load reduction estimates by program type.

TABLE 4-2 DEMAND RESPONSE LOAD REDUCTION IMPACTS

Program	Residential Load Reduction (kW)	C&I Load Reduction (kW)
Central AC DLC	0.94 kW (SF); 0.7 kW (MF)	N/A
Connected Thermostat	1.14 kW (SF); 0.86 kW (MF)	2.25 kW
Smart Water Heater	0.41 kW	N/A
DHW DLC	0.14 kW	0.6 kW
Room AC DLC	0.185 kW	N/A
Smart Appliance	0.24 kW	N/A
Electric Vehicle Charging Control	1.4 kW	0.02 kW
DLC Lighting	N/A	0.86 kW
Connected Energy Management System	N/A	10%
Thermal Storage	N/A	19.4 kW
Battery Storage	3 kW	11.25 kW
Behavioral	0.109 kW	N/A
Electric Vehicle Off-Peak Charging Rate	0.52 kW	0.092 kW
Time-of-use (TOU) Rate w/ tech	8%	4%
Time-of-use (TOU) Rate w/o tech	0.1 kW	0.03 kW
Critical peak pricing (CPP) Rate w/ tech	31%	9%
Critical peak pricing (CPP) Rate w/o tech	12%	6%
Peak Time Rebates (PTR) Rate	0.13 kW	0.06 kW
Capacity Bidding Programs (Large C&I Aggregator)	N/A	20%
Demand Bidding Programs (Small C&I Aggregator)	N/A	7%
Curtailable Rate	N/A	41.3 kW
Real Time Pricing (RTP) Rate	N/A	15%

Eligible Control Units: The number of control units (or demand response equipment) per participant were calculated based on the average number of units in homes in the I&M's Indiana territory. This was used to determine the total equipment cost.

Useful Life: The useful life of equipment used in demand response programs, such as load control switches, smart thermostats, or AMI equipment, was determined using TRMs, and data from manufacturers. For this study, the GDS Team used a useful life of 20 years for AMI equipment, 9 years for smart thermostats, 10 years for Level 2 EV chargers, 10 years for load switches, and 10 years for batteries.

Equipment and Incentive Costs: Equipment costs as applicable were included for each new participant. Incentives were included for all programs in the Base Case. These costs were either on a per participant, per kW or per kWh basis (noted in table). Table 4-3 provides sector and program-level measure equipment and installation costs as well as RAP incentives used in the analysis.

TABLE 4-3 ASSUMED BASE CASE EQUIPMENT AND INCENTIVE COSTS

Sector	Program	Equipment & Installation Cost	RAP Annual Incentive Costs
Residential	Connected Thermostat	$0 (assumes participant supplies own thermostat or is part of energy efficiency thermostat program)	$36/participant-year
	Central AC DLC	$200	$29/participant-year
	Connected Water Heater	$768	$15/participant-year
	DHW DLC	$200	$15/participant-year
	Room AC DLC	$200	$29/participant-year
	Smart Appliance	$0 (assumes participant supplies smart appliance)	$15/participant-year
	Battery Storage	$14,869 in first year of study; decreases to $11,023 in final year of study (utility pays for 25%, participant pays for 75%)	No annual incentives, one-time rebate
	Electric Vehicle Charging Control	$250 incentive/rebate to enroll + $750 participant cost	$50/participant-year
	Time-of-use (TOU) Rate w/ enabling technology	$0 (assumes participant supplies own thermostat or is part of energy efficiency thermostat program)	N/A
	Critical peak pricing (CPP) Rate w/ enabling technology	$0 (assumes participant supplies own thermostat or is part of energy efficiency thermostat program)	N/A
	Electric Vehicle Off-Peak Charging Rate	$500 incentive/rebate to enroll + $500 participant cost	No annual incentives, one-time rebate

Sector	Program	Equipment & Installation Cost	RAP Annual Incentive Costs
C&I	Connected Thermostat	$0 (assumes participant supplies own thermostat or is part of energy efficiency thermostat program)	$50/participant-year
	DHW DLC	$200	$50/participant-year
	Battery Storage	$33,200	No annual incentives, one-time rebate
	Thermal Storage	$45,000	$8.5/kW
	DLC Lighting	$1,900	$8.5/kW
	Connected Energy Management System	$47,084	$8.5/kW
	Electric Vehicle Charging Control	$250 incentive/rebate to enroll + $750 participant cost	$8.5/kW
	Time-of-use (TOU) Rate w/ enabling technology	$0 (assumes participant supplies own thermostat or is part of energy efficiency thermostat program)	N/A
	Critical peak pricing (CPP) Rate w/ enabling technology	$0 (assumes participant supplies own thermostat or is part of energy efficiency thermostat program)	N/A
	Electric Vehicle Off-Peak Charging Rate	$500 incentive/rebate to enroll + $500 participant cost	N/A

Program Costs: Program development costs of $400,000 were included in the first year of the analysis for new programs. This cost was split between Indiana and Michigan based on the allocation of customers between the two territories. No program development costs were included for existing I&M demand response programs. Each program includes an evaluation cost, marketing cost (higher for MAP than RAP), and administration cost. All program costs were escalated each year by the general rate of inflation assumed for this study.

Eligible Market Size: For direct load control programs, the size of the eligible market was determined by multiplying the forecast of I&M's customers by the saturation of the end use to be controlled. End use saturations were obtained from the I&M's RASS and primary research conducted by the GDS Team in the I&M service area to help inform the market potential studies.

Eligible Income Qualified vs Market Rate Customers: GDS used US Census data to determine the portion of I&M's residential customers that are income qualified versus market rate. This breakout was applied to all residential DR programs to determine the eligible market size for each population.

4.1.6 DR Program Adoption Levels

Long-term program adoption levels (or "steady state" participation) represent the enrollment rate once the fully achievable participation has been reached. The GDS Team used market research to determine steady state adoption rates for key program types. For the residential sector, the GDS Team collected data for direct load control of air conditioning/connected thermostats and rate programs. For the business sector, the GDS Team had data for direct load control of air conditioning and the CPP rate program. For rate programs, the residential survey included willingness to participate in time-of-use rates, while the business survey included Critical Peak Pricing rates. For programs where the GDS Team did not have primary data, other research or potential studies were used.

Customer participation in new demand response programs is assumed to reach the steady state adoption rate over a five-year period. The path to steady state customer participation follows an "S-shaped" curve, in which participation growth accelerates over the first half of the five-year period, and then slows over the second half of the period (see Figure 4-1). Table 4-4 provides the Base Case long-term adoption rates for MAP and RAP.

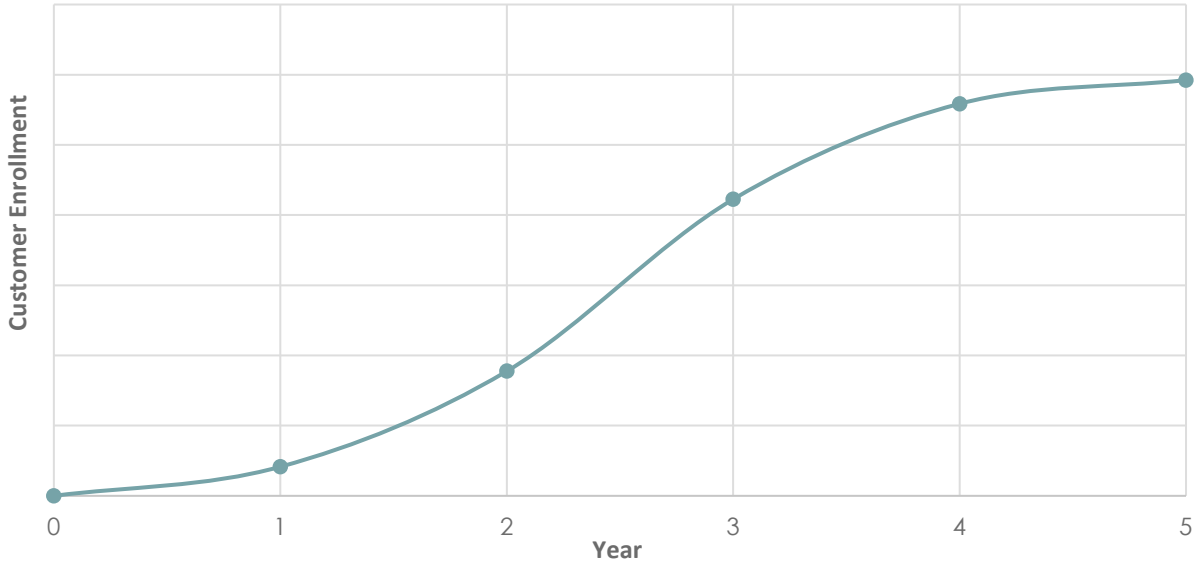


FIGURE 4-1 ILLUSTRATION OF S-SHAPED MARKET ADOPTION CURVE

TABLE 4-4 BASE CASE ADOPTION RATES

Sector	Program	Steady State MAP Adoption Rate		Steady State RAP Adoption Rate	
		Single Family	Multifamily	Single Family	Multifamily
Residential	Central AC DLC	19%	19%	16%	17%
	Connected Thermostat	22%	19%	15%	16%
	Connected Water Heater	14%	14%	10%	10%
	DWH DLC	24%	24%	16%	16%
	Behavioral	15%	15%	12%	12%
	Room AC DLC	37%	31%	25%	26%

Sector	Program	Steady State MAP Adoption Rate		Steady State RAP Adoption Rate	
		Single Family	Multifamily	Single Family	Multifamily
	Smart Appliance	24%	24%	16%	16%
	Electric Vehicle Charging Control	25%	25%	15%	15%
	Electric Vehicle Off-Peak Charging Rate	25%	25%	15%	15%
	Time-of-use (TOU) Rate w/o enabling technology	29%	17%	17%	11%
	Critical Peak Pricing (CPP) Rate w/o enabling technology	12%	7%	7%	5%
	Peak Time Rebate (PTR) Rate	8%	5%	5%	3%
C/I	Connected Thermostat	30%	30%	24%	24%
	DWH DLC	30%	30%	24%	24%
	Real Time Pricing (RTP) Rate	8%	8%	4%	4%
	Critical Peak Pricing (CPP) Rate w/o enabling technology	32%	32%	18%	18%
	Critical Peak Pricing (CPP) Rate w/ enabling technology	0%	0%	13%	13%
	Time-of-Use (TOU) Rate w/o enabling technology	15%	15%	10%	10%
	Capacity Bidding	10%	10%	5%	5%
	Curtailable Rate	25%	25%	20%	20%

Double-counting savings from demand response programs that affect the same end uses is a common issue that must be addressed when calculating the demand response savings potential. For example, a customer cannot elect to participate in both DLC programs and rate programs and claim savings from both programs for curtailing the same end use. One cannot save a kW of load in a specific hour more than once. In general, the hierarchy of demand response programs is accounted for by subtracting the number participants in a higher priority program from the eligible market for a lower priority program. Table 4-5 shows the hierarchy for each sector, with 1 being the top priority.

TABLE 4-5 BASE CASE DR HIERARCHY FOR EACH SECTOR

Order	Residential Hierarchy	Commercial Hierarchy	Industrial
1	Behavioral	Connected Thermostat	Curtailable Rate
2	Connected Thermostat	Real Time Pricing Rate	Capacity Bidding
3	Critical Peak Pricing (CPP) Rate w/ enabling technology	Critical Peak Pricing (CPP) Rate w/ enabling technology	Thermal Storage
4	Critical Peak Pricing (CPP) Rate w/o enabling technology	Critical Peak Pricing (CPP) Rate w/o enabling technology	Connected Energy Management System
5	Peak Time Rebates	Peak Time Rebates	Demand Bidding

Order	Residential Hierarchy	Commercial Hierarchy	Industrial
6	Time-of-use (TOU) Rate w/ enabling technology	Time-of-use (TOU) Rate w/ enabling technology	
7	Time-of-use (TOU) Rate w/o enabling technology	Time-of-use (TOU) Rate w/o enabling technology	

4.2 DEMAND RESPONSE POTENTIAL

This section provides sector-level results for demand response potential, as well as total potential in the I&M Indiana service territory, and a summary of program-level benefits and costs.

4.2.1 Residential Potential

Figure 4-2 shows the 2045 residential market rate and income-eligible MAP and RAP demand response potential for Indiana. These demand reduction values are presented at the customer meter level.

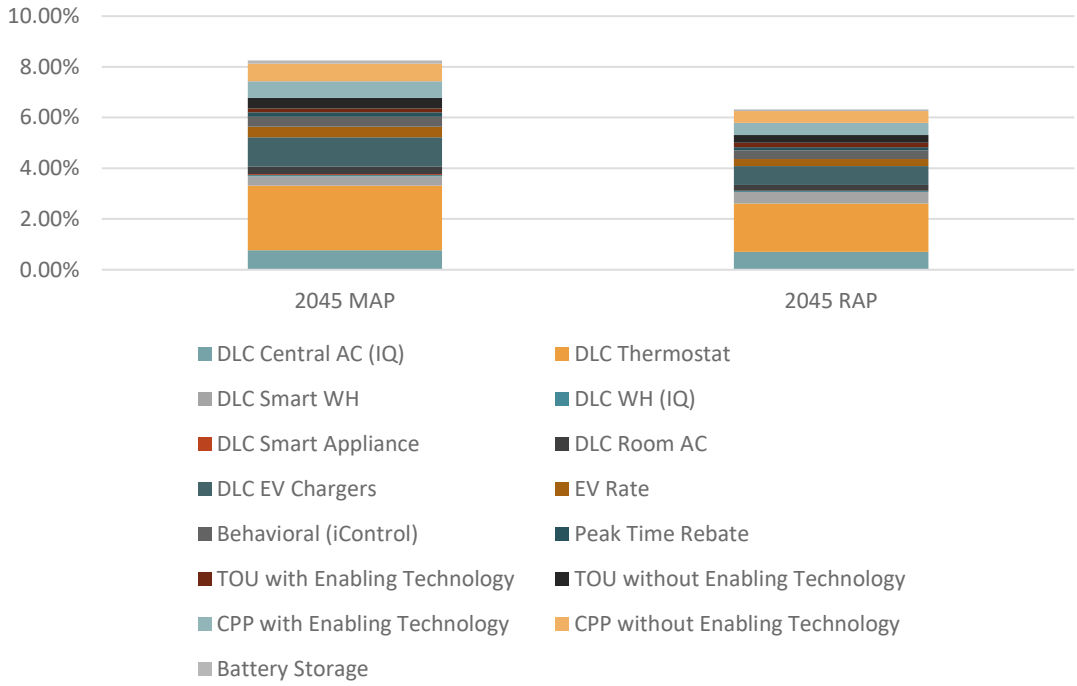


FIGURE 4-2: SUMMER PEAK MW RESIDENTIAL SECTOR BASE CASE RESULTS AS % OF 2045 RESIDENTIAL CLASS LOAD (IN)

4.2.2 C&I Sector Potential

Figure 4-3 shows the 2045 C&I sector MAP and RAP demand response potential for Indiana. These demand reduction values are present at the customer meter level.

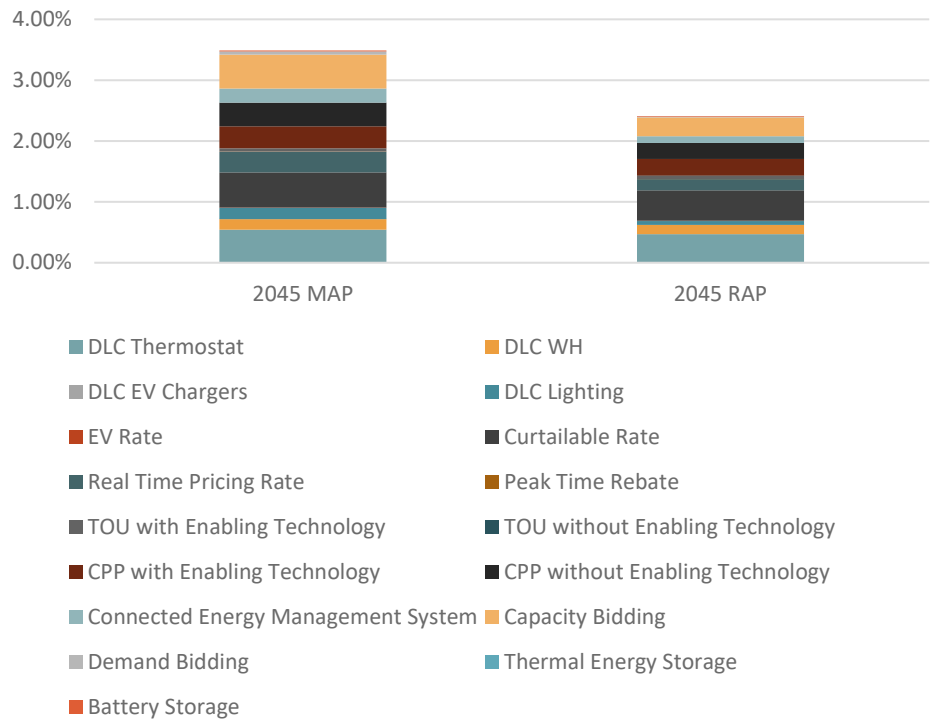


FIGURE 4-3 SUMMER PEAK MW C&I SECTOR BASE CASE RESULTS AS % OF 2045 C&I CLASS LOAD (IN)

4.2.3 Total Potential

Figure 4-4 shows the annual demand response RAP potential for the Base Case by sector in Indiana. These demand reduction values are present at the customer meter level.

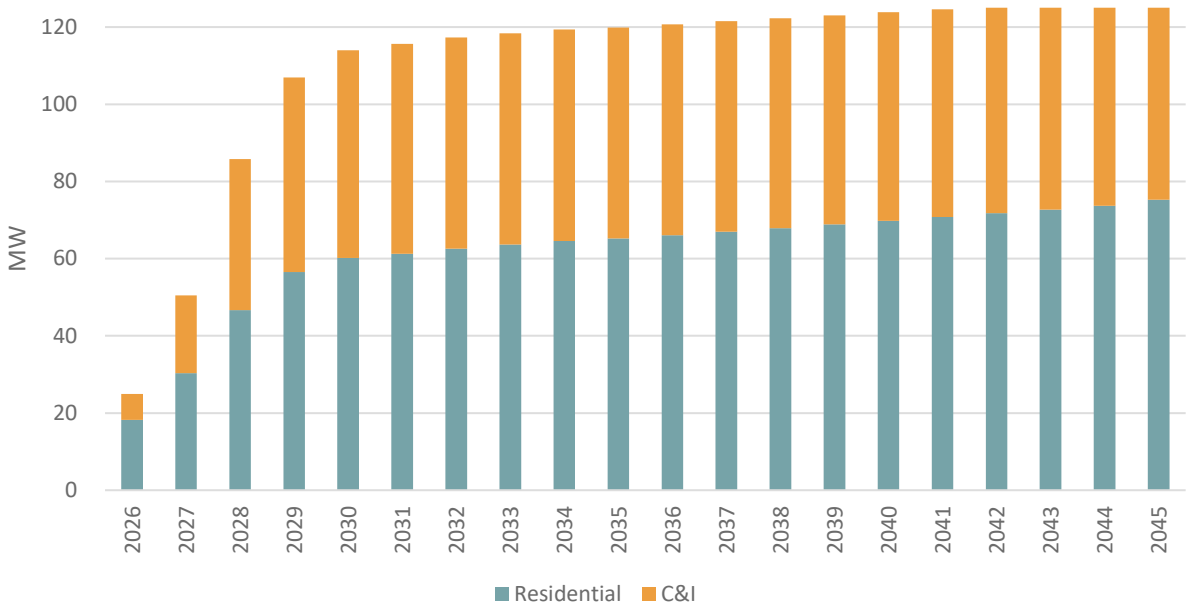


FIGURE 4-4 CUMULATIVE ANNUAL BASE CASE SUMMER PEAK MW RAP POTENTIAL BY SECTOR (IN)

4.2.4 Benefits/Costs of Program Potential

Cost-effectiveness of demand response measures was determined based on screening using the UCT test, which includes program administrative costs and incentives. Table 4-6 shows the residential and business benefits, costs, and UCT ratios for each program for MAP and RAP in the Base Case for Indiana.

TABLE 4-6 BASE CASE MAP BENEFITS, COSTS, AND UCT RATIOS

Sector	Program	MAP UCT	RAP UCT
Residential	DLC Central AC (IQ)	0.72	0.82
	DLC Thermostat	1.10	1.27
	DLC Smart WH	0.19	0.21
	DLC WH (IQ)	0.12	0.07
	DLC Smart Appliance	0.16	0.11
	DLC Room AC	0.16	0.18
	DLC EV Chargers	1.14	1.11
	EV Off-Peak Charging Rate	0.63	0.60
	Behavioral (iControl)	0.52	0.59
	Peak Time Rebate	0.84	0.91
	TOU with Enabling Technology	1.29	1.48
	TOU without Enabling Technology	1.29	1.69
	CPP with Enabling Technology	4.74	4.80
	CPP without Enabling Technology	3.72	4.26
	Battery Storage	0.25	0.20
C&I	DLC Thermostat	1.94	2.01
	DLC WH	0.45	0.41
	DLC EV Chargers	0.01	0.01
	DLC Lighting	0.60	0.28
	EV Off-Peak Charging Rate	0.10	0.07
	Curtailable Rate	5.95	5.20
	Real Time Pricing Rate	7.44	4.33
	Peak Time Rebate	0.17	0.10
	TOU with Enabling Technology	1.72	1.94
	TOU without Enabling Technology	0.13	0.14
	CPP with Enabling Technology	6.77	6.44
	CPP without Enabling Technology	8.00	7.63
	Connected Energy Management System	0.58	0.44
	Capacity Bidding	3.90	2.66
	Demand Bidding	0.96	0.33
	Battery Storage	0.11	0.07

5 DISTRIBUTED ENERGY RESOURCES POTENTIAL

As part of the overall modeling process, the GDS Team modeled distributed energy resources (DER) as sources of behind-the-meter customer-sited generation. The DER analysis focused on two major categories of technology, specifically solar photovoltaic (solar PV), and engine generators used to provide backup power (BUP) on an irregular basis or parallel generation that provides power on a regular basis (PG). The primary intent of the analysis was to develop a forecast of DERs that could be used by I&M as part of its IRP to understand the load contributions that each type of technology may have on customer loads and load shapes, along with system-level effects. Additionally, during discussion with stakeholders, I&M was requested to investigate the impact that a solar PV program may have on solar PV adoptions, along with program costs and associated benefit-cost ratios.

In the case of both technology types, the baseline forecast represents a "no program" condition, reflecting general market behavior. For solar PV the program option provides an opportunity to understand how customer adoptions of solar PV may be incrementally different from the baseline forecast. This section of the report presents the approach and results of the forecast for both technologies, along with the incremental program impact of a solar PV program and the cost estimates of such a program.

The following sections discuss the methods and results of the DER analysis. Organized by technology type, each technology section includes both methods and results.

5.1 OVERALL SUMMARY

Figure 5-1 reflects the summary of MWh and PJM 5CP summer and winter MW contributions at the system level based on a business-as-usual (BAU, no program) case. The results are inclusive of estimated existing and forecasted impacts from these two technology categories. Additional details are provided below.

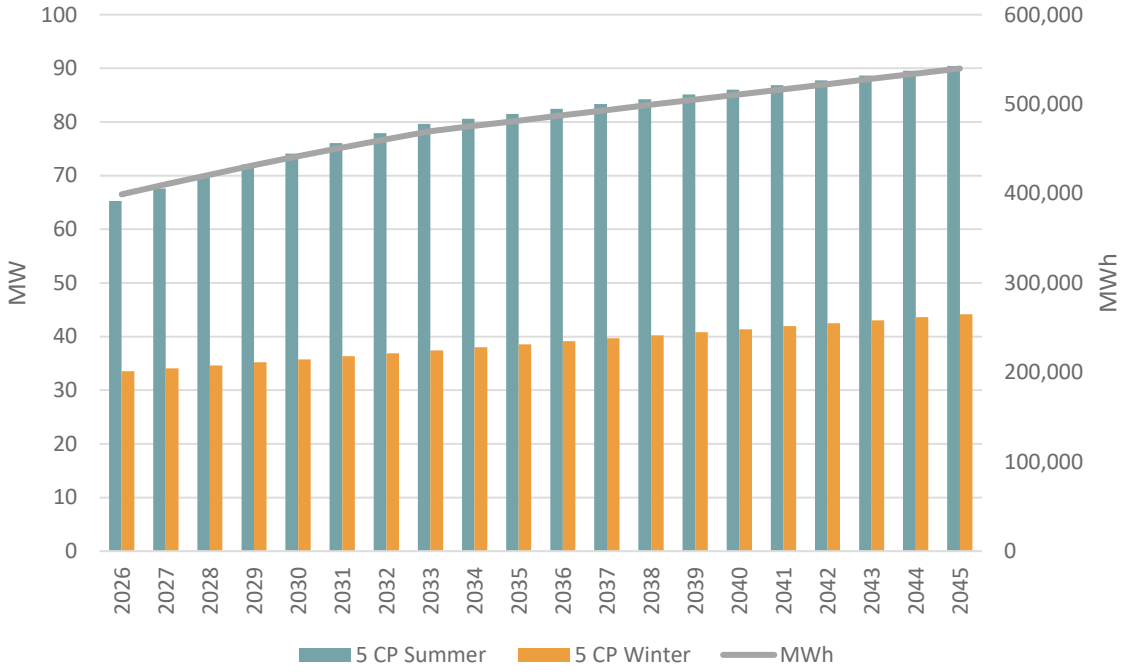


FIGURE 5-1 BAU IMPACTS OF SOLAR PV AND ENGINE GENERATOR DERS 2026-2045

In the BAU case, summer contributions to capacity are roughly double winter. In the analysis, backup generators and solar PV were estimated to contribute no MW to winter 5CP hours. MWh production is dominated by parallel generation systems due to expected substantial runtime hours and capacity. However, solar PV is forecasted to provide approximately 18 percent of MWh impacts and is a source of growth, particularly early in the forecast period. The details of the analysis for each technology type are presented below.

5.2 SOLAR PV ANALYSIS AND RESULTS

Photovoltaic systems utilize solar panels, a packaged collection of photovoltaic cells, to convert sunlight into electricity. A system is constructed with multiple solar panels, a DC/AC inverter(s), a racking system to hold the panels, and electrical system interconnections. These systems are often roof-mounted and face south-west, south, and/or, south-east. Customers hosting behind the meter systems can consume the energy created by the solar panels themselves, or export excess production to the electrical system. In Indiana, energy exported to the utility is credited at the utility's avoided cost, with energy consumed behind the meter being valued (for the customer) at the customer's retail price per kWh.

Sizing of solar PV systems is related to the maximum rated kW output in direct current (DC) using a standard rating system. An inverter converts the DC to match the frequency and voltage of the electric grid's alternating current. DC output at any given time is dependent on weather conditions, the angle of the solar PV panels relative to the sun, any soiling or shading, and the presence of sunlight. Converting the DC energy into AC creates losses through the inverter. Over a time period, these factors combine to create the kWh output to the customer or utility system.

The general forecasting approach used a range of data sources and analyses to combine into the final forecast. The approach entailed the following elements:

- Reviewing the adoption of customer-sited solar PV and small wind energy systems over time interconnected with I&M's Indiana distribution system,
- Segmenting the market into "small" and "medium/large" solar PV systems to develop market average capacity adoptions at an individual customer level,
- Developing market capacity options for low/mid/high adoption scenarios informed by I&M's customer counts, suitability for hosting solar PV systems, and I&M customer survey data to inform Bass-Diffusion adoption curves,
- Applying prototypical system economics or incentives, along with current federal incentives to the low/mid/high adoption curves.

These several analysis steps are summarized below.

5.2.1 Current Adoption of Solar PV and Capacity Segmentation

I&M provided a database of distributed energy generation equipment that was interconnected with I&M's distribution system. This included a range of technologies, including solar PV and small wind. To understand customer uptake of possible future solar PV, small and medium wind system capacities were aggregated with solar PV. Distributed wind systems are a substitution option for solar PV. While distributed wind adoptions are waning in favor of solar PV, their historical adoptions inform marketplace interest and investment in small renewable energy systems. The GDS team capped the analysis at systems less than 1 MW in capacity, with "small" systems capped at 20 kW of capacity. Systems greater than 1 MW were unusual

and represented unique cases that the GDS team considered unsuitable for specific forecasting. The count of customers adopting systems informs the pace of adoptions. The resulting historical data was treated as representing solar PV, though does include a small portion of distributed wind energy systems, summarized in Table 5-1 below. The table is abbreviated from the original data for brevity.

TABLE 5-1 HISTORCAL ADOPTION OF SOLAR PV, I&M INDIANA SERVICE TERRITORY

Timeframe	Total Customers	Small Systems	Medium/Large Systems
2008-2011	51	49	2
2012-2015	116	108	8
2016-2019	578	516	62
2020-2022	1,528	1,353	175
Through Q3 2023	1,662	1,453	209

The I&M data demonstrate an accelerating market for both small and medium/large customer adoptions. The forecast first focuses on customer counts as decision-making resides at the customer-level, not the system capacity level. The typical capacity (kWdc) of solar PV systems has varied over time. In general, average systems at 20 kWdc or less have grown larger between 2008 and 2024, with systems approximately doubling in size from 4.5 kWdc (2008) to 9.4 kWdc (2023). The average system size between 20 KW and 1 MW exhibits year to year variability, but with the same general trend, with average system kWdc capacity rising from 28.5 kWdc to 80.4 kWdc (average of 2020 through 2023).

The underlying Bass-Diffusion curve is based on modeling the count of customers adopting solar PV (described below). As such, the future adoptions of solar PV capacity require assumptions regarding typical system sizes. The GDS Team utilized the recent historical kWdc data to assume the following regarding solar PV capacity per adopting customer:

- Small systems (<= 20 kWdc) – 9.4 kWdc
- Medium/Large systems (>20 kWdc to <1 MWdc) – 80.4 kWdc

5.2.2 Market Capacity to Adopt Solar PV

One element of Bass-Diffusion adoption modeling is to determine the maximum possible adoption level. The low/mid/high adoption scenarios utilize an assumed maximum adoption level to inform the resulting Bass-Diffusion adoption curves.

One kW of DC (kWdc) solar panels utilizes roughly 130 square feet (this can vary by panel make and model). The potential area that could host solar PV panels is vast and virtually meaningless due to the scale. As a first step in the analysis process, the GDS team developed an estimate of the share of rooftops that could host solar panels by utilizing a National Renewable Energy Laboratory (NREL) database of rooftop area and solar PV hosting potential.[16] The purpose of using the database was to create a potential upper bound on the possible share of buildings that could host solar PV. In reality, this number is very high and represents an unrealistic outcome for the marketplace. Indeed, ground mounted systems would expand the potential area to an even higher unrealistic amount. This first step is simply an approach to creating a cap on what

[16] https://data.nrel.gov/submissions/121

may be physically possible, which is separate from what may realistically happen in the marketplace. It represents a maximum market capacity to host behind the meter solar PV systems.

The GDS Team analyzed the NREL database for Indiana, identifying the details in Table 5-2 related to suitable rooftop areas. In creating the customer counts associated with each system size, the Medium and Large categories were combined in order to align with the kWdc assumption presented above. Further, for the Small system customer count, the GDS Team assumed that 75 percent of commercial accounts fell in the Small category. Customer counts were based on the long-term total customer counts (by sector) provided by I&M to capture the long-term pattern of customer growth and underlying capacity.

Table 5-2 indicates the number of customers with suitable rooftop areas far exceeding the current volume of customers adopting Solar PV. To arrive at a final maximum count to be used in the Low/Mid/High forecasts, the GDS Team reviewed I&M customer survey data from 2021 and modeled PV system policies, incentives, and economics to create multipliers that scaled the suitable share of the market to more realistic maximum adoption levels.

TABLE 5-2 SHARE OF ROOFTOP SUITABILITY

Building Size	Suitable Share of Customers	Customer Counts	Currently Adopted Share of Suitable Sites
Small (<5,000 sq ft)	29%	135,340	1.2%
Medium (5,000 to 25,000 ft) and Large (> 25,000 sq ft)	55%	9,922	2.1%

In 2021, the GDS Team conducted a survey of I&M customers to understand factors that influence willingness to adopt various technologies, including solar PV. Residential customers were asked about their likelihood of adoption given utility incentive shares of system costs, while nonresidential customers were asked about their adoption likelihood based on simple payback. Table 5-3 provides the survey results and extrapolation of those results to extended simple payback criteria.

TABLE 5-3 II&M SURVEY DATA USED TO INFORM MAXIMUM ADOPTION LEVELS

Residential Incentive (% of System Cost)	Residential Adoption Rate	Nonresidential Simple Payback (Years)	Nonresidential Adoption Rate[17]
0%	6%	0	72%
25%	14%	1	66%
50%	28%	3	51%
75%	45%	5	39%
100%	72%	6	32.5%
		7	26.0%
		8	19.5%
		9	13.0%

[17] Nonresidential adoption rates beyond 5 years were extrapolated from the survey data. The data indicate that, on average, adoptions decrease by 6.5 percent for each additional year. The 10 year payback adoption rate (6.5%) was held constant in the event solar PV system costs had a simple payback longer than 10 years. Evidence of current market adoptions suggest that some portion of the nonresidential market accepts longer paybacks for solar PV, with forecast results allowing for some nonresidential adoptions for systems with long payback periods.

		10+	6.5%

For purposes of modeling small systems (<=20 kWdc), small commercial customers (assumed at 75 percent of commercial customers) were treated as residential customers for purposes of adoption modeling of small systems.

As a last adjustment factor, the GDS Team considered recent policy changes in Indiana that changed the net-metering tariff, and that the 2021 survey was completed prior to that change in policy. In the new policy, excess production that is exported to the electricity grid is paid for at the utility's avoided costs. This differs from net metering in which excess production is paid for at the customer's retail rate. For solar PV systems the implication is a shift in the market in which excess production has lower economic value for a customer. In 2023, PV Magazine (a solar industry publication) indicated that the additions of new customer-site solar PV system decreased by 67 percent between June 2022 and June 2023, attributing that decrease to the change in net metering policy.[18] The GDS Team used this information as a further adjustment to the maximum solar adoption levels used in each scenario, applying a 33 percent multiplier.

The maximum market capacity to adopt solar, over the long-term, utilized the data in Table 5-3 as a multiplier of the share of customer with suitable solar sites, along with the 33 percent adjustment for the changes to the net metering policy. As examples:

- In a scenario with no utility incentives (low adoption), a residential customer would have the final adoption level as 2.0 percent of the 135,340 suitable customers would be expected to adopt over the long-term. 135,340 (x) 6% (x) 33% = 2,680 cumulative customer adoptions (inclusive of those already having adopted).
- In a scenario in which a nonresidential customer may achieve a five-year simple payback using retail rates (net metering), the maximum long-term adoption level would be 9,922 (x) 39% (x) 33% = 1,277 cumulative customer adoptions (inclusive of those already having adopted).

The details of final inputs in each Bass-Diffusion curve and Low/Mid/High adoption scenario are described further in this section.

5.2.3 Modeling Prototypical Solar PV System and Economics

To model the energy production and economics from solar PV, the GDS Team utilized two industry standard modeling tools – NREL's PVWatts and System Advisor Model (SAM, version 2023.12.17). PVWatts was used to develop standardized assumptions for average annual kWh energy production. SAM was used to develop simple payback results for Medium/Large nonresidential systems to align economic outcomes with the simple payback adoption criteria presented above.

The PVWatts modeling developed a prototype weighted average kWh per kWdc using the following assumptions:

- Fort Wayne, IN weather
- 41-degree system tilt
- 0.1408 total system losses (PVWatts default)
- Blended azimuths weighted as:

[18] https://tinyurl.com/PV-Magazine-Nov-21-2023

- 10 percent 135 degrees
- 80 percent 180 degrees
- 10 percent 225 degrees

The blended azimuths allow for possible variations in system orientation but allow for predominantly due-south orientations. The 41-degree tilt represents the approximate line of latitude of South Bend, and typically allows for maximum energy production when oriented due south (180-degree azimuth). The actual mix of current or future solar PV orientations is unknown, with the overall choice meant to capture an approximation of what may be present in the current or future marketplace.

The result of the modeling is an assumed kWh production of 1,263.15 kWh per kWdc of rated solar panel capacity. This result is applied to each kWdc of adopted solar PV in the forecast. PVWatts' output of hourly PV production was used to inform the average solar PV loadshape across 8,760 hours of the year.

SAM was used to model simple payback periods for medium/large systems, represented by the average of 80.4 kWdc. The GDS Team assumed an average price of $3,100 per kWdc. This price for solar PV is used across multiple pieces of the forecast, including benefit cost testing for program scenarios and allowed to remain constant throughout the forecast period in nominal terms. For purposes of modeling payback, SAM provides for utility tariffs, including I&M in Indiana. The GDS Team utilized the commercial general service tariff to serve as a general proxy and allowed for rates to increase by 2.5 percent per year. Additionally, GDS assumed a federal tax rate of 21 percent and state tax rate of 7 percent, and 5-year MACRS depreciation schedule for both federal and state taxes, along with a zero percent real discount rate. The federal IRA tax credits were also included, with model runs reflecting the availability and changes over time. While any specific customer may experience different financial parameters, the general parameters provided for a favorable, though realistic, financial analysis of what may be possible for a nonresidential customer to experience and informs the simple payback of a solar PV system.

Three scenarios were run to capture the three drivers of the Low/Mid/High Bass Diffusion curves, representing varying possible utility incentives.

- $0 utility incentive to reflect the Low adoption scenario, a Business as Usual Case,
- 25% utility incentive to reflect the Mid adoption scenario, and modeled as a potential program,
- 50% utility incentive to reflect the High adoption scenario, and representing idealized payback opportunities

The results for systems adopted through the forecast period are summarized in Table 5-4. Note that the assumed adoption rate shown in Table 5-4 does not account for the 33% factor that accounts for the change to net metering practices. The SAM modeling did not attempt to separately calculate the exported energy that would have been valued at the utility avoided cost to avoid double counting the net metering policy adjustment. Simple paybacks with decimal years of 0.5 utilized the average adoption rate of the two surrounding years. For example, 4.5 years was modeled as the average of a 4- and 5-year simple payback adoption rate. Other simple paybacks with decimal years were rounded to their nearest whole year. Long-term adoption rates are presented above, in Table 5-3.

TABLE 5-4 MEDIUM/LARGE NONRESIDENTIAL MODELED SIMPLE PAYBACK RESULTS (YEARS)

Timeframe	Low Scenario (No incentive)	Mid Scenario (25% utility incentive)	High Scenario (50% utility incentive)
Through 2033	8	5	3
2034	9	6	4
2035	10	7	4.5
2036 and beyond	12	9	6

5.2.4 Adoption Modeling and Results

Using the data described above, the GDS Team developed a forecast of cumulative solar PV adoptions for three scenarios. The forecasts utilize Bass-Diffusion parameters for solar PV developed by NREL. The NREL Bass-Diffusion parameters inform the pacing of adoptions based on the maximum expected adoptions. The count of adoptions is based on the number of customers, which are then converted to kWh and kWdc based on the observations from recent I&M interconnections, also described above. The Bass-Diffusion curves start with the current adoptions and their pacing to inform the future pacing and account for the behavior of the current and past marketplace. As a result, cumulative adoptions are inclusive of and informed by those that have already occurred. GDS developed separate forecasts for systems <=20 kWdc, and those >20 kWdc and <1 MW.

Peak kW contributions by solar PV are informed by the PVWatts modeling. The PVWatts model provides for 8,760 hours of production by solar PV. A given hour's contribution of kWh relative to the installed kWdc capacity informs the share of a system's expected output at a given hour. The GDS Team utilized the average output for PJM 5 CP hours in 2023 to model summer and winter peak kWac contributions (there were no winter 5CP contributions by solar PV). Meter-level production was scaled to system level by adjusting for avoided line losses using a factor of 1.07462.

5.2.4.1 Scenario Results

Figure 5-2 presents the results of the three scenarios, illustrating total cumulative meter-level MWh for solar PV. The three scenarios represent varying levels of utility support via solar PV programing. These are:

- Low: no incentives, reflecting business-as-usual conditions
- Mid: utility incentives covering 25 percent of system installed cost
- High: utility incentives covering 50 percent of system installed cost

All scenarios show growth in solar PV beyond the current level of adoption. For even the Low scenario, total adoptions grow by over two-times that of the current market, with the High scenario indicating customer adoption of approximately six-times the current market.

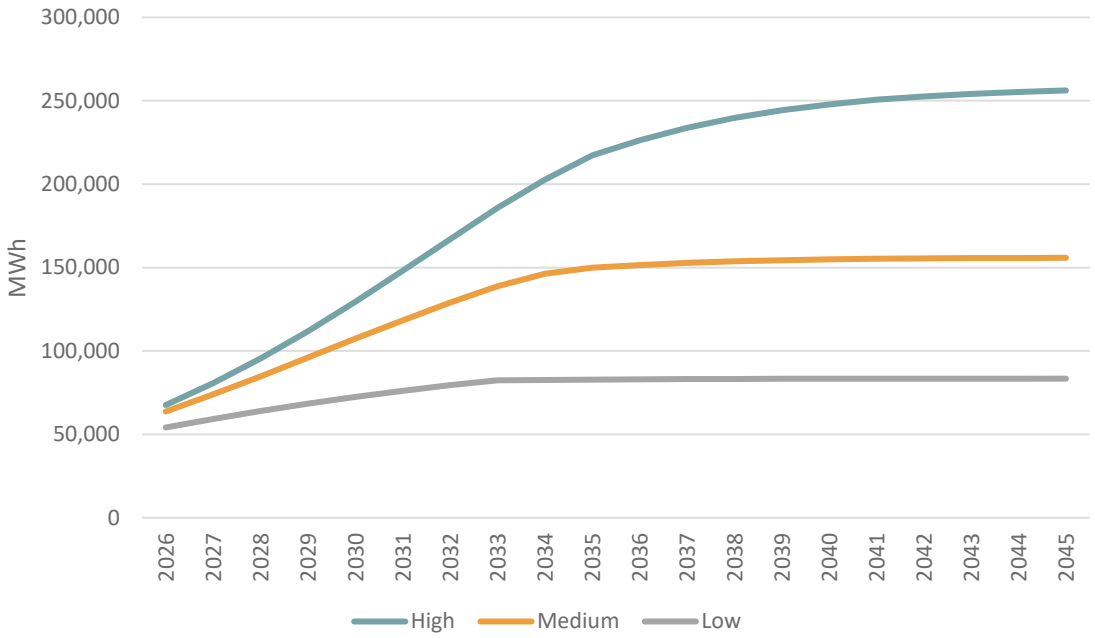


FIGURE 5-2 CUSTOMER-SITED SOLAR PV ANNUAL MWH ANNUAL PRODUCTION 2026-2045

Peak kW contributions from all solar PV follow the same pattern as MWh production. For the Low scenario, peak MW impacts from customer-sited systems growth 25.0 MW at the utility system level, while in the High scenario grow to 76.9 MW at the utility system level.

5.2.4.2 Program Results

The GDS Team analyzed the Mid scenario as reflective of a possible program in which I&M offers incentives that cover 25 percent of system costs. The analysis utilizes the Low scenario as the business-as-usual case, with incremental impacts above the Low scenario reflecting the net program impacts. In this regard, program benefits and costs, along with incremental impacts reflected in the IRP are those of the Mid scenario minus the forecast of the Low scenario in any given year.

The results presented in Table 5-5 show the incremental annual MWh and MWac peak contributions associated with such a program. The results are segmented into Residential and Nonresidential sectors. For modeling purposes, the GDS Team assumed that 25 percent of systems <=20 kWdc would be associated with the nonresidential sector, with systems over 20 kWdc up to 1 MWdc only being associated with the nonresidential sector. Meter-level results are multiplied by 1.07462 to account for line losses, reflecting utility-system impacts.

TABLE 5-5. INCREMENTAL PROGRAM IMPACTS OF MID SCENARIO

	Residential		Nonresidential		Total	
Year	MWh	MW peak	MWh	MW peak	MWh	MW peak
2026	2,301	0.64	2,185	0.61	4,486	1.25
2027	2,791	0.78	2,773	0.78	5,564	1.56
2028	3,162	0.88	3,364	0.94	6,526	1.82
2029	3,358	0.94	3,918	1.09	7,276	2.03
2030	3,353	0.94	4,398	1.23	7,751	2.17
2031	3,162	0.88	4,775	1.33	7,937	2.22
2032	2,829	0.79	5,032	1.41	7,861	2.20
2033	2,415	0.68	5,160	1.44	7,575	2.12
2034	1,980	0.55	5,683	1.59	7,664	2.14
2035	1,570	0.44	1,983	0.55	3,553	0.99
2036	1,211	0.34	404	0.11	1,615	0.45
2037	914	0.26	305	0.09	1,219	0.34
2038	679	0.19	226	0.06	905	0.25
2039	498	0.14	166	0.05	664	0.19
2040	362	0.10	121	0.03	483	0.13
2041	261	0.07	87	0.02	348	0.10
2042	188	0.05	63	0.02	250	0.07
2043	134	0.04	45	0.01	179	0.05
2044	96	0.03	32	0.01	128	0.04
2045	68	0.02	23	0.01	91	0.03

Table 5-6 summarizes the annual benefit-cost results of a solar PV program that offers 25 percent incentives. The multiple cost test results use the same logic and inputs as those found for energy efficiency programs. Additionally, the benefit-cost ratios rely on the following assumptions to support the various costs.

- 80 percent of solar PV system output will be consumed behind-the-meter, with the balance paid at the utility avoided cost rate,
- A measure life of 20 years with no performance degradation,
- That all system adopters would utilize the program, resulting costs that impact all solar PV systems but with incremental impacts associated only with the uplift from the Low scenario.
- System costs retained at $3,100 in nominal terms, resulting declining costs in real terms over time,
- Applying the federal IRA incentives available for a given year as a reduction in system costs for participants and incremental costs,
- Including program administration costs that are 25 percent of the incentive costs.

TABLE 5-6. BENEFIT-COST TEST RESULTS FOR 2026-2045

	Residential				Nonresidential			
Year	PCT	TRC	UCT	RIM	PCT	TRC	UCT	RIM
2026	1.31	0.46	0.47	0.44	0.75	0.42	0.29	0.28
2027	1.33	0.48	0.54	0.49	0.76	0.44	0.34	0.33
2028	1.35	0.50	0.60	0.55	0.77	0.46	0.39	0.37
2029	1.37	0.51	0.65	0.59	0.78	0.48	0.44	0.41
2030	1.40	0.53	0.70	0.62	0.80	0.50	0.48	0.45
2031	1.42	0.54	0.73	0.65	0.81	0.51	0.52	0.49
2032	1.45	0.55	0.76	0.67	0.82	0.53	0.56	0.52
2033	1.48	0.56	0.78	0.69	0.84	0.54	0.59	0.55
2034	1.36	0.53	0.81	0.70	0.85	0.53	0.89	0.79
2035	1.26	0.50	0.82	0.72	0.86	0.50	0.89	0.79
2036	1.09	0.44	0.84	0.73	0.88	0.44	0.84	0.76
2037	1.11	0.45	0.86	0.74	0.89	0.45	0.86	0.77
2038	1.13	0.46	0.87	0.75	0.91	0.46	0.87	0.78
2039	1.16	0.47	0.89	0.76	0.92	0.47	0.89	0.79
2040	1.18	0.47	0.90	0.77	0.93	0.47	0.90	0.80
2041	1.20	0.48	0.91	0.78	0.95	0.48	0.91	0.81
2042	1.22	0.49	0.92	0.79	0.96	0.49	0.92	0.82
2043	1.24	0.50	0.94	0.80	0.98	0.50	0.94	0.83
2044	1.26	0.51	0.95	0.80	0.99	0.51	0.95	0.84
2045	1.31	0.46	0.47	0.44	0.75	0.42	0.29	0.28

The results generally show that for the TRC, UCT, and RIM cost tests, that the program has a benefit-cost ratio less than 1.0 for all years of the forecast. For the PCT, residential customers indicate a benefit-cost ratio above 1.0 for all years, while nonresidential customers are below 1.0 for all years.

These benefit-cost results are sensitive to input assumptions. In particular, the assumed cost for installed systems may vary from vendor to vendor or customer to customer. Additionally, the use of the federal IRA tax credits are assumed to be fully realized for every customer. The assumption that all solar PV system adopters would utilize the utility program incorporates their cost impact but with only partial energy and demand impacts. However, evaluation research has shown substantial free ridership with solar PV programs, suggesting relatively high free ridership rates are not uncommon.

5.3 DISTRIBUTED ENGINE GENERATORS APPROACH AND RESULTS

The GDS Team developed a forecast of engine generators to inform possible DER load impacts, focusing on the nonresidential sector. These engine generators come in two general use-cases:

- Back-up generators used by customers in emergency situations,
- Parallel generators that operate on a regular basis, typically for combined heat and power, or based on local resource availability, such as biogas.

5.3.1 Engine Generator Analysis Background

Engine generators influence customer loads and may have potential for future programs. Backup generators operate sporadically and are not typically operated in parallel with the electric grid. A backup generator will be sized to support critical facility operations in the event of an electric grid outage. In theory, a backup

generator could be designed to operate in parallel with the electric grid, but its primary purpose and economic logic are to support critical customer loads absent supply from the electric grid. Backup generators are common for hospitals and emergency service facilities. In contrast, a parallel generator will be designed to operate to support a facility based on electricity resource needs and fuel availability. A parallel generator may consume all electricity onsite or supply power to the electricity grid. A parallel generator operates synchronous to the electricity grid.

The forecast is informed by several data sources:

- I&M's current installation of parallel generators,
- Estimates of current backup generator capacity,
- EPA information regarding the operations of parallel generators,
- Interviews with vendors of backup generators.

5.3.1.1 Current Adoptions of Engine Generators

I&M provided the GDS Team with its database of interconnected customer-sited energy sources that was current up to the third quarter of 2023. This data included a variety of types of parallel generators that operate synchronous with the electricity grid, but did not include details on backup generators. A separate file of known backup generators was provided by I&M to the GDS Team, though capacity ratings and other technical details were not present in the available data.

The current adoptions and the pacing of historical adoptions were used to inform the forecast of future adoptions.

Current Parallel Generator Installations

The I&M data showed that a total of 57,640 kW of parallel generator capacity was interconnected with the Indiana service territory. Of that capacity, one extremely large project of 39,600 kW made up the majority of the capacity and was distinct from all others. A total of seven additional systems totaling 18,040 kW made up the balance. One of these seven systems has been installed since 1950, with the remaining six having in-service dates from 2008 through 2017. With six systems being installed across approximately 16 years (2008 through 2023) installations are sporadic and range from 240 kW to 4,800 kW in capacity.

Current Backup Generation Installations

No data was available to confirm the capacity of backup generators. Data from I&M indicated 12 customers with known backup generators. In discussion with I&M, the GDS Team assumed that 10 MW was installed in the Indiana service territory and used as the basis for the forecast. Further customer research is needed to confirm the presence and capacity of backup generators.

5.3.1.2 Engine Generator Adoption Modeling and Results

The approach to modeling the future adoption and cumulative capacity of parallel generators and backup generators relied on distinct approaches and assumptions.

- Backup generator growth was assumed to align with the general rate of economic growth, an observation provided by several vendors of backup generator systems.
- Parallel generator growth was developed using the average annual capacity addition from 2008 through 2023 (15.8 years based on the earliest modern parallel generator installation). The very

large and unique case totaling 39,600 kW was excluded from the analysis. The result was an estimate of 1,018 kW of additional parallel generator capacity additions per year.

This general modeling approach relies on a growth forecast that reflects the expected behavior of the marketplace, informed by prior installation rates (parallel generators) and observed market patterns (backup generators). Specific key assumptions include:

- Three percent annual growth rate for backup generator capacity (assumed rate of economic growth),
- 200 hours of annual full-load hours of runtime for backup generators, reflecting testing and general operations,
- Selected hours for backup generator operations based on top 200 hours of 2022 nonresidential loads
- 5 CP hourly output of parallel generators based on proportion of a 5CP hour's nonresidential load relative to maximum nonresidential sector load in 2022.
- 6,570 hours of annual runtime for parallel generators
- 0.85 sizing factor for parallel generators (peak operating capacity relative to installed capacity)
- System peak MW contributions based on PJM 5CP peak hours for 2023
- Applying a multiplier of 1.05407 to MWh and peak demand to account for nonresidential line losses

Figure 5-3 summarizes the forecasted contribution from engine generators for the forecast period. The data in the figure is inclusive of existing systems, with growth reflecting the approach to future adoptions added to the existing systems. Data reflects utility system level impacts.

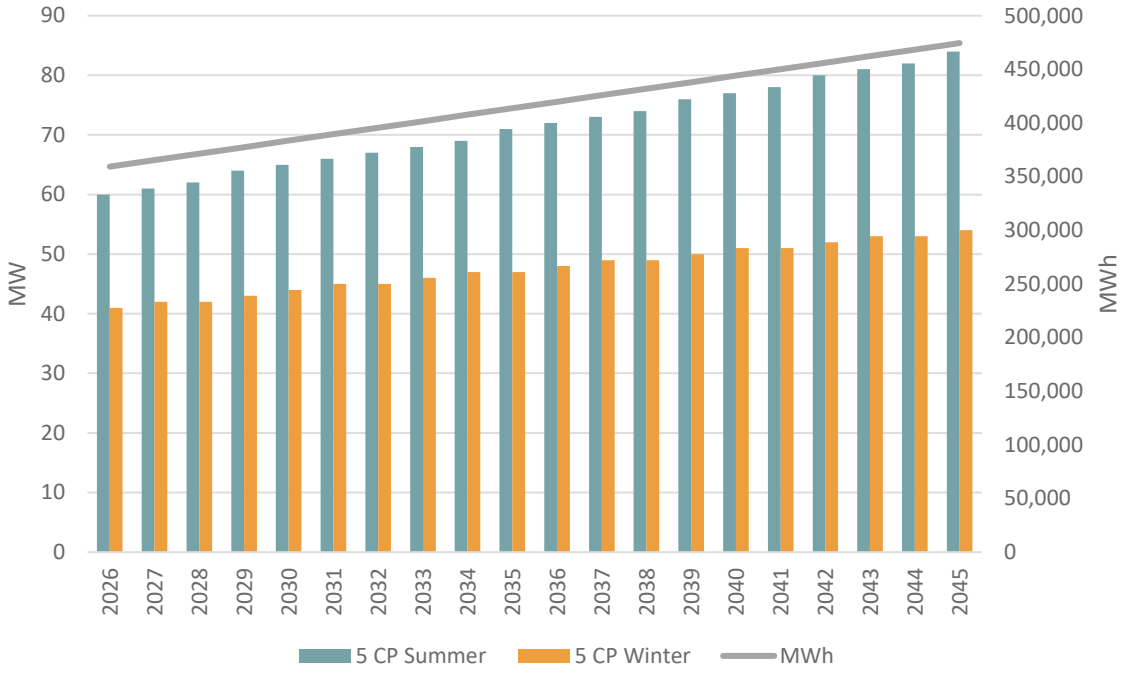


FIGURE 5-3. ENGINE GENERATOR UTILITY SYSTEM IMPACTS 2026-2045

The impacts are shown with combined effects of both parallel and backup generators. MWh impacts are 99 percent associated with parallel generators, reflecting the substantial existing systems and assumed annual

hours of runtime. Summer 5CP MW are, on average, 81 percent parallel generators, with minor variations across the years. Winter 5CP MW are all associated with parallel generators, reflecting that the top 200 hours of the year do not fall within the PJM winter 5 CP hours.

It is possible that operational characteristics could differ from forecast assumptions for either parallel or backup generators.

Appendix A: Sensitivities

Energy Efficiency Sensitivity Analysis

GDS performed a sensitivity analysis on the energy efficiency potential results described in Chapter 3 of the report. The purpose of the sensitivity analysis was to investigate the magnitude of changes to the savings and costs under alternative conditions to those assumed for the study. Some of the sensitivities would create situations more favorable to energy efficiency, while others would be less conducive to driving energy efficiency savings. Each sensitivity is defined below, followed by an explanation of the magnitude of the changes to the savings and costs in each case.

Sensitivity #1. High Avoided Costs

This sensitivity investigates the impact on potential if higher avoided costs were assumed. The avoided T&D costs are doubled, while avoided energy and capacity costs are not changed.

Sensitivity #2. Low Avoided Costs

This sensitivity investigates the impact on potential if lower avoided costs were assumed. The avoided energy and capacity costs were reduced by 50%, while the avoided T&D costs are not changed.

Sensitivity #3. Large Customer Opt-Outs Included

This sensitivity investigates the impact on potential if large customer opt-outs are included in the analysis. The base case excludes sales and savings from eligible customers that currently opt-out of I&M's energy efficiency programs. This sensitivity only affected the nonresidential sector.

Sensitivity #4. Reduced Technology Costs

This sensitivity investigates the impact on potential if technology costs were reduced. This scenario assumes a 35% reduction for emerging technology costs, and a 20% reduction in costs for all other measures. The cost reduction applies to both measure costs, and incentives.

Sensitivity #5. Extreme Temperatures

This sensitivity investigates the impact on potential associated with weather-sensitive measures due to more extreme temperatures by increasing the magnitude of weather-sensitive variables by 20%.

Sensitivity #6. Federal Funding

This sensitivity investigates the impact on potential if federal funding associated with the Inflation Reduction Act is limited or does not materialize. This sensitivity only affected the residential sector.

Figure A-1 below shows the total annual savings (sum of 20-yr annual incremental) as well as the total budgets in the RAP scenario and the associated sensitivities. The Large Customer Opt-Out included sensitivity yields the greatest savings, followed by the Extreme Temperatures sensitivity. The Avoided Costs – Low sensitivity indicates a nearly 10% decrease in savings, while the Avoided Costs – High, Reduced Technology Cost, and Federal Funding scenarios have slightly positive impacts to the overall savings.

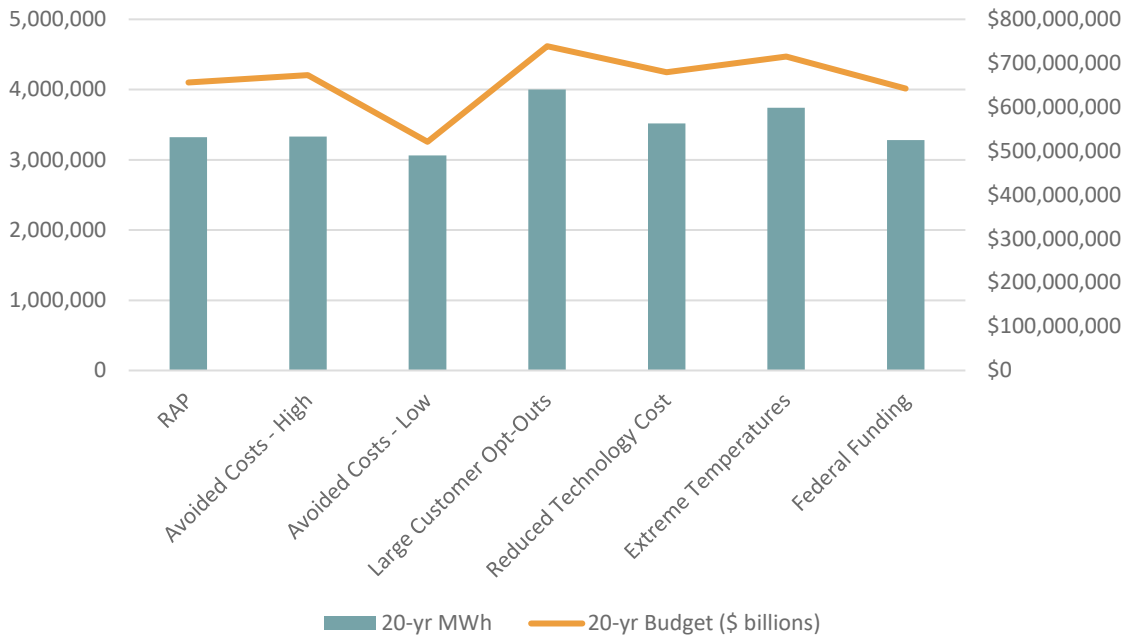


FIGURE A-1. TOTAL ANNUAL SAVINGS AND 20-YR BUDGETS

Table A-1 below shows a comparison of the NPV benefits and costs according to the UCT for each of the energy efficiency sensitivities. The UCT ratios ranged from 2.03 to 2.15 in all cases, except for the Avoided Costs – Low sensitivity, which has a UCT ratio of just 1.22.

TABLE A-1. NPV BENEFITS AND COSTS OF ENERGY EFFICIENCY SENSITIVITIES

Scenario	NPV Benefits ($, millions)	NPV Costs ($, millions)	UCT Ratio
RAP	$691	$338	2.04
Avoided Costs - High	$729	$349	2.09
Avoided Costs - Low	$336	$276	1.22
Large Customer Opt-Outs	$822	$383	2.15
Reduced Technology Cost	$732	$360	2.03
Federal Funding	$684	$332	2.06

Demand Response Sensitivity Analysis

GDS performed a sensitivity analysis on the demand response potential results described in Chapter 4 of the report. The purpose of the sensitivity analysis was to investigate the magnitude of changes to the savings and costs under alternative conditions to those assumed for the study. Some of the sensitivities would create situations more favorable to demand response, while others would be less conducive to driving demand response savings. Each sensitivity is defined below, followed by an explanation of the magnitude of the changes to the savings and costs in each case.

Sensitivity #1. High Avoided Costs

This sensitivity investigates the impact on potential if higher avoided costs were assumed. The avoided T&D costs are doubled, while avoided energy and capacity costs are not changed.

Sensitivity #2. Low Avoided Costs

This sensitivity investigates the impact on potential if lower avoided costs were assumed. The avoided energy and capacity costs were reduced by 50%, while the avoided T&D costs are not changed.

Sensitivity #3. Winter Peaking

This sensitivity investigates the impact on potential if avoided capacity and T&D costs to the Winter season.

Sensitivity #4. Reduced Technology Costs

This sensitivity investigates the impact on potential if technology costs were reduced. This scenario assumes a 20% reduction in costs for all measures. The cost reduction applies to both measure costs, and incentives.

Figure A-2 below shows the total annual MW savings (sum of 20-yr annual incremental) as well as the total budgets in the RAP scenario and the associated sensitivities. The savings and costs do not change in the avoided costs sensitivities (though the cost-effectiveness is impacted). The Winter Peaking sensitivity shows about a 10% reduction in savings, and the Reduced Technology Cost sensitivity shows about a 6% decreases in costs, while maintaining the same level of savings as the RAP scenario.

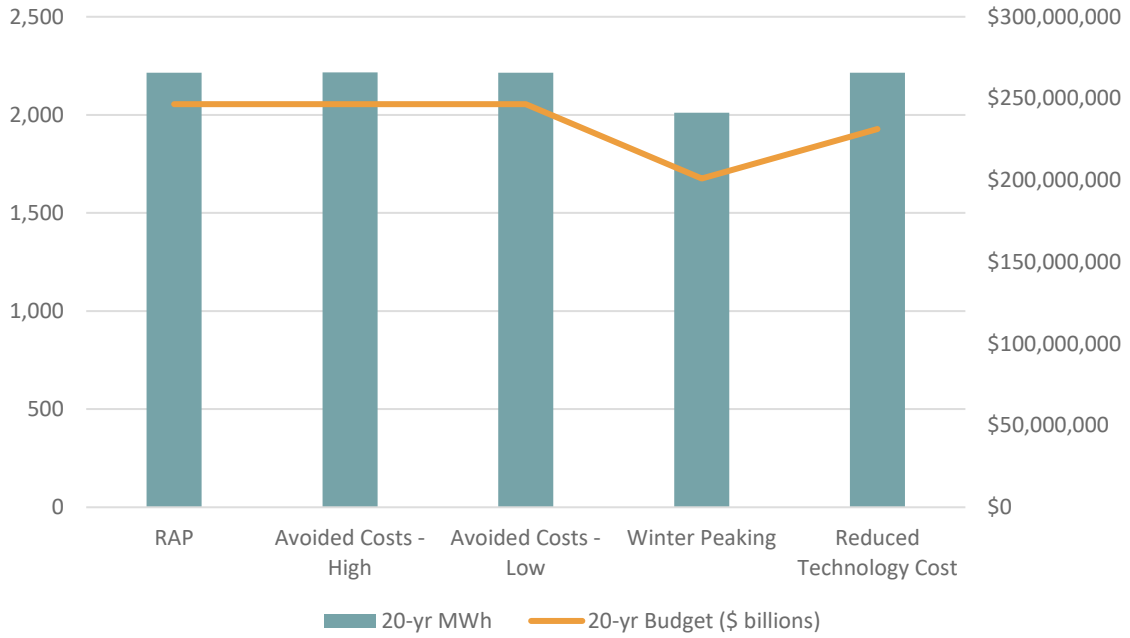


FIGURE A-2. TOTAL ANNUAL SAVINGS AND 20-YR BUDGETS

Table A-2 below shows a comparison of the NPV benefits and costs according to the UCT for each of the demand response sensitivities.

TABLE A-2. NPV BENEFITS AND COSTS OF DEMAND RESPONSE SENSITIVITIES

Sector	Program	RAP	High AC	Low AC	Winter Peak	Reduced Technology Cost
Residential	DLC Central AC (IQ)	0.82	0.92	0.41	N/A	0.85
	DLC Thermostat	1.27	1.43	0.72	1.14	1.27
	DLC Smart WH	0.21	0.31	0.16	0.54	0.37
	DLC WH (IQ)	0.07	0.08	0.04	0.07	0.07
	DLC Smart Appliance	0.11	0.13	0.06	0.11	0.11
	DLC Room AC	0.18	0.21	0.10	N/A	0.19
	DLC EV Chargers	1.11	1.25	0.62	0.40	1.18
	EV Off-Peak Charging Rate	0.60	0.66	0.33	0.60	0.60
	Behavioral (iControl)	0.59	0.67	0.34	0.59	0.59
	Peak Time Rebate	0.91	1.04	0.52	0.28	0.91
	TOU with Enabling Technology	1.48	1.69	0.85	1.34	1.48
	TOU without Enabling Technology	1.69	1.93	0.97	0.56	1.69
	CPP with Enabling Technology	4.80	5.51	2.75	3.46	4.80
	CPP without Enabling Technology	4.26	4.90	2.45	4.20	4.26
	Battery Storage	0.20	0.22	0.11	0.20	0.21
C&I	DLC Thermostat	2.01	2.25	1.13	1.34	2.01
	DLC WH	0.41	0.46	0.23	0.83	0.43
	DLC EV Chargers	0.01	0.01	0.00	0.01	0.01
	DLC Lighting	0.28	0.31	0.15	0.28	0.48
	EV Off-Peak Charging Rate	0.07	0.08	0.04	0.07	0.07
	Curtailable Rate	5.20	5.87	2.93	5.20	5.20
	Real Time Pricing Rate	4.33	4.96	2.48	3.18	4.33
	Peak Time Rebate	0.10	0.12	0.06	0.03	0.10
	TOU with Enabling Technology	1.94	2.22	1.11	1.45	1.94
	TOU without Enabling Technology	0.14	0.16	0.08	0.05	0.14

Sector	Program	RAP	High AC	Low AC	Winter Peak	Reduced Technology Cost
	CPP with Enabling Technology	6.44	7.39	3.69	4.73	6.44
	CPP without Enabling Technology	7.63	8.76	4.38	5.61	7.63
	Connected Energy Management System	0.44	0.49	0.25	0.40	0.50
	Capacity Bidding	2.66	3.05	1.53	2.44	2.66
	Demand Bidding	0.33	0.38	0.19	0.25	0.33
	Battery Storage	0.07	0.08	0.04	0.07	0.07

DER Sensitivity Analysis

GDS developed forecasts of solar PV and engine generators (backup and parallel) to inform IRP inputs. GDS conducted sensitivity tests on the results to factors that influenced IRP results and reflect the key inputs to the technology models. The results are summarized below.

The approach to sensitivities and the resulting outcomes differ between the two types of technologies in important ways.

- For solar PV, several key input assumptions were adjusted to understand their impact on the UCT benefit-fit cost ratios (BCRs) that emerged from the modeling process, reflecting a range of possible solar program BCRs that would be impacted by changes to the model assumptions.
- For engine generators, the IRP forecast did not include a program consideration. As such, the sensitivity parameters are related to economic growth (impact back-up generators) and annual expected capacity additions (parallel generators)

Solar PV Sensitivity Results

The sensitivity results for solar PV focus on the UCT BCR. GDS analyzed several scenarios that capture considerations of program BCRs under changes to the original IRP assumptions compared to decreases in solar PV system installed costs ($ per kWdc) as well as possible increases in the assumed T&D avoided costs. The sensitivity results were driven by the following scenarios:

- 35% reduction in PV system cost per kWdc
- Cost reduction to achieve approximately 1.0 UCT BCR annual average across forecast period for both C&I and Residential Sectors
- Increase in T&D avoided costs by 5x to capture potential localized benefits
- Assumptions regarding solar PV program cost coverage remained consistent with the original IRP scenario – 25 percent of installation cost incentivized by the utility program

The results indicate the follow:

- A 35 percent reduction in PV system cost results in a UCT > 1.0 for most years.

- A UCT that allows for an annual average program year to have a UCT > 1.0 for all sectors requires a 30 percent reduction in system installation costs.
- Increasing T&D avoided costs by 500 percent (5x) allows the residential sector to achieve a UCT BCR >1.0, on average, though not for the C&I sector.

The resulting BCRs for each sensitivity scenario and the original IRP scenario are presented in the detailed tables following the description of the engine generator sensitivity tests.

Engine Generator Sensitivity Results

The sensitivity analysis of engine generators focuses on forecasted annual 5CP and annual MWh impacts. GDS analyzed two scenarios, varying key drivers for the backup generator and parallel generator assumptions. These include:

- A high scenario in which backup generator general economic growth is assumed at 4.0 percent, an increase from the IRP assumption of a 3.0 growth rate. Parallel generators have their annual capacity additions 25 percent higher – 1.269 MW added per year in contrast to the IRP modeling of 1.015 MW added per year.
- A low scenario in which backup generator general economic growth is assumed at 2.0 percent, an decrease from the IRP assumption of a 3.0 growth rate. Parallel generators have their annual capacity additions 25 percent lower – 0.761 MW added per year in contrast to the IRP modeling of 1.015 MW added per year.

The forecast for engine generator capacity and energy provision, at the system level, includes systems that are already assumed to exist. As such, they reflect a cumulative impact. Nevertheless, the scenarios indicate meaningful changes by the end of the forecast period (2045). These are:

- In the high scenario and compared to the IRP modeling, 2045 results are 10 percent higher for summer 5CP capacity contributions and approximately 7 percent higher for annual MWh and winter 5CP capacity contributions.
- In the low scenario and compared to the IRP modeling, 2045 results are 10 percent lower for summer 5CP capacity contributions and approximately 7 percent lower for annual MWh and winter 5CP capacity contributions.

The detailed tables that reflect the sensitivity analysis results for both solar PV and engine generators are below.

Solar PV Sensitivity Analysis Scenario Results

TABLE A-3. IRP SCENARIO - $3,100 PER KWDC INSTALLED COST AND 25% UTILITY INCENTIVES

Residential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	1.31	1.33	1.35	1.37	1.4	1.42	1.45	1.48	1.36	1.26	1.09	1.11	1.13	1.16	1.18	1.2	1.22	1.24	1.26	1.28	1.28
TRC	0.46	0.48	0.5	0.51	0.53	0.54	0.55	0.56	0.53	0.5	0.44	0.45	0.46	0.47	0.47	0.48	0.49	0.5	0.51	0.52	0.5
UCT	0.47	0.54	0.6	0.65	0.7	0.73	0.76	0.78	0.81	0.82	0.84	0.86	0.87	0.89	0.9	0.91	0.92	0.94	0.95	0.96	0.8
RIM	0.44	0.49	0.55	0.59	0.62	0.65	0.67	0.69	0.7	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.8	0.8	0.81	0.69
Nonresidential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	0.75	0.76	0.77	0.78	0.8	0.81	0.82	0.84	0.85	0.86	0.88	0.89	0.91	0.92	0.93	0.95	0.96	0.98	0.99	1.01	0.87
TRC	0.42	0.44	0.46	0.48	0.5	0.51	0.53	0.54	0.53	0.5	0.44	0.45	0.46	0.47	0.47	0.48	0.49	0.5	0.51	0.52	0.49
UCT	0.29	0.34	0.39	0.44	0.48	0.52	0.56	0.59	0.89	0.89	0.84	0.86	0.87	0.89	0.9	0.91	0.92	0.94	0.95	0.96	0.72
RIM	0.28	0.33	0.37	0.41	0.45	0.49	0.52	0.55	0.79	0.79	0.76	0.77	0.78	0.79	0.8	0.81	0.82	0.83	0.84	0.85	0.65

TABLE A-4. 35 PERCENT COST REDUCTION - $2,015 PER KWDC AND 25% UTILITY INCENTIVES

Residential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	1.82	1.85	1.88	1.92	1.96	2	2.04	2.08	1.92	1.78	1.55	1.58	1.61	1.64	1.68	1.71	1.74	1.77	1.81	1.84	1.81
TRC	0.7	0.73	0.75	0.77	0.79	0.81	0.83	0.85	0.8	0.75	0.66	0.68	0.69	0.7	0.72	0.73	0.74	0.75	0.77	0.78	0.75
UCT	0.71	0.82	0.91	0.98	1.04	1.09	1.13	1.17	1.2	1.22	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.38	1.4	1.41	1.18
RIM	0.63	0.71	0.78	0.84	0.88	0.91	0.94	0.97	0.99	1	1.02	1.03	1.04	1.06	1.07	1.08	1.09	1.1	1.1	1.11	0.97
Nonresidential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	1.02	1.04	1.05	1.07	1.09	1.11	1.13	1.15	1.17	1.19	1.21	1.24	1.26	1.28	1.3	1.32	1.35	1.37	1.39	1.41	1.21
TRC	0.63	0.67	0.7	0.73	0.75	0.77	0.79	0.82	0.8	0.76	0.66	0.68	0.69	0.7	0.72	0.73	0.74	0.75	0.77	0.78	0.73
UCT	0.45	0.52	0.59	0.66	0.72	0.78	0.83	0.89	1.31	1.31	1.25	1.27	1.29	1.31	1.33	1.35	1.37	1.38	1.4	1.41	1.07
RIM	0.42	0.49	0.55	0.61	0.66	0.71	0.75	0.79	1.12	1.12	1.07	1.09	1.1	1.11	1.13	1.14	1.15	1.16	1.17	1.18	0.93

TABLE A-5. ACHIEVE 1.0 UCT BCR FOR ALL SECTORS - $2,170 PER KWDC AND 25% UTILITY INCENTIVES

Residential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	1.71	1.74	1.78	1.81	1.85	1.88	1.92	1.96	1.81	1.68	1.46	1.48	1.51	1.54	1.57	1.6	1.63	1.66	1.7	1.73	1.7
TRC	0.65	0.68	0.7	0.72	0.74	0.76	0.77	0.79	0.74	0.7	0.62	0.63	0.64	0.66	0.67	0.68	0.69	0.7	0.72	0.73	0.7
UCT	0.67	0.76	0.85	0.91	0.97	1.02	1.06	1.09	1.12	1.14	1.17	1.19	1.21	1.23	1.24	1.26	1.28	1.29	1.31	1.32	1.10
RIM	0.59	0.67	0.74	0.79	0.83	0.86	0.89	0.91	0.93	0.95	0.96	0.98	0.99	1	1.01	1.02	1.03	1.04	1.05	1.06	0.92
Nonresidential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	0.97	0.98	1	1.01	1.03	1.05	1.07	1.09	1.11	1.13	1.15	1.17	1.19	1.21	1.23	1.25	1.27	1.29	1.31	1.33	1.14
TRC	0.59	0.62	0.65	0.68	0.7	0.72	0.74	0.76	0.75	0.7	0.62	0.63	0.64	0.66	0.67	0.68	0.69	0.7	0.72	0.73	0.68
UCT	0.41	0.49	0.55	0.62	0.68	0.73	0.78	0.83	1.23	1.23	1.17	1.19	1.21	1.23	1.24	1.26	1.28	1.29	1.31	1.32	1.00
RIM	0.39	0.46	0.52	0.57	0.62	0.67	0.71	0.75	1.06	1.06	1.01	1.03	1.04	1.05	1.06	1.08	1.09	1.1	1.11	1.12	0.87

TABLE A-6. 500 PERCENT (5X) T&D AVOIDED COSTS - T&D COSTS SHIFT FROM $13.82 TO $69.10; $3,100 PER KWDC AND 25% UTILITY INCENTIVES

Residential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	1.31	1.33	1.35	1.37	1.4	1.42	1.45	1.48	1.36	1.26	1.09	1.11	1.13	1.16	1.18	1.2	1.22	1.24	1.26	1.28	1.28
TRC	0.6	0.62	0.64	0.66	0.67	0.68	0.7	0.71	0.66	0.62	0.55	0.55	0.56	0.57	0.58	0.59	0.6	0.61	0.61	0.62	0.62
UCT	0.61	0.7	0.77	0.83	0.88	0.92	0.95	0.98	1	1.02	1.04	1.05	1.07	1.08	1.09	1.11	1.12	1.13	1.14	1.15	0.98
RIM	0.56	0.63	0.7	0.75	0.78	0.82	0.84	0.86	0.88	0.89	0.9	0.91	0.92	0.93	0.94	0.94	0.95	0.96	0.96	0.97	0.85
Nonresidential	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	Average
PCT	1.31	1.33	1.35	1.37	1.4	1.42	1.45	1.48	1.36	1.26	1.09	1.11	1.13	1.16	1.18	1.2	1.22	1.24	1.26	1.28	1.28
TRC	0.6	0.62	0.64	0.66	0.67	0.68	0.7	0.71	0.66	0.62	0.55	0.55	0.56	0.57	0.58	0.59	0.6	0.61	0.61	0.62	0.62
UCT	0.61	0.7	0.77	0.83	0.88	0.92	0.95	0.98	1	1.02	1.04	1.05	1.07	1.08	1.09	1.11	1.12	1.13	1.14	1.15	0.98
RIM	0.56	0.63	0.7	0.75	0.78	0.82	0.84	0.86	0.88	0.89	0.9	0.91	0.92	0.93	0.94	0.94	0.95	0.96	0.96	0.97	0.85

Engine Generator Sensitivity Analysis Scenario Results

TABLE A-7. IRP SCENARIO – 3 PERCENT ECONOMIC GROWTH RATE FOR BU GENERATORS, 1.015 MW ANNUAL ADDITIONS FROM PG

Metric	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
5 CP Summer	60.1	61.2	62.4	63.5	64.7	65.9	67.1	68.3	69.5	70.7	71.9	73.2	74.4	75.7	77	78.3	79.6	80.9	82.3	83.6
5 CP Winter	41.1	41.8	42.5	43.1	43.8	44.5	45.2	45.9	46.6	47.3	48	48.6	49.3	50	50.7	51.4	52.1	52.8	53.4	54.1
GWh	359.3	365.4	371.4	377.5	383.5	389.6	395.6	401.7	407.7	413.8	419.8	425.9	432	438	444.1	450.2	456.2	462.3	468.4	474.5

TABLE A-8. HIGH SCENARIO – 4 PERCENT ECONOMIC GROWTH RATE FOR BU GENERATORS, 1.269 MW ANNUAL ADDITIONS FROM PG

Metric	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
5 CP Summer	61	62.5	63.9	65.4	67	68.5	70	71.6	73.2	74.8	76.5	78.2	79.9	81.6	83.3	85.1	86.9	88.7	90.6	92.5
5 CP Winter	41.6	42.5	43.3	44.2	45	45.9	46.7	47.6	48.5	49.3	50.2	51	51.9	52.8	53.6	54.5	55.3	56.2	57.1	57.9
GWh	363.9	371.4	379	386.6	394.1	401.7	409.3	416.9	424.5	432	439.6	447.2	454.8	462.4	470.1	477.7	485.3	492.9	500.6	508.2

TABLE A-9. LOW SCENARIO – 2 PERCENT ECONOMIC GROWTH RATE FOR BU GENERATORS, 0.761 MW ANNUAL ADDITIONS FROM PG

Metric	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
5 CP Summer	59.1	60	60.8	61.6	62.5	63.3	64.1	65	65.9	66.7	67.6	68.4	69.3	70.2	71.1	72	72.9	73.8	74.7	75.6
5 CP Winter	40.6	41.1	41.6	42.1	42.6	43.1	43.7	44.2	44.7	45.2	45.7	46.2	46.7	47.3	47.8	48.3	48.8	49.3	49.8	50.4
GWh	354.8	359.3	363.8	368.4	372.9	377.4	382	386.5	391	395.5	400.1	404.6	409.1	413.7	418.2	422.7	427.3	431.8	436.4	440.9

APPENDIX B: RESIDENTIAL ENERGY EFFICIENCY DETAIL

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1001	Appliances	ENERGY STAR Air Purifier	Home Energy Products	SF	NLI	MO	413.0	55.4%	229.0	0.026	0.034	9	$22	100%	100%	10%	32%	64%	64%	2.50
1002	Appliances	ENERGY STAR Air Purifier	Income Qualified Weatherproofing	SF	LI	MO	413.0	55.4%	229.0	0.026	0.034	9	$22	100%	100%	10%	32%	68%	68%	2.50
1003	Appliances	ENERGY STAR Air Purifier	Home Energy Products	SF	N/A	NC	413.0	55.4%	229.0	0.026	0.034	9	$22	100%	100%	10%	32%	64%	64%	2.50
1004	Appliances	ENERGY STAR Air Purifier	Home Energy Products	MF	NLI	MO	413.0	55.4%	229.0	0.026	0.034	9	$22	100%	100%	10%	32%	62%	62%	2.50
1005	Appliances	ENERGY STAR Air Purifier	Income Qualified Weatherproofing	MF	LI	MO	413.0	55.4%	229.0	0.026	0.034	9	$22	100%	100%	10%	32%	53%	53%	2.50
1006	Appliances	ENERGY STAR Air Purifier	Home Energy Products	MF	N/A	NC	413.0	55.4%	229.0	0.026	0.034	9	$22	100%	100%	10%	32%	62%	62%	2.50
1007	Appliances	ENERGY STAR Refrigerator	Home Energy Products	SF	NLI	MO	349.2	10.0%	35.0	0.005	0.004	15	$28	50%	25%	141%	57%	70%	65%	2.55
1008	Appliances	ENERGY STAR Refrigerator	Income Qualified Weatherproofing	SF	LI	ER1	998.2	68.5%	684.0	0.103	0.103	5	$872	100%	100%	141%	57%	70%	68%	0.20
1009	Appliances	ENERGY STAR Refrigerator	Income Qualified Weatherproofing	SF	LI	ER2	349.2	10.0%	35.0	0.005	0.004	10	$0	100%	100%	141%	57%	70%	68%	-
1010	Appliances	ENERGY STAR Refrigerator	Income Qualified Weatherproofing	SF	LI	ER3	349.2	10.0%	35.0	0.005	0.004	15	$28	100%	100%	141%	57%	70%	68%	-
1011	Appliances	ENERGY STAR Refrigerator	Home Energy Products	SF	N/A	NC	349.2	10.0%	35.0	0.005	0.004	15	$28	50%	25%	141%	57%	70%	65%	2.55
1012	Appliances	ENERGY STAR Refrigerator	Home Energy Products	MF	NLI	MO	349.2	10.0%	35.0	0.005	0.004	15	$28	50%	25%	141%	57%	70%	65%	2.55
1013	Appliances	ENERGY STAR Refrigerator	Income Qualified Weatherproofing	MF	LI	ER1	998.2	68.5%	684.0	0.103	0.103	5	$872	100%	100%	141%	57%	70%	65%	0.20
1014	Appliances	ENERGY STAR Refrigerator	Income Qualified Weatherproofing	MF	LI	ER2	349.2	10.0%	35.0	0.005	0.004	10	$0	100%	100%	141%	57%	70%	65%	-
1015	Appliances	ENERGY STAR Refrigerator	Income Qualified Weatherproofing	MF	LI	ER3	349.2	10.0%	35.0	0.005	0.004	15	$28	100%	100%	141%	57%	70%	65%	-
1016	Appliances	ENERGY STAR Refrigerator	Home Energy Products	MF	N/A	NC	349.2	10.0%	35.0	0.005	0.004	15	$28	50%	25%	141%	57%	70%	65%	2.55
1017	Appliances	CEE Tier 2 Refrigerator	Home Energy Products	SF	NLI	MO	349.2	15.0%	52.4	0.008	0.005	15	$112	25%	25%	141%	57%	70%	65%	0.97
1018	Appliances	CEE Tier 2 Refrigerator	Home Energy Products	SF	LI	MO	349.2	15.0%	52.4	0.008	0.005	15	$112	25%	25%	141%	57%	67%	65%	0.97
1019	Appliances	CEE Tier 2 Refrigerator	Home Energy Products	SF	N/A	NC	349.2	15.0%	52.4	0.008	0.005	15	$112	25%	25%	141%	57%	70%	65%	0.97
1020	Appliances	CEE Tier 2 Refrigerator	Home Energy Products	MF	NLI	MO	349.2	15.0%	52.4	0.008	0.005	15	$112	25%	25%	141%	57%	69%	65%	0.97
1021	Appliances	CEE Tier 2 Refrigerator	Home Energy Products	MF	LI	MO	349.2	15.0%	52.4	0.008	0.005	15	$112	25%	25%	141%	57%	68%	65%	0.97
1022	Appliances	CEE Tier 2 Refrigerator	Home Energy Products	MF	N/A	NC	349.2	15.0%	52.4	0.008	0.005	15	$112	25%	25%	141%	57%	69%	65%	0.97
1023	Appliances	CEE Tier 3 Refrigerator	Home Energy Products	SF	NLI	MO	349.2	20.0%	69.8	0.011	0.007	15	$134	25%	25%	141%	57%	70%	65%	1.09
1024	Appliances	CEE Tier 3 Refrigerator	Home Energy Products	SF	LI	MO	349.2	20.0%	69.8	0.011	0.007	15	$134	50%	25%	141%	57%	70%	65%	1.09
1025	Appliances	CEE Tier 3 Refrigerator	Home Energy Products	SF	N/A	NC	349.2	20.0%	69.8	0.011	0.007	15	$134	25%	25%	141%	57%	70%	65%	1.09
1026	Appliances	CEE Tier 3 Refrigerator	Home Energy Products	MF	NLI	MO	349.2	20.0%	69.8	0.011	0.007	15	$134	25%	25%	141%	57%	69%	65%	1.09
1027	Appliances	CEE Tier 3 Refrigerator	Home Energy Products	MF	LI	MO	349.2	20.0%	69.8	0.011	0.007	15	$134	50%	25%	141%	57%	70%	65%	1.09
1028	Appliances	CEE Tier 3 Refrigerator	Home Energy Products	MF	N/A	NC	349.2	20.0%	69.8	0.011	0.007	15	$134	25%	25%	141%	57%	69%	65%	1.09
1029	Appliances	Refrigerator Recycling	Home Appliance Recycling	SF	N/A	Recycle	827.0	100.0%	827.0	0.102	0.084	6	$170	100%	29%	8%	0%	64%	34%	3.91
1030	Appliances	Refrigerator Recycling	Home Appliance Recycling	MF	N/A	Recycle	827.0	100.0%	827.0	0.102	0.084	6	$170	100%	29%	8%	0%	62%	30%	3.91
1031	Appliances	ENERGY STAR Clothes Washer	Home Energy Products	SF	NLI	MO	612.4	13.9%	85.0	0.011	0.014	14	$87	25%	25%	96%	57%	70%	65%	1.86
1032	Appliances	ENERGY STAR Clothes Washer	Home Energy Products	SF	LI	MO	612.4	13.9%	85.0	0.011	0.014	14	$87	75%	25%	96%	57%	70%	65%	1.86
1033	Appliances	ENERGY STAR Clothes Washer	Home Energy Products	SF	N/A	NC	612.4	13.9%	85.0	0.011	0.014	14	$87	25%	25%	96%	57%	70%	65%	1.86
1034	Appliances	ENERGY STAR Clothes Washer	Home Energy Products	MF	NLI	MO	612.4	13.9%	85.0	0.011	0.014	14	$87	25%	25%	96%	25%	47%	40%	1.86
1035	Appliances	ENERGY STAR Clothes Washer	Home Energy Products	MF	LI	MO	612.4	13.9%	85.0	0.011	0.014	14	$87	75%	25%	96%	25%	48%	40%	1.86
1036	Appliances	ENERGY STAR Clothes Washer	Home Energy Products	MF	N/A	NC	612.4	13.9%	85.0	0.011	0.014	14	$87	25%	25%	96%	25%	47%	40%	1.86
1037	Appliances	CEE Tier 2 Clothes Washer	Home Energy Products	SF	NLI	MO	612.4	24.9%	152.7	0.020	0.025	14	$85	75%	25%	96%	57%	70%	65%	3.42
1038	Appliances	CEE Tier 2 Clothes Washer	Home Energy Products	SF	LI	MO	612.4	24.9%	152.7	0.020	0.025	14	$85	100%	25%	96%	57%	70%	65%	3.42
1039	Appliances	CEE Tier 2 Clothes Washer	Home Energy Products	SF	N/A	NC	612.4	24.9%	152.7	0.020	0.025	14	$85	75%	25%	96%	57%	70%	65%	3.42
1040	Appliances	CEE Tier 2 Clothes Washer	Home Energy Products	MF	NLI	MO	612.4	24.9%	152.7	0.020	0.025	14	$85	75%	25%	96%	25%	48%	40%	3.42
1041	Appliances	CEE Tier 2 Clothes Washer	Home Energy Products	MF	LI	MO	612.4	24.9%	152.7	0.020	0.025	14	$85	100%	25%	96%	25%	53%	40%	3.42
1042	Appliances	CEE Tier 2 Clothes Washer	Home Energy Products	MF	N/A	NC	612.4	24.9%	152.7	0.020	0.025	14	$85	75%	25%	96%	25%	48%	40%	3.42
1043	Appliances	CEE Advacned Tier Clothes Washer	Home Energy Products	SF	NLI	MO	612.4	27.8%	170.3	0.022	0.028	14	$99	75%	25%	96%	57%	70%	65%	3.27
1044	Appliances	CEE Advacned Tier Clothes Washer	Home Energy Products	SF	LI	MO	612.4	27.8%	170.3	0.022	0.028	14	$99	100%	25%	96%	57%	70%	65%	3.27
1045	Appliances	CEE Advacned Tier Clothes Washer	Home Energy Products	SF	N/A	NC	612.4	27.8%	170.3	0.022	0.028	14	$99	75%	25%	96%	57%	70%	65%	3.27
1046	Appliances	CEE Advacned Tier Clothes Washer	Home Energy Products	MF	NLI	MO	612.4	27.8%	170.3	0.022	0.028	14	$99	75%	25%	96%	25%	48%	40%	3.27
1047	Appliances	CEE Advacned Tier Clothes Washer	Home Energy Products	MF	LI	MO	612.4	27.8%	170.3	0.022	0.028	14	$99	100%	25%	96%	25%	53%	40%	3.27
1048	Appliances	CEE Advacned Tier Clothes Washer	Home Energy Products	MF	N/A	NC	612.4	27.8%	170.3	0.022	0.028	14	$99	75%	25%	96%	25%	48%	40%	3.27
1049	Appliances	ENERGY STAR Dishwasher	Home Energy Products	SF	NLI	MO	307.0	13.0%	40.0	0.003	0.010	11	$76	25%	25%	73%	92%	95%	94%	0.74
1050	Appliances	ENERGY STAR Dishwasher	Home Energy Products	SF	LI	MO	307.0	13.0%	40.0	0.003	0.010	11	$76	25%	25%	73%	92%	94%	94%	0.74
1051	Appliances	ENERGY STAR Dishwasher	Home Energy Products	SF	N/A	NC	307.0	13.0%	40.0	0.003	0.010	11	$76	25%	25%	73%	92%	95%	94%	0.74
1052	Appliances	ENERGY STAR Dishwasher	Home Energy Products	MF	NLI	MO	307.0	13.0%	40.0	0.003	0.010	11	$76	25%	25%	73%	92%	95%	94%	0.74
1053	Appliances	ENERGY STAR Dishwasher	Home Energy Products	MF	LI	MO	307.0	13.0%	40.0	0.003	0.010	11	$76	25%	25%	73%	92%	94%	94%	0.74
1054	Appliances	ENERGY STAR Dishwasher	Home Energy Products	MF	N/A	NC	307.0	13.0%	40.0	0.003	0.010	11	$76	25%	25%	73%	92%	95%	94%	0.74
1055	Appliances	Smart Dishwasher	Home Energy Products	SF	NLI	MO	307.0	10.7%	32.8	0.002	0.008	11	$76	25%	25%	73%	92%	95%	94%	0.61
1056	Appliances	Smart Dishwasher	Home Energy Products	SF	LI	MO	307.0	10.7%	32.8	0.002	0.008	11	$76	25%	25%	73%	92%	94%	94%	0.61
1057	Appliances	Smart Dishwasher	Home Energy Products	SF	N/A	NC	307.0	10.7%	32.8	0.002	0.008	11	$76	25%	25%	73%	92%	95%	94%	0.61
1058	Appliances	Smart Dishwasher	Home Energy Products	MF	NLI	MO	307.0	10.7%	32.8	0.002	0.008	11	$76	25%	25%	73%	92%	95%	94%	0.61
1059	Appliances	Smart Dishwasher	Home Energy Products	MF	LI	MO	307.0	10.7%	32.8	0.002	0.008	11	$76	25%	25%	73%	92%	94%	94%	0.61
1060	Appliances	Smart Dishwasher	Home Energy Products	MF	N/A	NC	307.0	10.7%	32.8	0.002	0.008	11	$76	25%	25%	73%	92%	95%	94%	0.61
1061	Appliances	ENERGY STAR Dehumidifier	Home Energy Products	SF	NLI	MO	1,095.0	12.2%	134.0	0.030	0.020	12	$35	100%	71%	16%	84%	89%	87%	2.74
1062	Appliances	ENERGY STAR Dehumidifier	Home Energy Products	SF	LI	MO	1,095.0	12.2%	134.0	0.030	0.020	12	$35	100%	71%	16%	84%	89%	87%	2.74
1063	Appliances	ENERGY STAR Dehumidifier	Home Energy Products	SF	N/A	NC	1,095.0	12.2%	134.0	0.030	0.020	12	$35	100%	71%	16%	84%	89%	87%	2.74
1064	Appliances	ENERGY STAR Dehumidifier	Home Energy Products	MF	NLI	MO	1,095.0	12.2%	134.0	0.030	0.020	12	$35	100%	71%	2%	84%	89%	87%	2.74
1065	Appliances	ENERGY STAR Dehumidifier	Home Energy Products	MF	LI	MO	1,095.0	12.2%	134.0	0.030	0.020	12	$35	100%	71%	2%	84%	89%	87%	2.74
1066	Appliances	ENERGY STAR Dehumidifier	Home Energy Products	MF	N/A	NC	1,095.0	12.2%	134.0	0.030	0.020	12	$35	100%	71%	2%	84%	89%	87%	2.74
1067	Appliances	ENERGY STAR Most Efficient Dehumidifier	Home Energy Products	SF	NLI	MO	1,095.0	17.2%	188.0	0.043	0.028	12	$100	75%	25%	16%	84%	89%	87%	3.88

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1068	Appliances	ENERGY STAR Most Efficient Dehumidifier	Home Energy Products	SF	LI	MO	1,095.0	17.2%	188.0	0.043	0.028	12	$100	100%	25%	16%	84%	89%	87%	3.88
1069	Appliances	ENERGY STAR Most Efficient Dehumidifier	Home Energy Products	SF	N/A	NC	1,095.0	17.2%	188.0	0.043	0.028	12	$100	75%	25%	16%	84%	89%	87%	3.88
1070	Appliances	ENERGY STAR Most Efficient Dehumidifier	Home Energy Products	MF	NLI	MO	1,095.0	17.2%	188.0	0.043	0.028	12	$100	75%	25%	2%	84%	89%	87%	3.88
1071	Appliances	ENERGY STAR Most Efficient Dehumidifier	Home Energy Products	MF	LI	MO	1,095.0	17.2%	188.0	0.043	0.028	12	$100	100%	25%	2%	84%	89%	87%	3.88
1072	Appliances	ENERGY STAR Most Efficient Dehumidifier	Home Energy Products	MF	N/A	NC	1,095.0	17.2%	188.0	0.043	0.028	12	$100	75%	25%	2%	84%	89%	87%	3.88
1073	Appliances	ENERGY STAR Freezer	Home Energy Products	SF	NLI	MO	277.3	10.0%	27.8	0.004	0.003	21	$5	100%	25%	55%	32%	64%	45%	14.60
1074	Appliances	ENERGY STAR Freezer	Home Energy Products	SF	LI	MO	277.3	10.0%	27.8	0.004	0.003	21	$5	100%	25%	55%	32%	68%	45%	14.60
1075	Appliances	ENERGY STAR Freezer	Home Energy Products	SF	N/A	NC	277.3	10.0%	27.8	0.004	0.003	21	$5	100%	25%	55%	32%	64%	45%	14.60
1076	Appliances	ENERGY STAR Freezer	Home Energy Products	MF	NLI	MO	277.3	10.0%	27.8	0.004	0.003	21	$5	100%	25%	55%	32%	62%	45%	14.60
1077	Appliances	ENERGY STAR Freezer	Home Energy Products	MF	LI	MO	277.3	10.0%	27.8	0.004	0.003	21	$5	100%	25%	55%	32%	53%	45%	14.60
1078	Appliances	ENERGY STAR Freezer	Home Energy Products	MF	N/A	NC	277.3	10.0%	27.8	0.004	0.003	21	$5	100%	25%	55%	32%	62%	45%	14.60
1079	Appliances	Freezer Recycling	Home Appliance Recycling	SF	N/A	Recycle	629.0	100.0%	629.0	0.074	0.063	6	$170	75%	29%	8%	0%	50%	34%	2.93
1080	Appliances	Freezer Recycling	Home Appliance Recycling	MF	N/A	Recycle	629.0	100.0%	629.0	0.074	0.063	6	$170	75%	29%	8%	0%	42%	30%	2.93
1081	Appliances	ENERGY STAR Clothes Dryer (Electric)	Home Energy Products	SF	NLI	MO	768.9	20.9%	160.4	0.022	0.025	16	$152	50%	25%	73%	35%	54%	48%	2.23
1082	Appliances	ENERGY STAR Clothes Dryer (Electric)	Home Energy Products	SF	LI	MO	768.9	20.9%	160.4	0.022	0.025	16	$152	100%	25%	73%	35%	68%	48%	2.23
1083	Appliances	ENERGY STAR Clothes Dryer (Electric)	Home Energy Products	SF	N/A	NC	768.9	20.9%	160.4	0.022	0.025	16	$152	50%	25%	73%	35%	54%	48%	2.23
1084	Appliances	ENERGY STAR Clothes Dryer (Electric)	Residential Multi-Family DI	MF	NLI	MO	768.9	20.9%	160.4	0.022	0.024	16	$152	50%	49%	73%	35%	54%	48%	1.13
1085	Appliances	ENERGY STAR Clothes Dryer (Electric)	Residential Multi-Family DI	MF	LI	MO	768.9	20.9%	160.4	0.022	0.024	16	$152	100%	49%	73%	35%	54%	48%	1.13
1086	Appliances	ENERGY STAR Clothes Dryer (Electric)	Residential Multi-Family DI	MF	N/A	NC	768.9	20.9%	160.4	0.022	0.024	16	$152	50%	49%	73%	35%	54%	48%	1.13
1087	Appliances	Heat Pump Dryer	Home Energy Products	SF	NLI	MO	768.9	56.6%	435.0	0.055	0.067	16	$900	25%	25%	73%	35%	54%	48%	1.00
1088	Appliances	Heat Pump Dryer	Home Energy Products	SF	LI	MO	768.9	56.6%	435.0	0.055	0.067	16	$900	50%	25%	73%	35%	54%	48%	1.00
1089	Appliances	Heat Pump Dryer	Home Energy Products	SF	N/A	NC	768.9	56.6%	435.0	0.055	0.067	16	$900	25%	25%	73%	35%	54%	48%	1.00
1090	Appliances	Heat Pump Dryer	Home Energy Products	MF	NLI	MO	768.9	56.6%	435.0	0.055	0.066	16	$900	25%	25%	73%	35%	54%	48%	1.00
1091	Appliances	Heat Pump Dryer	Home Energy Products	MF	LI	MO	768.9	56.6%	435.0	0.055	0.066	16	$900	50%	25%	73%	35%	54%	48%	1.00
1092	Appliances	Heat Pump Dryer	Home Energy Products	MF	N/A	NC	768.9	56.6%	435.0	0.055	0.066	16	$900	25%	25%	73%	35%	54%	48%	1.00
1093	Appliances	Ozone Laundry	Home Energy Products	SF	NLI	Retrofit	612.4	39.5%	241.7	0.035	0.037	8	$300	25%	25%	24%	0%	31%	31%	1.03
1094	Appliances	Ozone Laundry	Home Energy Products	SF	LI	Retrofit	612.4	39.5%	241.7	0.035	0.037	8	$300	50%	25%	24%	0%	36%	23%	1.03
1095	Appliances	Ozone Laundry	Home Energy Products	SF	N/A	NC	612.4	39.5%	241.7	0.035	0.037	8	$300	25%	25%	24%	0%	31%	31%	1.03
1096	Appliances	Ozone Laundry	Home Energy Products	MF	NLI	Retrofit	612.4	37.9%	232.2	0.033	0.035	8	$300	25%	25%	41%	0%	29%	29%	0.99
1097	Appliances	Ozone Laundry	Home Energy Products	MF	LI	Retrofit	612.4	37.9%	232.2	0.033	0.035	8	$300	25%	25%	41%	0%	26%	26%	0.99
1098	Appliances	Ozone Laundry	Home Energy Products	MF	N/A	NC	612.4	37.9%	232.2	0.033	0.035	8	$300	25%	25%	41%	0%	29%	29%	0.99
1099	Appliances	Smart Dryer Sensor	Home Energy Products	SF	NLI	Retrofit	768.9	5.1%	39.0	0.005	0.006	16	$150	25%	25%	73%	35%	54%	48%	0.55
1100	Appliances	Smart Dryer Sensor	Home Energy Products	SF	LI	Retrofit	768.9	5.1%	39.0	0.005	0.006	16	$150	25%	25%	73%	35%	50%	48%	0.55
1101	Appliances	Smart Dryer Sensor	Home Energy Products	SF	N/A	NC	768.9	5.1%	39.0	0.005	0.006	16	$150	25%	25%	73%	35%	54%	48%	0.55
1102	Appliances	Smart Dryer Sensor	Home Energy Products	MF	NLI	Retrofit	768.9	5.1%	39.0	0.005	0.006	16	$150	25%	25%	73%	35%	54%	48%	0.55
1103	Appliances	Smart Dryer Sensor	Home Energy Products	MF	LI	Retrofit	768.9	5.1%	39.0	0.005	0.006	16	$150	25%	25%	73%	35%	52%	48%	0.55
1104	Appliances	Smart Dryer Sensor	Home Energy Products	MF	N/A	NC	768.9	5.1%	39.0	0.005	0.006	16	$150	25%	25%	73%	35%	54%	48%	0.55
1105	Appliances	ENERGY STAR Water Coolers	Home Energy Products	SF	NLI	MO	319.6	76.9%	245.7	0.028	0.036	10	$60	100%	25%	5%	58%	70%	66%	5.84
1106	Appliances	ENERGY STAR Water Coolers	Home Energy Products	SF	LI	MO	319.6	76.9%	245.7	0.028	0.036	10	$60	100%	25%	5%	58%	70%	66%	5.84
1107	Appliances	ENERGY STAR Water Coolers	Home Energy Products	SF	N/A	NC	319.6	76.9%	245.7	0.028	0.036	10	$60	100%	25%	5%	58%	70%	66%	5.84
1108	Appliances	ENERGY STAR Water Coolers	Home Energy Products	MF	NLI	MO	319.6	76.9%	245.7	0.028	0.036	10	$60	100%	25%	5%	58%	70%	66%	5.84
1109	Appliances	ENERGY STAR Water Coolers	Home Energy Products	MF	LI	MO	319.6	76.9%	245.7	0.028	0.036	10	$60	100%	25%	5%	58%	70%	66%	5.84
1110	Appliances	ENERGY STAR Water Coolers	Home Energy Products	MF	N/A	NC	319.6	76.9%	245.7	0.028	0.036	10	$60	100%	25%	5%	58%	70%	66%	5.84
1111	Appliances	Induction Cooktop	Home Energy Products	SF	NLI	MO	122.5	9.4%	11.5	0.015	0.002	16	$1,049	25%	25%	53%	51%	65%	60%	0.08
1112	Appliances	Induction Cooktop	Home Energy Products	SF	LI	MO	122.5	9.4%	11.5	0.015	0.002	16	$1,049	25%	25%	53%	51%	62%	60%	0.08
1113	Appliances	Induction Cooktop	Home Energy Products	SF	N/A	NC	122.5	9.4%	11.5	0.015	0.002	16	$1,049	25%	25%	53%	51%	65%	60%	0.08
1114	Appliances	Induction Cooktop	Home Energy Products	MF	NLI	MO	122.5	9.4%	11.5	0.015	0.002	16	$1,049	25%	25%	53%	51%	65%	60%	0.08
1115	Appliances	Induction Cooktop	Home Energy Products	MF	LI	MO	122.5	9.4%	11.5	0.015	0.002	16	$1,049	25%	25%	53%	51%	64%	60%	0.08
1116	Appliances	Induction Cooktop	Home Energy Products	MF	N/A	NC	122.5	9.4%	11.5	0.015	0.002	16	$1,049	25%	25%	53%	51%	65%	60%	0.08
2001	Behavioral	Home Energy Reports	Home Energy Engagement	SF	N/A	MO	11,297.0	0.9%	103.0	0.012	0.018	1	$0	100%	100%	100%	0%	100%	100%	1.00
2002	Behavioral	Home Energy Reports	Home Energy Engagement	SF	N/A	NC	11,297.0	0.9%	103.0	0.012	0.018	1	$0	100%	100%	100%	0%	100%	100%	1.00
2003	Behavioral	Home Energy Reports	Home Energy Engagement	MF	N/A	MO	7,531.0	1.4%	103.0	0.012	0.020	1	$0	100%	100%	100%	0%	100%	100%	1.00
2004	Behavioral	Home Energy Reports	Home Energy Engagement	MF	N/A	NC	7,531.0	1.4%	103.0	0.012	0.020	1	$0	100%	100%	100%	0%	100%	100%	1.00
2005	Behavioral	Home Energy Management System	Home Energy Products	SF	N/A	MO	11,297.0	5.0%	564.9	0.064	0.098	15	$0	100%	25%	100%	0%	100%	100%	1.00
2006	Behavioral	Home Energy Management System	Home Energy Products	SF	N/A	NC	11,297.0	5.0%	564.9	0.064	0.098	15	$0	100%	25%	100%	0%	100%	100%	1.00
2007	Behavioral	Home Energy Management System	Home Energy Products	MF	N/A	MO	7,531.0	5.0%	376.6	0.043	0.073	15	$0	100%	25%	100%	0%	100%	100%	1.00
2008	Behavioral	Home Energy Management System	Home Energy Products	MF	N/A	NC	7,531.0	5.0%	376.6	0.043	0.073	15	$0	100%	25%	100%	0%	100%	100%	1.00
2009	Behavioral	AMI Data Portal	Home Energy Engagement	SF	N/A	MO	11,297.0	0.8%	85.7	0.010	0.015	1	$0	100%	100%	100%	0%	100%	100%	1.00
2010	Behavioral	AMI Data Portal	Home Energy Engagement	SF	N/A	NC	11,297.0	0.8%	85.7	0.010	0.015	1	$0	100%	100%	100%	0%	100%	100%	1.00
2011	Behavioral	AMI Data Portal	Home Energy Engagement	MF	N/A	MO	7,531.0	0.8%	57.1	0.007	0.011	1	$0	100%	100%	100%	0%	100%	100%	1.00
2012	Behavioral	AMI Data Portal	Home Energy Engagement	MF	N/A	NC	7,531.0	0.8%	57.1	0.007	0.011	1	$0	100%	100%	100%	0%	100%	100%	1.00
3001	Consumer Electonics	Advanced Power Strip – Tier 1	Home Energy Products	SF	NLI	Retrofit	466.0	12.1%	56.6	0.006	0.008	7	$10	100%	100%	67%	44%	64%	64%	1.50
3002	Consumer Electonics	Advanced Power Strip – Tier 1	Home Energy Products	SF	LI	Retrofit	466.0	12.1%	56.6	0.006	0.008	7	$10	100%	100%	67%	44%	68%	68%	1.50
3003	Consumer Electonics	Advanced Power Strip – Tier 1	Home Energy Products	SF	N/A	NC	466.0	12.1%	56.6	0.006	0.008	7	$10	100%	100%	67%	44%	64%	64%	1.50
3004	Consumer Electonics	Advanced Power Strip – Tier 1	Home Energy Products	MF	NLI	Retrofit	466.0	12.1%	56.6	0.006	0.008	7	$10	100%	100%	67%	46%	62%	62%	1.50
3005	Consumer Electonics	Advanced Power Strip – Tier 1	Home Energy Products	MF	LI	Retrofit	466.0	12.1%	56.6	0.006	0.008	7	$10	100%	100%	67%	46%	62%	57%	1.50
3006	Consumer Electonics	Advanced Power Strip – Tier 1	Home Energy Products	MF	N/A	NC	466.0	12.1%	56.6	0.006	0.008	7	$10	100%	100%	67%	46%	62%	62%	1.50

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
3007	Consumer Electonics	Tier 2 Advanced Power Strips (APS) – Residential	Home Energy Products	SF	NLI	Retrofit	466.0	29.2%	136.1	0.025	0.020	7	$20	100%	100%	67%	44%	64%	64%	2.08
3008	Consumer Electonics	Tier 2 Advanced Power Strips (APS) – Residential	Home Energy Products	SF	LI	Retrofit	466.0	29.2%	136.1	0.025	0.020	7	$20	100%	100%	67%	44%	68%	68%	2.08
3009	Consumer Electonics	Tier 2 Advanced Power Strips (APS) – Residential	Home Energy Products	SF	N/A	NC	466.0	29.2%	136.1	0.025	0.020	7	$20	100%	100%	67%	44%	64%	64%	2.08
3010	Consumer Electonics	Tier 2 Advanced Power Strips (APS) – Residential	Home Energy Products	MF	NLI	Retrofit	466.0	29.2%	136.1	0.025	0.020	7	$20	100%	100%	67%	46%	62%	62%	2.08
3011	Consumer Electonics	Tier 2 Advanced Power Strips (APS) – Residential	Home Energy Products	MF	LI	Retrofit	466.0	29.2%	136.1	0.025	0.020	7	$20	100%	100%	67%	46%	62%	57%	2.08
3012	Consumer Electonics	Tier 2 Advanced Power Strips (APS) – Residential	Home Energy Products	MF	N/A	NC	466.0	29.2%	136.1	0.025	0.020	7	$20	100%	100%	67%	46%	62%	62%	2.08
3013	Consumer Electonics	ENERGY STAR Television	Home Energy Products	SF	NLI	MO	-	-	91.3	0.011	0.013	5	$60	33%	33%	180%	59%	71%	67%	0.93
3014	Consumer Electonics	ENERGY STAR Television	Home Energy Products	SF	LI	MO	-	-	91.3	0.011	0.013	5	$60	50%	33%	180%	59%	71%	67%	0.93
3015	Consumer Electonics	ENERGY STAR Television	Home Energy Products	SF	N/A	NC	-	-	91.3	0.011	0.013	5	$60	33%	33%	180%	59%	71%	67%	0.93
3016	Consumer Electonics	ENERGY STAR Television	Home Energy Products	MF	NLI	MO	-	-	91.3	0.011	0.014	5	$60	33%	33%	180%	59%	71%	67%	0.93
3017	Consumer Electonics	ENERGY STAR Television	Home Energy Products	MF	LI	MO	-	-	91.3	0.011	0.014	5	$60	50%	33%	180%	59%	71%	67%	0.93
3018	Consumer Electonics	ENERGY STAR Television	Home Energy Products	MF	N/A	NC	-	-	91.3	0.011	0.014	5	$60	33%	33%	180%	59%	71%	67%	0.93
3019	Consumer Electonics	Smart Sockets	Home Energy Products	SF	NLI	Retrofit	54.5	92.6%	50.4	0.007	0.007	7	$9	100%	22%	100%	0%	64%	29%	7.05
3020	Consumer Electonics	Smart Sockets	Home Energy Products	SF	LI	Retrofit	54.5	92.6%	50.4	0.007	0.007	7	$9	100%	22%	100%	0%	68%	22%	7.05
3021	Consumer Electonics	Smart Sockets	Home Energy Products	SF	N/A	NC	54.5	92.6%	50.4	0.007	0.007	7	$9	100%	22%	100%	0%	64%	29%	7.05
3022	Consumer Electonics	Smart Sockets	Home Energy Products	MF	NLI	Retrofit	54.5	92.6%	50.4	0.007	0.007	7	$9	100%	22%	100%	0%	62%	29%	7.05
3023	Consumer Electonics	Smart Sockets	Home Energy Products	MF	LI	Retrofit	54.5	92.6%	50.4	0.007	0.007	7	$9	100%	22%	100%	0%	53%	25%	7.05
3024	Consumer Electonics	Smart Sockets	Home Energy Products	MF	N/A	NC	54.5	92.6%	50.4	0.007	0.007	7	$9	100%	22%	100%	0%	62%	29%	7.05
4001	Electric Vehicle	L2 ESVE	Home Energy Products	SF	NLI	MO	84.0	72.1%	60.5	0.007	0.009	10	$47	25%	25%	3%	32%	52%	50%	1.85
4002	Electric Vehicle	L2 ESVE	Home Energy Products	SF	LI	MO	84.0	72.1%	60.5	0.007	0.009	10	$47	75%	25%	3%	32%	68%	68%	1.85
4003	Electric Vehicle	L2 ESVE	Home Energy Products	SF	N/A	NC	84.0	72.1%	60.5	0.007	0.009	10	$47	25%	25%	3%	32%	52%	50%	1.85
4004	Electric Vehicle	L2 ESVE	Home Energy Products	MF	NLI	MO	84.0	72.1%	60.5	0.007	0.009	10	$47	25%	25%	3%	32%	52%	48%	1.85
4005	Electric Vehicle	L2 ESVE	Home Energy Products	MF	LI	MO	84.0	72.1%	60.5	0.007	0.009	10	$47	75%	25%	3%	32%	53%	53%	1.85
4006	Electric Vehicle	L2 ESVE	Home Energy Products	MF	N/A	NC	84.0	72.1%	60.5	0.007	0.009	10	$47	25%	25%	3%	32%	52%	48%	1.85
5001	HVAC Equipment	ASHP Tune Up	Midstream	SF	NLI	Retrofit	7,502.4	5.0%	375.1	0.049	0.067	3	$225	25%	25%	6%	70%	77%	76%	0.87
5002	HVAC Equipment	ASHP Tune Up	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	5.0%	375.1	0.049	0.067	3	$225	100%	100%	6%	70%	79%	76%	0.22
5003	HVAC Equipment	ASHP Tune Up	Midstream	SF	N/A	NC	7,502.4	5.0%	375.1	0.049	0.067	3	$225	25%	25%	6%	70%	77%	76%	0.87
5004	HVAC Equipment	ASHP Tune Up	Midstream	MF	NLI	Retrofit	5,870.0	5.0%	293.5	0.039	0.064	3	$225	25%	25%	6%	70%	76%	76%	0.69
5005	HVAC Equipment	ASHP Tune Up	Income Qualified Weatherproofing	MF	LI	Retrofit	5,870.0	5.0%	293.5	0.039	0.064	3	$225	100%	100%	6%	70%	79%	76%	0.17
5006	HVAC Equipment	ASHP Tune Up	Midstream	MF	N/A	NC	5,870.0	5.0%	293.5	0.039	0.064	3	$225	25%	25%	6%	70%	76%	76%	0.69
5007	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Heat pump	Midstream	SF	NLI	MO	7,303.7	10.6%	774.6	0.055	0.139	16	$135	100%	100%	6%	36%	65%	65%	1.20
5008	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Heat pump	Income Qualified HEAR	SF	LI	MO	7,303.7	10.6%	774.6	0.055	0.139	16	$8,500	100%	100%	6%	36%	63%	63%	0.04
5009	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Heat pump	Midstream	SF	N/A	NC	7,303.7	10.6%	774.6	0.055	0.139	16	$135	100%	100%	6%	36%	65%	65%	1.20
5010	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Heat pump	Midstream	MF	NLI	MO	5,718.6	10.7%	612.3	0.044	0.133	16	$135	100%	100%	6%	36%	57%	57%	0.95
5011	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Heat pump	Income Qualified HEAR	MF	LI	MO	5,718.6	10.7%	612.3	0.044	0.133	16	$8,200	100%	100%	6%	36%	55%	53%	0.03
5012	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Heat pump	Midstream	MF	N/A	NC	5,718.6	10.7%	612.3	0.044	0.133	16	$135	100%	100%	6%	36%	57%	57%	0.95
5013	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Heat pump	Midstream	SF	NLI	MO	7,303.7	18.5%	1,353.4	0.109	0.243	16	$421	100%	95%	6%	36%	65%	62%	1.60
5014	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Heat pump	Income Qualified HEAR	SF	LI	MO	7,303.7	18.5%	1,353.4	0.109	0.243	16	$18,215	100%	100%	6%	36%	63%	63%	0.04
5015	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Heat pump	Midstream	SF	N/A	NC	7,303.7	18.5%	1,353.4	0.109	0.243	16	$421	100%	95%	6%	36%	65%	62%	1.60
5016	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Heat pump	Midstream	MF	NLI	MO	5,718.6	18.7%	1,068.1	0.087	0.231	16	$421	100%	95%	6%	36%	57%	55%	1.27
5017	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Heat pump	Income Qualified HEAR	MF	LI	MO	5,718.6	18.7%	1,068.1	0.087	0.231	16	$14,572	100%	100%	6%	36%	55%	53%	0.03
5018	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Heat pump	Midstream	MF	N/A	NC	5,718.6	18.7%	1,068.1	0.087	0.231	16	$421	100%	95%	6%	36%	57%	55%	1.27
5019	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Heat pump	Midstream	SF	NLI	MO	7,303.7	27.7%	2,026.2	0.152	0.364	16	$630	100%	95%	6%	36%	65%	62%	1.58
5020	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Heat pump	Income Qualified HEAR	SF	LI	MO	7,303.7	27.7%	2,026.2	0.152	0.364	16	$18,738	100%	100%	6%	36%	63%	63%	0.05
5021	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Heat pump	Midstream	SF	N/A	NC	7,303.7	27.7%	2,026.2	0.152	0.364	16	$630	100%	95%	6%	36%	65%	62%	1.58
5022	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Heat pump	Midstream	MF	NLI	MO	5,718.6	28.0%	1,600.6	0.122	0.347	16	$630	100%	95%	6%	36%	57%	55%	1.25
5023	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Heat pump	Income Qualified HEAR	MF	LI	MO	5,718.6	28.0%	1,600.6	0.122	0.347	16	$14,990	100%	100%	6%	36%	55%	53%	0.05
5024	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Heat pump	Midstream	MF	N/A	NC	5,718.6	28.0%	1,600.6	0.122	0.347	16	$630	100%	95%	6%	36%	57%	55%	1.25
5025	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Heat pump	Midstream	SF	NLI	MO	7,303.7	32.9%	2,405.9	0.195	0.432	16	$855	100%	70%	6%	36%	65%	55%	1.90
5026	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Heat pump	Income Qualified HEAR	SF	LI	MO	7,303.7	32.9%	2,405.9	0.195	0.432	16	$19,300	100%	100%	6%	36%	63%	63%	0.06
5027	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Heat pump	Midstream	SF	N/A	NC	7,303.7	32.9%	2,405.9	0.195	0.432	16	$855	100%	70%	6%	36%	65%	55%	1.90
5028	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Heat pump	Midstream	MF	NLI	MO	5,718.6	33.2%	1,898.6	0.156	0.411	16	$855	100%	70%	6%	36%	57%	48%	1.51
5029	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Heat pump	Income Qualified HEAR	MF	LI	MO	5,718.6	33.2%	1,898.6	0.156	0.411	16	$15,440	100%	100%	6%	36%	55%	53%	0.06
5030	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Heat pump	Midstream	MF	N/A	NC	5,718.6	33.2%	1,898.6	0.156	0.411	16	$855	100%	70%	6%	36%	57%	48%	1.51
5031	HVAC Equipment	Ground Source Heat Pump Heat pump baseline	Midstream	SF	NLI	MO	7,303.7	27.6%	2,013.2	0.230	0.362	25	$5,186	10%	10%	6%	36%	55%	48%	2.71
5032	HVAC Equipment	Ground Source Heat Pump Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	27.6%	2,013.2	0.230	0.362	25	$11,871	100%	100%	6%	36%	63%	63%	0.11
5033	HVAC Equipment	Ground Source Heat Pump Heat pump baseline	Midstream	SF	N/A	NC	7,303.7	27.6%	2,013.2	0.230	0.362	25	$5,186	10%	10%	6%	36%	55%	48%	2.71
5034	HVAC Equipment	Ground Source Heat Pump (desuperheater) Heat	Midstream	SF	NLI	MO	10,546.0	32.6%	3,439.8	0.230	0.618	25	$6,536	25%	25%	6%	36%	55%	48%	1.27
5035	HVAC Equipment	Ground Source Heat Pump (desuperheater) Heat	Income Qualified HEAR	SF	LI	MO	10,546.0	32.6%	3,439.8	0.230	0.618	25	$13,221	100%	100%	6%	36%	63%	63%	0.16
5036	HVAC Equipment	Ground Source Heat Pump (desuperheater) Heat	Midstream	SF	N/A	NC	10,546.0	32.6%	3,439.8	0.230	0.618	25	$6,536	25%	25%	6%	36%	55%	48%	1.27
5037	HVAC Equipment	Well-Connected Geothermal Heat Pump - heat pump	Midstream	SF	NLI	MO	7,303.7	37.0%	2,702.4	0.500	0.485	25	$14,996	25%	25%	6%	36%	55%	48%	0.56
5038	HVAC Equipment	Well-Connected Geothermal Heat Pump - heat pump	Income Qualified HEAR	SF	LI	MO	7,303.7	37.0%	2,702.4	0.500	0.485	25	$14,996	100%	100%	6%	36%	63%	63%	0.14
5039	HVAC Equipment	Well-Connected Geothermal Heat Pump - heat pump	Midstream	SF	N/A	NC	7,303.7	37.0%	2,702.4	0.500	0.485	25	$14,996	25%	25%	6%	36%	55%	48%	0.56
5040	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Home Energy Products	SF	NLI	MO	7,303.7	11.2%	819.6	0.058	0.147	16	$155	100%	100%	6%	36%	65%	65%	1.52
5041	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	11.2%	819.6	0.058	0.147	16	$3,608	100%	100%	6%	36%	63%	63%	0.11
5042	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Home Energy Products	SF	N/A	NC	7,303.7	11.2%	819.6	0.058	0.147	16	$155	100%	100%	6%	36%	65%	65%	1.52
5043	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Home Energy Products	MF	NLI	MO	5,718.6	11.3%	647.9	0.046	0.140	16	$124	100%	100%	6%	36%	57%	57%	1.20

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
5044	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	11.3%	647.9	0.046	0.140	16	$2,886	100%	100%	6%	36%	55%	53%	0.10
5045	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Home Energy Products	MF	N/A	NC	5,718.6	11.3%	647.9	0.046	0.140	16	$124	100%	100%	6%	36%	57%	57%	1.20
5046	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Home Energy Products	SF	NLI	MO	7,303.7	19.6%	1,431.9	0.115	0.257	16	$560	100%	71%	6%	36%	65%	55%	1.69
5047	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	19.6%	1,431.9	0.115	0.257	16	$4,013	100%	100%	6%	36%	63%	63%	0.17
5048	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Home Energy Products	SF	N/A	NC	7,303.7	19.6%	1,431.9	0.115	0.257	16	$560	100%	71%	6%	36%	65%	55%	1.69
5049	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Home Energy Products	MF	NLI	MO	5,718.6	19.8%	1,130.2	0.092	0.245	16	$448	100%	89%	6%	36%	57%	53%	1.34
5050	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	19.8%	1,130.2	0.092	0.245	16	$3,210	93%	93%	6%	36%	55%	53%	0.18
5051	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Home Energy Products	MF	N/A	NC	5,718.6	19.8%	1,130.2	0.092	0.245	16	$448	100%	89%	6%	36%	57%	53%	1.34
5052	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Home Energy Products	SF	NLI	MO	7,303.7	29.4%	2,143.9	0.160	0.385	16	$835	100%	72%	6%	36%	65%	55%	1.67
5053	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	29.4%	2,143.9	0.160	0.385	16	$4,288	100%	100%	6%	36%	63%	63%	0.23
5054	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Home Energy Products	SF	N/A	NC	7,303.7	29.4%	2,143.9	0.160	0.385	16	$835	100%	72%	6%	36%	65%	55%	1.67
5055	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Home Energy Products	MF	NLI	MO	5,718.6	29.6%	1,693.7	0.128	0.367	16	$668	100%	90%	6%	36%	57%	53%	1.32
5056	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	29.6%	1,693.7	0.128	0.367	16	$3,430	87%	87%	6%	36%	55%	53%	0.26
5057	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Home Energy Products	MF	N/A	NC	5,718.6	29.6%	1,693.7	0.128	0.367	16	$668	100%	90%	6%	36%	57%	53%	1.32
5058	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Home Energy Products	SF	NLI	MO	7,303.7	34.9%	2,545.6	0.205	0.457	16	$1,650	50%	36%	6%	36%	55%	48%	2.01
5059	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	34.9%	2,545.6	0.205	0.457	16	$5,103	100%	100%	6%	36%	63%	63%	0.24
5060	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Home Energy Products	SF	N/A	NC	7,303.7	34.9%	2,545.6	0.205	0.457	16	$1,650	50%	36%	6%	36%	55%	48%	2.01
5061	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Home Energy Products	MF	NLI	MO	5,718.6	35.1%	2,009.0	0.164	0.435	16	$1,320	50%	45%	6%	36%	55%	48%	1.59
5062	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	35.1%	2,009.0	0.164	0.435	16	$4,082	73%	73%	6%	36%	55%	53%	0.32
5063	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Home Energy Products	MF	N/A	NC	5,718.6	35.1%	2,009.0	0.164	0.435	16	$1,320	50%	45%	6%	36%	55%	48%	1.59
5064	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Midstream	SF	NLI	MO	7,303.7	11.2%	819.6	0.058	0.147	16	$155	100%	100%	6%	36%	65%	65%	1.52
5065	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	11.2%	819.6	0.058	0.147	16	$3,608	100%	100%	6%	36%	63%	63%	0.11
5066	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Midstream	SF	N/A	NC	7,303.7	11.2%	819.6	0.058	0.147	16	$155	100%	100%	6%	36%	65%	65%	1.52
5067	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Midstream	MF	NLI	MO	5,718.6	11.3%	647.9	0.046	0.140	16	$124	100%	100%	6%	36%	57%	57%	1.20
5068	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	11.3%	647.9	0.046	0.140	16	$2,886	100%	100%	6%	36%	55%	53%	0.10
5069	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Heat pump baseline	Midstream	MF	N/A	NC	5,718.6	11.3%	647.9	0.046	0.140	16	$124	100%	100%	6%	36%	57%	57%	1.20
5070	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Midstream	SF	NLI	MO	7,303.7	19.6%	1,431.9	0.115	0.257	16	$560	100%	71%	6%	36%	65%	55%	1.69
5071	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	19.6%	1,431.9	0.115	0.257	16	$4,013	100%	100%	6%	36%	63%	63%	0.17
5072	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Midstream	SF	N/A	NC	7,303.7	19.6%	1,431.9	0.115	0.257	16	$560	100%	71%	6%	36%	65%	55%	1.69
5073	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Midstream	MF	NLI	MO	5,718.6	19.8%	1,130.2	0.092	0.245	16	$448	100%	89%	6%	36%	57%	53%	1.34
5074	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	19.8%	1,130.2	0.092	0.245	16	$3,210	93%	93%	6%	36%	55%	53%	0.18
5075	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Heat pump baseline	Midstream	MF	N/A	NC	5,718.6	19.8%	1,130.2	0.092	0.245	16	$448	100%	89%	6%	36%	57%	53%	1.34
5076	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Midstream	SF	NLI	MO	7,303.7	29.4%	2,143.9	0.160	0.385	16	$835	100%	72%	6%	36%	65%	55%	1.67
5077	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	29.4%	2,143.9	0.160	0.385	16	$4,288	100%	100%	6%	36%	63%	63%	0.23
5078	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Midstream	SF	N/A	NC	7,303.7	29.4%	2,143.9	0.160	0.385	16	$835	100%	72%	6%	36%	65%	55%	1.67
5079	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Midstream	MF	NLI	MO	5,718.6	29.6%	1,693.7	0.128	0.367	16	$668	100%	90%	6%	36%	57%	53%	1.32
5080	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	29.6%	1,693.7	0.128	0.367	16	$3,430	87%	87%	6%	36%	55%	53%	0.26
5081	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Heat pump baseline	Midstream	MF	N/A	NC	5,718.6	29.6%	1,693.7	0.128	0.367	16	$668	100%	90%	6%	36%	57%	53%	1.32
5082	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Midstream	SF	NLI	MO	7,303.7	34.9%	2,545.6	0.205	0.457	16	$1,650	50%	36%	6%	36%	55%	48%	2.01
5083	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Income Qualified HEAR	SF	LI	MO	7,303.7	34.9%	2,545.6	0.205	0.457	16	$5,103	100%	100%	6%	36%	63%	63%	0.24
5084	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Midstream	SF	N/A	NC	7,303.7	34.9%	2,545.6	0.205	0.457	16	$1,650	50%	36%	6%	36%	55%	48%	2.01
5085	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Midstream	MF	NLI	MO	5,718.6	35.1%	2,009.0	0.164	0.435	16	$1,320	50%	45%	6%	36%	55%	48%	1.59
5086	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Income Qualified Weatherproofing	MF	LI	MO	5,718.6	35.1%	2,009.0	0.164	0.435	16	$4,082	73%	73%	6%	36%	55%	53%	0.32
5087	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Heat pump baseline	Midstream	MF	N/A	NC	5,718.6	35.1%	2,009.0	0.164	0.435	16	$1,320	50%	45%	6%	36%	55%	48%	1.59
5088	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Electric furnace	Midstream	SF	NLI	MO	16,585.2	60.7%	10,069.4	0.055	1.808	16	$135	100%	100%	8%	36%	65%	65%	13.06
5089	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Electric furnace	Income Qualified HEAR	SF	LI	MO	16,585.2	60.7%	10,069.4	0.055	1.808	16	$8,500	100%	100%	8%	36%	63%	63%	0.46
5090	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Electric furnace	Midstream	SF	N/A	NC	16,585.2	60.7%	10,069.4	0.055	1.808	16	$135	100%	100%	8%	36%	65%	65%	13.06
5091	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Electric furnace	Midstream	MF	NLI	MO	13,143.8	61.2%	8,048.1	0.044	1.744	16	$135	100%	100%	8%	36%	57%	57%	10.47
5092	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Electric furnace	Income Qualified HEAR	MF	LI	MO	13,143.8	61.2%	8,048.1	0.044	1.744	16	$8,200	100%	100%	8%	36%	55%	53%	0.38
5093	HVAC Equipment	Air Source Heat Pump 15.2 SEER2 - Electric furnace	Midstream	MF	N/A	NC	13,143.8	61.2%	8,048.1	0.044	1.744	16	$135	100%	100%	8%	36%	57%	57%	10.47
5094	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Electric furnace	Midstream	SF	NLI	MO	16,585.2	64.2%	10,648.1	0.109	1.912	16	$421	100%	95%	8%	36%	65%	62%	10.50
5095	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Electric furnace	Income Qualified HEAR	SF	LI	MO	16,585.2	64.2%	10,648.1	0.109	1.912	16	$18,215	100%	100%	8%	36%	63%	63%	0.23
5096	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Electric furnace	Midstream	SF	N/A	NC	16,585.2	64.2%	10,648.1	0.109	1.912	16	$421	100%	95%	8%	36%	65%	62%	10.50
5097	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Electric furnace	Midstream	MF	NLI	MO	13,143.8	64.7%	8,503.9	0.087	1.843	16	$421	100%	95%	8%	36%	57%	55%	8.41
5098	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Electric furnace	Income Qualified HEAR	MF	LI	MO	13,143.8	64.7%	8,503.9	0.087	1.843	16	$14,572	100%	100%	8%	36%	55%	53%	0.23
5099	HVAC Equipment	Air Source Heat Pump 16.2 SEER2 - Electric furnace	Midstream	MF	N/A	NC	13,143.8	64.7%	8,503.9	0.087	1.843	16	$421	100%	95%	8%	36%	57%	55%	8.41
5100	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Electric furnace	Midstream	SF	NLI	MO	16,585.2	68.3%	11,321.0	0.152	2.033	16	$630	100%	95%	8%	36%	65%	62%	7.51
5101	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Electric furnace	Income Qualified HEAR	SF	LI	MO	16,585.2	68.3%	11,321.0	0.152	2.033	16	$18,738	100%	100%	8%	36%	63%	63%	0.24
5102	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Electric furnace	Midstream	SF	N/A	NC	16,585.2	68.3%	11,321.0	0.152	2.033	16	$630	100%	95%	8%	36%	65%	62%	7.51
5103	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Electric furnace	Midstream	MF	NLI	MO	13,143.8	68.8%	9,036.4	0.122	1.958	16	$630	100%	95%	8%	36%	57%	55%	6.01
5104	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Electric furnace	Income Qualified HEAR	MF	LI	MO	13,143.8	68.8%	9,036.4	0.122	1.958	16	$14,990	100%	100%	8%	36%	55%	53%	0.24
5105	HVAC Equipment	Air Source Heat Pump 17.1 SEER2 - Electric furnace	Midstream	MF	N/A	NC	13,143.8	68.8%	9,036.4	0.122	1.958	16	$630	100%	95%	8%	36%	57%	55%	6.01
5106	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Electric furnace	Midstream	SF	NLI	MO	16,585.2	70.5%	11,700.7	0.195	2.101	16	$855	100%	70%	8%	36%	65%	55%	7.84
5107	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Electric furnace	Income Qualified HEAR	SF	LI	MO	16,585.2	70.5%	11,700.7	0.195	2.101	16	$19,300	100%	100%	8%	36%	63%	63%	0.24
5108	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Electric furnace	Midstream	SF	N/A	NC	16,585.2	70.5%	11,700.7	0.195	2.101	16	$855	100%	70%	8%	36%	65%	55%	7.84
5109	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Electric furnace	Midstream	MF	NLI	MO	13,143.8	71.0%	9,334.4	0.156	2.023	16	$855	100%	70%	8%	36%	57%	48%	6.27
5110	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Electric furnace	Income Qualified HEAR	MF	LI	MO	13,143.8	71.0%	9,334.4	0.156	2.023	16	$15,440	100%	100%	8%	36%	55%	53%	0.24

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
5111	HVAC Equipment	Air Source Heat Pump 18.1 SEER2 - Electric furnace	Midstream	MF	N/A	NC	13,143.8	71.0%	9,334.4	0.156	2.023	16	$855	100%	70%	8%	36%	57%	48%	6.27
5112	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Home Energy Products	SF	NLI	MO	16,585.2	49.8%	8,255.0	0.058	1.483	16	$155	100%	100%	8%	36%	65%	65%	12.91
5113	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	49.8%	8,255.0	0.058	1.483	16	$3,608	100%	100%	8%	36%	63%	63%	0.89
5114	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Home Energy Products	SF	N/A	NC	16,585.2	49.8%	8,255.0	0.058	1.483	16	$155	100%	100%	8%	36%	65%	65%	12.91
5115	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Home Energy Products	MF	NLI	MO	13,143.8	50.2%	6,596.3	0.046	1.429	16	$124	100%	100%	8%	36%	57%	57%	10.34
5116	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	50.2%	6,596.3	0.046	1.429	16	$2,886	100%	100%	8%	36%	55%	53%	0.90
5117	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Home Energy Products	MF	N/A	NC	13,143.8	50.2%	6,596.3	0.046	1.429	16	$124	100%	100%	8%	36%	57%	57%	10.34
5118	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Home Energy Products	SF	NLI	MO	16,585.2	53.5%	8,867.3	0.115	1.593	16	$560	100%	71%	8%	36%	65%	55%	8.82
5119	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	53.5%	8,867.3	0.115	1.593	16	$4,013	100%	100%	8%	36%	63%	63%	0.88
5120	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Home Energy Products	SF	N/A	NC	16,585.2	53.5%	8,867.3	0.115	1.593	16	$560	100%	71%	8%	36%	65%	55%	8.82
5121	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Home Energy Products	MF	NLI	MO	13,143.8	53.9%	7,078.5	0.092	1.534	16	$448	100%	89%	8%	36%	57%	53%	7.05
5122	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	53.9%	7,078.5	0.092	1.534	16	$3,210	100%	93%	8%	36%	55%	53%	0.94
5123	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Home Energy Products	MF	N/A	NC	13,143.8	53.9%	7,078.5	0.092	1.534	16	$448	100%	89%	8%	36%	57%	53%	7.05
5124	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Home Energy Products	SF	NLI	MO	16,585.2	57.8%	9,579.3	0.160	1.720	16	$835	100%	72%	8%	36%	65%	55%	6.42
5125	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	57.8%	9,579.3	0.160	1.720	16	$4,288	100%	100%	8%	36%	63%	63%	0.90
5126	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Home Energy Products	SF	N/A	NC	16,585.2	57.8%	9,579.3	0.160	1.720	16	$835	100%	72%	8%	36%	65%	55%	6.42
5127	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Home Energy Products	MF	NLI	MO	13,143.8	58.1%	7,642.0	0.128	1.656	16	$668	100%	90%	8%	36%	57%	53%	5.13
5128	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	58.1%	7,642.0	0.128	1.656	16	$3,430	100%	87%	8%	36%	55%	53%	1.03
5129	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Home Energy Products	MF	N/A	NC	13,143.8	58.1%	7,642.0	0.128	1.656	16	$668	100%	90%	8%	36%	57%	53%	5.13
5130	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Home Energy Products	SF	NLI	MO	16,585.2	60.2%	9,981.0	0.205	1.793	16	$1,650	100%	36%	8%	36%	65%	48%	6.76
5131	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	60.2%	9,981.0	0.205	1.793	16	$5,103	100%	100%	8%	36%	63%	63%	0.79
5132	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Home Energy Products	SF	N/A	NC	16,585.2	60.2%	9,981.0	0.205	1.793	16	$1,650	100%	36%	8%	36%	65%	48%	6.76
5133	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Home Energy Products	MF	NLI	MO	13,143.8	60.5%	7,957.3	0.164	1.724	16	$1,320	100%	45%	8%	36%	57%	48%	5.40
5134	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	60.5%	7,957.3	0.164	1.724	16	$4,082	100%	73%	8%	36%	55%	53%	1.08
5135	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Home Energy Products	MF	N/A	NC	13,143.8	60.5%	7,957.3	0.164	1.724	16	$1,320	100%	45%	8%	36%	57%	48%	5.40
5136	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Midstream	SF	NLI	MO	16,585.2	49.8%	8,255.0	0.058	1.483	16	$155	100%	100%	8%	36%	65%	65%	12.91
5137	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	49.8%	8,255.0	0.058	1.483	16	$3,608	100%	100%	8%	36%	63%	63%	0.89
5138	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Midstream	SF	N/A	NC	16,585.2	49.8%	8,255.0	0.058	1.483	16	$155	100%	100%	8%	36%	65%	65%	12.91
5139	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Midstream	MF	NLI	MO	13,143.8	50.2%	6,596.3	0.046	1.429	16	$124	100%	100%	8%	36%	57%	57%	10.34
5140	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	50.2%	6,596.3	0.046	1.429	16	$2,886	100%	100%	8%	36%	55%	53%	0.90
5141	HVAC Equipment	Ductless Heat Pump 8.5 HSPF2 - Electric resistance	Midstream	MF	N/A	NC	13,143.8	50.2%	6,596.3	0.046	1.429	16	$124	100%	100%	8%	36%	57%	57%	10.34
5142	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Midstream	SF	NLI	MO	16,585.2	53.5%	8,867.3	0.115	1.593	16	$560	100%	71%	8%	36%	65%	55%	8.82
5143	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	53.5%	8,867.3	0.115	1.593	16	$4,013	100%	100%	8%	36%	63%	63%	0.88
5144	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Midstream	SF	N/A	NC	16,585.2	53.5%	8,867.3	0.115	1.593	16	$560	100%	71%	8%	36%	65%	55%	8.82
5145	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Midstream	MF	NLI	MO	13,143.8	53.9%	7,078.5	0.092	1.534	16	$448	100%	89%	8%	36%	57%	53%	7.05
5146	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	53.9%	7,078.5	0.092	1.534	16	$3,210	100%	93%	8%	36%	55%	53%	0.94
5147	HVAC Equipment	Ductless Heat Pump 9.4 HSPF2 - Electric resistance	Midstream	MF	N/A	NC	13,143.8	53.9%	7,078.5	0.092	1.534	16	$448	100%	89%	8%	36%	57%	53%	7.05
5148	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Midstream	SF	NLI	MO	16,585.2	57.8%	9,579.3	0.160	1.720	16	$835	100%	72%	8%	36%	65%	55%	6.42
5149	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	57.8%	9,579.3	0.160	1.720	16	$4,288	100%	100%	8%	36%	63%	63%	0.90
5150	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Midstream	SF	N/A	NC	16,585.2	57.8%	9,579.3	0.160	1.720	16	$835	100%	72%	8%	36%	65%	55%	6.42
5151	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Midstream	MF	NLI	MO	13,143.8	58.1%	7,642.0	0.128	1.656	16	$668	100%	90%	8%	36%	57%	53%	5.13
5152	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	58.1%	7,642.0	0.128	1.656	16	$3,430	100%	87%	8%	36%	55%	53%	1.03
5153	HVAC Equipment	Ductless Heat Pump 10.8 HSPF2 - Electric resistance	Midstream	MF	N/A	NC	13,143.8	58.1%	7,642.0	0.128	1.656	16	$668	100%	90%	8%	36%	57%	53%	5.13
5154	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Midstream	SF	NLI	MO	16,585.2	60.2%	9,981.0	0.205	1.793	16	$1,650	100%	36%	8%	36%	65%	48%	6.76
5155	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Income Qualified HEAR	SF	LI	MO	16,585.2	60.2%	9,981.0	0.205	1.793	16	$5,103	100%	100%	8%	36%	63%	63%	0.79
5156	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Midstream	SF	N/A	NC	16,585.2	60.2%	9,981.0	0.205	1.793	16	$1,650	100%	36%	8%	36%	65%	48%	6.76
5157	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Midstream	MF	NLI	MO	13,143.8	60.5%	7,957.3	0.164	1.724	16	$1,320	100%	45%	8%	36%	57%	48%	5.40
5158	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Income Qualified Weatherproofing	MF	LI	MO	13,143.8	60.5%	7,957.3	0.164	1.724	16	$4,082	100%	73%	8%	36%	55%	53%	1.08
5159	HVAC Equipment	Ductless Heat Pump 11.7 HSPF2 - Electric resistance	Midstream	MF	N/A	NC	13,143.8	60.5%	7,957.3	0.164	1.724	16	$1,320	100%	45%	8%	36%	57%	48%	5.40
5160	HVAC Equipment	AC Tune Up	Midstream	SF	NLI	Retrofit	1,537.0	5.0%	76.8	0.049	0.001	3	$225	25%	25%	79%	70%	77%	76%	0.37
5161	HVAC Equipment	AC Tune Up	Income Qualified Weatherproofing	SF	LI	Retrofit	1,537.0	5.0%	76.8	0.049	0.001	3	$225	100%	100%	79%	70%	79%	76%	0.09
5162	HVAC Equipment	AC Tune Up	Midstream	SF	N/A	NC	1,537.0	5.0%	76.8	0.049	0.001	3	$225	25%	25%	79%	70%	77%	76%	0.37
5163	HVAC Equipment	AC Tune Up	Residential Multi-Family DI	MF	NLI	Retrofit	1,097.7	5.0%	54.9	0.039	0.001	3	$225	21%	21%	79%	70%	76%	76%	0.33
5164	HVAC Equipment	AC Tune Up	Residential Multi-Family DI	MF	LI	Retrofit	1,097.7	5.0%	54.9	0.039	0.001	3	$225	100%	100%	79%	70%	79%	76%	0.07
5165	HVAC Equipment	AC Tune Up	Residential Multi-Family DI	MF	N/A	NC	1,097.7	5.0%	54.9	0.039	0.001	3	$225	21%	21%	79%	70%	76%	76%	0.33
5166	HVAC Equipment	Central Air Conditioner 15.2 SEER	Home Energy Products	SF	NLI	MO	1,448.9	5.9%	85.8	0.104	0.001	18	$1,070	19%	19%	79%	23%	46%	38%	0.81
5167	HVAC Equipment	Central Air Conditioner 15.2 SEER	Home Energy Products	SF	LI	MO	1,448.9	5.9%	85.8	0.104	0.001	18	$3,927	100%	100%	79%	23%	63%	63%	0.04
5168	HVAC Equipment	Central Air Conditioner 15.2 SEER	Home Energy Products	SF	N/A	NC	1,448.9	5.9%	85.8	0.104	0.001	18	$1,070	19%	19%	79%	23%	46%	38%	0.81
5169	HVAC Equipment	Central Air Conditioner 15.2 SEER	Home Energy Products	MF	NLI	MO	1,034.8	5.9%	61.3	0.083	0.001	18	$1,070	19%	19%	79%	23%	45%	38%	0.63
5170	HVAC Equipment	Central Air Conditioner 15.2 SEER	Home Energy Products	MF	LI	MO	1,034.8	5.9%	61.3	0.083	0.001	18	$3,927	100%	100%	79%	23%	53%	53%	0.03
5171	HVAC Equipment	Central Air Conditioner 15.2 SEER	Home Energy Products	MF	N/A	NC	1,034.8	5.9%	61.3	0.083	0.001	18	$1,070	19%	19%	79%	23%	45%	38%	0.63
5172	HVAC Equipment	Central Air Conditioner 16.2 SEER	Home Energy Products	SF	NLI	MO	1,448.9	11.7%	169.9	0.158	0.002	18	$1,270	22%	22%	79%	23%	46%	38%	0.95
5173	HVAC Equipment	Central Air Conditioner 16.2 SEER	Home Energy Products	SF	LI	MO	1,448.9	11.7%	169.9	0.158	0.002	18	$4,127	100%	100%	79%	23%	63%	63%	0.06
5174	HVAC Equipment	Central Air Conditioner 16.2 SEER	Home Energy Products	SF	N/A	NC	1,448.9	11.7%	169.9	0.158	0.002	18	$1,270	22%	22%	79%	23%	46%	38%	0.95
5175	HVAC Equipment	Central Air Conditioner 16.2 SEER	Home Energy Products	MF	NLI	MO	1,034.8	11.7%	121.4	0.126	0.002	18	$1,270	22%	22%	79%	23%	45%	38%	0.74
5176	HVAC Equipment	Central Air Conditioner 16.2 SEER	Home Energy Products	MF	LI	MO	1,034.8	11.7%	121.4	0.126	0.002	18	$4,127	100%	100%	79%	23%	53%	53%	0.05
5177	HVAC Equipment	Central Air Conditioner 16.2 SEER	Home Energy Products	MF	N/A	NC	795.6	15.3%	121.4	0.126	0.002	18	$1,270	22%	22%	79%	23%	45%	38%	0.74

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
5178	HVAC Equipment	Indirect-Evaporative Cooler	Midstream	SF	NLI	MO	1,156.4	44.0%	508.8	0.235	0.005	15	$1,463	25%	25%	1%	0%	23%	23%	1.20
5179	HVAC Equipment	Indirect-Evaporative Cooler	Midstream	SF	LI	MO	1,156.4	44.0%	508.8	0.235	0.005	15	$1,463	50%	25%	1%	0%	30%	14%	1.20
5180	HVAC Equipment	Indirect-Evaporative Cooler	Midstream	SF	N/A	NC	1,156.4	44.0%	508.8	0.235	0.005	15	$1,463	25%	25%	1%	0%	23%	23%	1.20
5181	HVAC Equipment	Indirect-Evaporative Cooler	Midstream	MF	NLI	MO	844.0	44.0%	371.3	0.155	0.006	15	$1,463	25%	25%	1%	0%	21%	21%	0.82
5182	HVAC Equipment	Indirect-Evaporative Cooler	Midstream	MF	LI	MO	844.0	44.0%	371.3	0.155	0.006	15	$1,463	25%	25%	1%	0%	25%	25%	0.82
5183	HVAC Equipment	Indirect-Evaporative Cooler	Midstream	MF	N/A	NC	844.0	44.0%	371.3	0.155	0.006	15	$1,463	25%	25%	1%	0%	21%	21%	0.82
5184	HVAC Equipment	Radiant Panels	Home Energy Products	SF	NLI	Retrofit	7,135.7	30.0%	2,140.7	0.385	0.384	20	$39,414	25%	25%	2%	0%	23%	23%	0.15
5185	HVAC Equipment	Radiant Panels	Home Energy Products	SF	LI	Retrofit	7,135.7	30.0%	2,140.7	0.385	0.384	20	$39,414	25%	25%	2%	0%	14%	14%	0.15
5186	HVAC Equipment	Radiant Panels	Home Energy Products	SF	N/A	NC	7,135.7	30.0%	2,140.7	0.385	0.384	20	$39,414	25%	25%	2%	0%	23%	23%	0.15
5187	HVAC Equipment	Radiant Panels	Home Energy Products	MF	NLI	Retrofit	5,490.3	30.0%	1,647.1	0.178	0.357	20	$39,414	25%	25%	2%	0%	21%	21%	0.10
5188	HVAC Equipment	Radiant Panels	Home Energy Products	MF	LI	Retrofit	5,490.3	30.0%	1,647.1	0.178	0.357	20	$39,414	25%	25%	2%	0%	25%	25%	0.10
5189	HVAC Equipment	Radiant Panels	Home Energy Products	MF	N/A	NC	5,490.3	30.0%	1,647.1	0.178	0.357	20	$39,414	25%	25%	2%	0%	21%	21%	0.10
5190	HVAC Equipment	Advanced Wall Heater	Midstream	SF	NLI	MO	16,327.9	30.0%	4,898.4	0.000	1.381	20	$109	100%	25%	2%	0%	65%	23%	79.95
5191	HVAC Equipment	Advanced Wall Heater	Midstream	SF	LI	MO	16,327.9	30.0%	4,898.4	0.000	1.381	20	$109	100%	25%	2%	0%	63%	14%	79.95
5192	HVAC Equipment	Advanced Wall Heater	Midstream	SF	N/A	NC	16,327.9	30.0%	4,898.4	0.000	1.381	20	$109	100%	25%	2%	0%	65%	23%	79.95
5193	HVAC Equipment	Advanced Wall Heater	Midstream	MF	NLI	MO	12,981.1	30.0%	3,894.3	0.000	1.102	20	$109	100%	25%	2%	0%	57%	21%	63.73
5194	HVAC Equipment	Advanced Wall Heater	Midstream	MF	LI	MO	12,981.1	30.0%	3,894.3	0.000	1.102	20	$109	100%	25%	2%	0%	53%	25%	63.73
5195	HVAC Equipment	Advanced Wall Heater	Midstream	MF	N/A	NC	12,981.1	30.0%	3,894.3	0.000	1.102	20	$109	100%	25%	2%	0%	57%	21%	63.73
5196	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Heat pump	Midstream	SF	NLI	Retrofit	7,502.4	8.5%	636.2	0.178	0.114	11	$129	100%	58%	6%	41%	65%	53%	4.52
5197	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Heat pump	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	8.5%	636.2	0.178	0.114	11	$129	100%	100%	6%	41%	63%	63%	2.63
5198	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Heat pump	Midstream	SF	N/A	NC	7,502.4	8.5%	636.2	0.178	0.114	11	$129	100%	58%	6%	41%	65%	53%	4.52
5199	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Heat pump	Residential Multi-Family DI	MF	NLI	Retrofit	5,718.6	8.7%	497.8	0.142	0.108	11	$129	100%	58%	6%	41%	59%	53%	3.58
5200	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Heat pump	Income Qualified Weatherproofing	MF	LI	Retrofit	5,718.6	8.7%	497.8	0.142	0.108	11	$129	100%	100%	6%	41%	59%	53%	2.08
5201	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Heat pump	Residential Multi-Family DI	MF	N/A	NC	5,718.6	8.7%	497.8	0.142	0.108	11	$129	100%	58%	6%	41%	59%	53%	3.58
5202	HVAC Equipment	Programmable Thermostat - Heat pump baseline	Residential Online Energy Check-up	SF	NLI	Retrofit	7,502.4	4.9%	369.9	0.000	0.066	16	$30	100%	100%	6%	41%	65%	65%	4.72
5203	HVAC Equipment	Programmable Thermostat - Heat pump baseline	Residential Online Energy Check-up	SF	LI	Retrofit	7,502.4	4.9%	369.9	0.000	0.066	16	$30	100%	100%	6%	41%	63%	63%	4.72
5204	HVAC Equipment	Programmable Thermostat - Heat pump baseline	Residential Online Energy Check-up	SF	N/A	NC	7,502.4	4.9%	369.9	0.000	0.066	16	$30	100%	100%	6%	41%	65%	65%	4.72
5205	HVAC Equipment	Programmable Thermostat - Heat pump baseline	Residential Online Energy Check-up	MF	NLI	Retrofit	5,718.6	5.2%	295.9	0.000	0.064	16	$30	100%	100%	6%	41%	59%	57%	3.79
5206	HVAC Equipment	Programmable Thermostat - Heat pump baseline	Residential Online Energy Check-up	MF	LI	Retrofit	5,718.6	5.2%	295.9	0.000	0.064	16	$30	100%	100%	6%	41%	59%	53%	3.79
5207	HVAC Equipment	Programmable Thermostat - Heat pump baseline	Residential Online Energy Check-up	MF	N/A	NC	5,718.6	5.2%	295.9	0.000	0.064	16	$30	100%	100%	6%	41%	59%	57%	3.79
5208	HVAC Equipment	Wif-Fi Connected Smart Thermostat - Electric furnace	Midstream	SF	NLI	Retrofit	16,673.2	8.5%	1,415.7	0.178	0.254	11	$129	100%	58%	7%	41%	65%	53%	7.56
5209	HVAC Equipment	Wif-Fi Connected Smart Thermostat - Electric furnace	Income Qualified Weatherproofing	SF	LI	Retrofit	16,673.2	8.5%	1,415.7	0.178	0.254	11	$129	100%	100%	7%	41%	63%	63%	4.39
5210	HVAC Equipment	Wif-Fi Connected Smart Thermostat - Electric furnace	Midstream	SF	N/A	NC	16,673.2	8.5%	1,415.7	0.178	0.254	11	$129	100%	58%	7%	41%	65%	53%	7.56
5211	HVAC Equipment	Wif-Fi Connected Smart Thermostat - Electric furnace	Residential Multi-Family DI	MF	NLI	Retrofit	13,206.7	8.5%	1,121.5	0.142	0.243	11	$129	100%	58%	7%	41%	59%	53%	6.01
5212	HVAC Equipment	Wif-Fi Connected Smart Thermostat - Electric furnace	Income Qualified Weatherproofing	MF	LI	Retrofit	13,206.7	8.5%	1,121.5	0.142	0.243	11	$129	100%	100%	7%	41%	59%	53%	3.50
5213	HVAC Equipment	Wif-Fi Connected Smart Thermostat - Electric furnace	Residential Multi-Family DI	MF	N/A	NC	13,206.7	8.5%	1,121.5	0.142	0.243	11	$129	100%	58%	7%	41%	59%	53%	6.01
5214	HVAC Equipment	Programmable Thermostat - Electric furnace baseline	Residential Online Energy Check-up	SF	NLI	Retrofit	16,673.2	5.6%	938.4	0.000	0.169	16	$30	100%	100%	7%	41%	65%	65%	11.98
5215	HVAC Equipment	Programmable Thermostat - Electric furnace baseline	Residential Online Energy Check-up	SF	LI	Retrofit	16,673.2	5.6%	938.4	0.000	0.169	16	$30	100%	100%	7%	41%	63%	63%	11.98
5216	HVAC Equipment	Programmable Thermostat - Electric furnace baseline	Residential Online Energy Check-up	SF	N/A	NC	16,673.2	5.6%	938.4	0.000	0.169	16	$30	100%	100%	7%	41%	65%	65%	11.98
5217	HVAC Equipment	Programmable Thermostat - Electric furnace baseline	Residential Online Energy Check-up	MF	NLI	Retrofit	13,206.7	5.7%	750.8	0.000	0.163	16	$30	100%	100%	7%	41%	59%	57%	9.61
5218	HVAC Equipment	Programmable Thermostat - Electric furnace baseline	Residential Online Energy Check-up	MF	LI	Retrofit	13,206.7	5.7%	750.8	0.000	0.163	16	$30	100%	100%	7%	41%	59%	53%	9.61
5219	HVAC Equipment	Programmable Thermostat - Electric furnace baseline	Residential Online Energy Check-up	MF	N/A	NC	13,206.7	5.7%	750.8	0.000	0.163	16	$30	100%	100%	7%	41%	59%	57%	9.61
5220	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Gas/CAC	Midstream	SF	NLI	Retrofit	2,307.3	5.6%	129.1	0.178	0.006	11	$129	100%	58%	74%	41%	65%	53%	2.55
5221	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Gas/CAC	Midstream	SF	LI	Retrofit	2,307.3	5.6%	129.1	0.178	0.006	11	$129	100%	58%	74%	41%	63%	53%	2.55
5222	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Gas/CAC	Midstream	SF	N/A	NC	2,307.3	5.6%	129.1	0.178	0.006	11	$129	100%	58%	74%	41%	65%	53%	2.55
5223	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Gas/CAC	Residential Multi-Family DI	MF	NLI	Retrofit	1,675.6	5.5%	92.2	0.142	0.003	11	$129	100%	58%	74%	41%	59%	53%	1.99
5224	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Gas/CAC	Midstream	MF	LI	Retrofit	1,675.6	5.5%	92.2	0.142	0.003	11	$129	100%	58%	74%	41%	59%	53%	1.99
5225	HVAC Equipment	Wi-Fi Connected Smart Thermostat - Gas/CAC	Residential Multi-Family DI	MF	N/A	NC	1,675.6	5.5%	92.2	0.142	0.003	11	$129	100%	58%	74%	41%	59%	53%	1.99
5226	HVAC Equipment	Programmable Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	SF	NLI	Retrofit	2,307.3	2.1%	47.8	0.000	0.002	16	$30	100%	100%	74%	41%	65%	65%	0.60
5227	HVAC Equipment	Programmable Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	SF	LI	Retrofit	2,307.3	2.1%	47.8	0.000	0.002	16	$30	100%	100%	74%	41%	63%	63%	0.60
5228	HVAC Equipment	Programmable Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	SF	N/A	NC	2,307.3	2.1%	47.8	0.000	0.002	16	$30	100%	100%	74%	41%	65%	65%	0.60
5229	HVAC Equipment	Programmable Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	MF	NLI	Retrofit	1,675.6	2.1%	35.8	0.000	0.001	16	$30	100%	100%	74%	41%	59%	57%	0.45
5230	HVAC Equipment	Programmable Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	MF	LI	Retrofit	1,675.6	2.1%	35.8	0.000	0.001	16	$30	100%	100%	74%	41%	59%	53%	0.45
5231	HVAC Equipment	Programmable Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	MF	N/A	NC	1,675.6	2.1%	35.8	0.000	0.001	16	$30	100%	100%	74%	41%	59%	57%	0.45
5232	HVAC Equipment	Optimized Thermostat - Heat pump baseline	Residential Online Energy Check-up	SF	NLI	Retrofit	7,135.7	4.0%	285.4	0.000	0.051	1	$5	100%	100%	6%	41%	65%	65%	1.92
5233	HVAC Equipment	Optimized Thermostat - Heat pump baseline	Residential Online Energy Check-up	SF	LI	Retrofit	7,135.7	4.0%	285.4	0.000	0.051	1	$5	100%	100%	6%	41%	63%	63%	1.92
5234	HVAC Equipment	Optimized Thermostat - Heat pump baseline	Residential Online Energy Check-up	SF	N/A	NC	7,135.7	4.0%	285.4	0.000	0.051	1	$5	100%	100%	6%	41%	65%	65%	1.92
5235	HVAC Equipment	Optimized Thermostat - Heat pump baseline	Residential Online Energy Check-up	MF	NLI	Retrofit	5,490.3	4.0%	219.6	0.000	0.048	1	$5	100%	100%	6%	41%	59%	57%	1.49
5236	HVAC Equipment	Optimized Thermostat - Heat pump baseline	Residential Online Energy Check-up	MF	LI	Retrofit	5,490.3	4.0%	219.6	0.000	0.048	1	$5	100%	100%	6%	41%	59%	53%	1.49
5237	HVAC Equipment	Optimized Thermostat - Heat pump baseline	Residential Online Energy Check-up	MF	N/A	NC	5,490.3	4.0%	219.6	0.000	0.048	1	$5	100%	100%	6%	41%	59%	57%	1.49
5238	HVAC Equipment	Optimized Thermostat - Electric furnace baseline	Residential Online Energy Check-up	SF	NLI	Retrofit	16,327.9	4.0%	653.1	0.000	0.117	1	$5	100%	100%	7%	41%	65%	65%	4.39
5239	HVAC Equipment	Optimized Thermostat - Electric furnace baseline	Residential Online Energy Check-up	SF	LI	Retrofit	16,327.9	4.0%	653.1	0.000	0.117	1	$5	100%	100%	7%	41%	63%	63%	4.39
5240	HVAC Equipment	Optimized Thermostat - Electric furnace baseline	Residential Online Energy Check-up	SF	N/A	NC	16,327.9	4.0%	653.1	0.000	0.117	1	$5	100%	100%	7%	41%	65%	65%	4.39
5241	HVAC Equipment	Optimized Thermostat - Electric furnace baseline	Residential Online Energy Check-up	MF	NLI	Retrofit	12,981.1	4.0%	519.2	0.000	0.113	1	$5	100%	100%	7%	41%	59%	57%	3.51
5242	HVAC Equipment	Optimized Thermostat - Electric furnace baseline	Residential Online Energy Check-up	MF	LI	Retrofit	12,981.1	4.0%	519.2	0.000	0.113	1	$5	100%	100%	7%	41%	59%	53%	3.51
5243	HVAC Equipment	Optimized Thermostat - Electric furnace baseline	Residential Online Energy Check-up	MF	N/A	NC	12,981.1	4.0%	519.2	0.000	0.113	1	$5	100%	100%	7%	41%	59%	57%	3.51
5244	HVAC Equipment	Optimized Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	SF	NLI	Retrofit	1,926.8	4.0%	77.1	0.000	0.004	1	$5	100%	100%	74%	41%	65%	65%	0.51

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
5245	HVAC Equipment	Optimized Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	SF	LI	Retrofit	1,926.8	4.0%	77.1	0.000	0.004	1	$5	100%	100%	74%	41%	63%	63%	0.51
5246	HVAC Equipment	Optimized Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	SF	N/A	NC	1,926.8	4.0%	77.1	0.000	0.004	1	$5	100%	100%	74%	41%	65%	65%	0.51
5247	HVAC Equipment	Optimized Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	MF	NLI	Retrofit	1,421.9	4.0%	56.9	0.000	0.002	1	$5	100%	100%	74%	41%	59%	57%	0.37
5248	HVAC Equipment	Optimized Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	MF	LI	Retrofit	1,421.9	4.0%	56.9	0.000	0.002	1	$5	100%	100%	74%	41%	59%	53%	0.37
5249	HVAC Equipment	Optimized Thermostat - Gas/CAC baseline	Residential Online Energy Check-up	MF	N/A	NC	1,421.9	4.0%	56.9	0.000	0.002	1	$5	100%	100%	74%	41%	59%	57%	0.37
5250	HVAC Equipment	Integrated HVAC Controls - Heat pump baseline	Midstream	SF	NLI	Retrofit	7,135.7	5.0%	356.8	0.000	0.064	9	$99	75%	25%	6%	0%	45%	23%	3.58
5251	HVAC Equipment	Integrated HVAC Controls - Heat pump baseline	Midstream	SF	LI	Retrofit	7,135.7	5.0%	356.8	0.000	0.064	9	$99	100%	25%	6%	0%	63%	14%	3.58
5252	HVAC Equipment	Integrated HVAC Controls - Heat pump baseline	Midstream	SF	N/A	NC	7,135.7	5.0%	356.8	0.000	0.064	9	$99	75%	25%	6%	0%	45%	23%	3.58
5253	HVAC Equipment	Integrated HVAC Controls - Heat pump baseline	Midstream	MF	NLI	Retrofit	5,490.3	5.0%	274.5	0.000	0.059	9	$99	50%	25%	6%	0%	36%	21%	2.76
5254	HVAC Equipment	Integrated HVAC Controls - Heat pump baseline	Midstream	MF	LI	Retrofit	5,490.3	5.0%	274.5	0.000	0.059	9	$99	100%	25%	6%	0%	53%	25%	2.76
5255	HVAC Equipment	Integrated HVAC Controls - Heat pump baseline	Midstream	MF	N/A	NC	5,490.3	5.0%	274.5	0.000	0.059	9	$99	50%	25%	6%	0%	36%	21%	2.76
5256	HVAC Equipment	Integrated HVAC Controls - Electric furnace baseline	Midstream	SF	NLI	Retrofit	16,327.9	5.0%	816.4	0.000	0.147	9	$99	100%	25%	7%	0%	65%	23%	8.20
5257	HVAC Equipment	Integrated HVAC Controls - Electric furnace baseline	Midstream	SF	LI	Retrofit	16,327.9	5.0%	816.4	0.000	0.147	9	$99	100%	25%	7%	0%	63%	14%	8.20
5258	HVAC Equipment	Integrated HVAC Controls - Electric furnace baseline	Midstream	SF	N/A	NC	16,327.9	5.0%	816.4	0.000	0.147	9	$99	100%	25%	7%	0%	65%	23%	8.20
5259	HVAC Equipment	Integrated HVAC Controls - Electric furnace baseline	Midstream	MF	NLI	Retrofit	12,981.1	5.0%	649.1	0.000	0.141	9	$99	100%	25%	7%	0%	57%	21%	6.53
5260	HVAC Equipment	Integrated HVAC Controls - Electric furnace baseline	Midstream	MF	LI	Retrofit	12,981.1	5.0%	649.1	0.000	0.141	9	$99	100%	25%	7%	0%	53%	25%	6.53
5261	HVAC Equipment	Integrated HVAC Controls - Electric furnace baseline	Midstream	MF	N/A	NC	12,981.1	5.0%	649.1	0.000	0.141	9	$99	100%	25%	7%	0%	57%	21%	6.53
5262	HVAC Equipment	Integrated HVAC Controls - Gas/CAC baseline	Midstream	SF	NLI	Retrofit	1,926.8	5.0%	96.3	0.000	0.005	9	$99	25%	25%	74%	0%	23%	23%	0.96
5263	HVAC Equipment	Integrated HVAC Controls - Gas/CAC baseline	Midstream	SF	LI	Retrofit	1,926.8	5.0%	96.3	0.000	0.005	9	$99	25%	25%	74%	0%	14%	14%	0.96
5264	HVAC Equipment	Integrated HVAC Controls - Gas/CAC baseline	Midstream	SF	N/A	NC	1,926.8	5.0%	96.3	0.000	0.005	9	$99	25%	25%	74%	0%	23%	23%	0.96
5265	HVAC Equipment	Integrated HVAC Controls - Gas/CAC baseline	Midstream	MF	NLI	Retrofit	1,421.9	5.0%	71.1	0.000	0.003	9	$99	25%	25%	74%	0%	21%	21%	0.71
5266	HVAC Equipment	Integrated HVAC Controls - Gas/CAC baseline	Midstream	MF	LI	Retrofit	1,421.9	5.0%	71.1	0.000	0.003	9	$99	25%	25%	74%	0%	25%	25%	0.71
5267	HVAC Equipment	Integrated HVAC Controls - Gas/CAC baseline	Midstream	MF	N/A	NC	1,421.9	5.0%	71.1	0.000	0.003	9	$99	25%	25%	74%	0%	21%	21%	0.71
5268	HVAC Equipment	ECM HVAC Motor	Home Energy Products	SF	NLI	Retrofit	-	-	666.0	0.065	0.120	6	$350	29%	29%	86%	36%	52%	48%	1.52
5269	HVAC Equipment	ECM HVAC Motor	Home Energy Products	SF	LI	Retrofit	-	-	666.0	0.065	0.120	6	$350	75%	29%	86%	36%	55%	45%	1.52
5270	HVAC Equipment	ECM HVAC Motor	Home Energy Products	SF	N/A	NC	-	-	666.0	0.065	0.120	6	$350	29%	29%	86%	36%	52%	48%	1.52
5271	HVAC Equipment	ECM HVAC Motor	Home Energy Products	MF	NLI	Retrofit	-	-	444.0	0.065	0.096	6	$350	29%	29%	86%	36%	50%	48%	1.13
5272	HVAC Equipment	ECM HVAC Motor	Home Energy Products	MF	LI	Retrofit	-	-	444.0	0.065	0.096	6	$350	50%	29%	86%	36%	53%	48%	1.13
5273	HVAC Equipment	ECM HVAC Motor	Home Energy Products	MF	N/A	NC	-	-	444.0	0.065	0.096	6	$350	29%	29%	86%	36%	50%	48%	1.13
5274	HVAC Equipment	Advanced Furnace Fan	Midstream	SF	NLI	Retrofit	-	-	188.0	0.020	0.034	6	$302	25%	25%	86%	36%	50%	48%	0.58
5275	HVAC Equipment	Advanced Furnace Fan	Midstream	SF	LI	Retrofit	-	-	188.0	0.020	0.034	6	$302	25%	25%	86%	36%	45%	45%	0.58
5276	HVAC Equipment	Advanced Furnace Fan	Midstream	SF	N/A	NC	-	-	188.0	0.020	0.034	6	$302	25%	25%	86%	36%	50%	48%	0.58
5277	HVAC Equipment	Advanced Furnace Fan	Midstream	MF	NLI	Retrofit	-	-	188.0	0.020	0.041	6	$302	25%	25%	86%	36%	49%	48%	0.58
5278	HVAC Equipment	Advanced Furnace Fan	Midstream	MF	LI	Retrofit	-	-	188.0	0.020	0.041	6	$302	25%	25%	86%	36%	52%	48%	0.58
5279	HVAC Equipment	Advanced Furnace Fan	Midstream	MF	N/A	NC	-	-	188.0	0.020	0.041	6	$302	25%	25%	86%	36%	49%	48%	0.58
5280	HVAC Equipment	ENERGY STAR Room Air Conditioner	Midstream	SF	NLI	MO	938.1	8.8%	82.8	0.034	0.001	12	$40	100%	25%	10%	53%	67%	62%	5.70
5281	HVAC Equipment	ENERGY STAR Room Air Conditioner	Midstream	SF	LI	MO	938.1	8.8%	82.8	0.034	0.001	12	$40	100%	25%	10%	53%	67%	59%	5.70
5282	HVAC Equipment	ENERGY STAR Room Air Conditioner	Midstream	SF	N/A	NC	938.1	8.8%	82.8	0.034	0.001	12	$40	100%	25%	10%	53%	67%	62%	5.70
5283	HVAC Equipment	ENERGY STAR Room Air Conditioner	Midstream	MF	NLI	MO	837.4	8.8%	73.9	0.034	0.001	12	$40	100%	25%	10%	53%	67%	62%	5.42
5284	HVAC Equipment	ENERGY STAR Room Air Conditioner	Midstream	MF	LI	MO	837.4	8.8%	73.9	0.034	0.001	12	$40	100%	25%	10%	53%	67%	62%	5.42
5285	HVAC Equipment	ENERGY STAR Room Air Conditioner	Midstream	MF	N/A	NC	837.4	8.8%	73.9	0.034	0.001	12	$40	100%	25%	10%	53%	67%	62%	5.42
5286	HVAC Equipment	CEE Tier 2 Room Air Conditioner	Midstream	SF	NLI	MO	938.1	24.4%	228.8	0.094	0.002	12	$100	100%	25%	10%	53%	67%	62%	6.31
5287	HVAC Equipment	CEE Tier 2 Room Air Conditioner	Midstream	SF	LI	MO	938.1	24.4%	228.8	0.094	0.002	12	$100	100%	25%	10%	53%	67%	59%	6.31
5288	HVAC Equipment	CEE Tier 2 Room Air Conditioner	Midstream	SF	N/A	NC	938.1	24.4%	228.8	0.094	0.002	12	$100	100%	25%	10%	53%	67%	62%	6.31
5289	HVAC Equipment	CEE Tier 2 Room Air Conditioner	Midstream	MF	NLI	MO	837.4	24.4%	204.2	0.094	0.003	12	$100	100%	25%	10%	53%	67%	62%	5.99
5290	HVAC Equipment	CEE Tier 2 Room Air Conditioner	Midstream	MF	LI	MO	837.4	24.4%	204.2	0.094	0.003	12	$100	100%	25%	10%	53%	67%	62%	5.99
5291	HVAC Equipment	CEE Tier 2 Room Air Conditioner	Midstream	MF	N/A	NC	837.4	24.4%	204.2	0.094	0.003	12	$100	100%	25%	10%	53%	67%	62%	5.99
5292	HVAC Equipment	Room Air Conditioner Recycling	Home Appliance Recycling	SF	N/A	Recycle	630.6	100.0%	630.6	0.260	0.007	4	$129	100%	39%	1%	0%	65%	32%	3.41
5293	HVAC Equipment	Room Air Conditioner Recycling	Home Appliance Recycling	MF	N/A	Recycle	562.9	100.0%	562.9	0.260	0.009	4	$129	100%	39%	1%	0%	57%	28%	3.24
5294	HVAC Equipment	Smart Vents/Sensors - Gas/CAC baseline	Midstream	SF	NLI	Retrofit	1,926.8	9.0%	173.4	0.068	0.009	11	$1,625	25%	25%	74%	5%	27%	24%	0.27
5295	HVAC Equipment	Smart Vents/Sensors - Gas/CAC baseline	Midstream	SF	LI	Retrofit	1,926.8	9.0%	173.4	0.068	0.009	11	$1,625	25%	25%	74%	5%	18%	18%	0.27
5296	HVAC Equipment	Smart Vents/Sensors - Gas/CAC baseline	Midstream	SF	N/A	NC	1,926.8	9.0%	173.4	0.068	0.009	11	$1,625	25%	25%	74%	5%	27%	24%	0.27
5297	HVAC Equipment	Smart Vents/Sensors - Gas/CAC baseline	Midstream	MF	NLI	Retrofit	1,421.9	9.0%	128.0	0.049	0.005	11	$1,625	25%	25%	74%	5%	25%	24%	0.20
5298	HVAC Equipment	Smart Vents/Sensors - Gas/CAC baseline	Midstream	MF	LI	Retrofit	1,421.9	9.0%	128.0	0.049	0.005	11	$1,625	25%	25%	74%	5%	29%	25%	0.20
5299	HVAC Equipment	Smart Vents/Sensors - Gas/CAC baseline	Midstream	MF	N/A	NC	1,421.9	9.0%	128.0	0.049	0.005	11	$1,625	25%	25%	74%	5%	25%	24%	0.20
5300	HVAC Equipment	Smart Vents/Sensors - Heat pump baseline	Midstream	SF	NLI	Retrofit	7,135.7	9.0%	642.2	0.116	0.115	11	$1,625	25%	25%	6%	5%	27%	24%	0.71
5301	HVAC Equipment	Smart Vents/Sensors - Heat pump baseline	Midstream	SF	LI	Retrofit	7,135.7	9.0%	642.2	0.116	0.115	11	$1,625	25%	25%	6%	5%	18%	18%	0.71
5302	HVAC Equipment	Smart Vents/Sensors - Heat pump baseline	Midstream	SF	N/A	NC	7,135.7	9.0%	642.2	0.116	0.115	11	$1,625	25%	25%	6%	5%	27%	24%	0.71
5303	HVAC Equipment	Smart Vents/Sensors - Heat pump baseline	Midstream	MF	NLI	Retrofit	5,490.3	9.0%	494.1	0.053	0.107	11	$1,625	25%	25%	6%	5%	25%	24%	0.47
5304	HVAC Equipment	Smart Vents/Sensors - Heat pump baseline	Midstream	MF	LI	Retrofit	5,490.3	9.0%	494.1	0.053	0.107	11	$1,625	25%	25%	6%	5%	29%	25%	0.47
5305	HVAC Equipment	Smart Vents/Sensors - Heat pump baseline	Midstream	MF	N/A	NC	5,490.3	9.0%	494.1	0.053	0.107	11	$1,625	25%	25%	6%	5%	25%	24%	0.47
5306	HVAC Equipment	Smart Vents/Sensors - Electric furnace baseline	Midstream	SF	NLI	Retrofit	16,327.9	9.0%	1,469.5	0.265	0.264	10	$1,625	25%	25%	7%	5%	27%	24%	1.50
5307	HVAC Equipment	Smart Vents/Sensors - Electric furnace baseline	Midstream	SF	LI	Retrofit	16,327.9	9.0%	1,469.5	0.265	0.264	10	$1,625	75%	25%	7%	5%	42%	18%	1.50
5308	HVAC Equipment	Smart Vents/Sensors - Electric furnace baseline	Midstream	SF	N/A	NC	16,327.9	9.0%	1,469.5	0.265	0.264	10	$1,625	25%	25%	7%	5%	27%	24%	1.50
5309	HVAC Equipment	Smart Vents/Sensors - Electric furnace baseline	Midstream	MF	NLI	Retrofit	12,981.1	9.0%	1,168.3	0.126	0.253	10	$1,625	25%	25%	7%	5%	25%	24%	1.03
5310	HVAC Equipment	Smart Vents/Sensors - Electric furnace baseline	Midstream	MF	LI	Retrofit	12,981.1	9.0%	1,168.3	0.126	0.253	10	$1,625	50%	25%	7%	5%	30%	25%	1.03
5311	HVAC Equipment	Smart Vents/Sensors - Electric furnace baseline	Midstream	MF	N/A	NC	12,981.1	9.0%	1,168.3	0.126	0.253	10	$1,625	25%	25%	7%	5%	25%	24%	1.03

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
5312	HVAC Equipment	Whole House Attic Fan	Midstream	SF	NLI	Retrofit	1,156.4	7.1%	82.0	0.009	0.001	15	$1,128	25%	25%	79%	13%	33%	30%	0.14
5313	HVAC Equipment	Whole House Attic Fan	Midstream	SF	LI	Retrofit	1,156.4	7.1%	82.0	0.009	0.001	15	$1,128	25%	25%	79%	13%	25%	25%	0.14
5314	HVAC Equipment	Whole House Attic Fan	Midstream	SF	N/A	NC	1,156.4	7.1%	82.0	0.009	0.001	15	$1,128	25%	25%	79%	13%	33%	30%	0.14
5315	HVAC Equipment	Whole House Attic Fan	Midstream	MF	NLI	Retrofit	844.0	9.7%	82.0	0.009	0.001	15	$1,128	25%	25%	79%	13%	31%	30%	0.14
5316	HVAC Equipment	Whole House Attic Fan	Midstream	MF	LI	Retrofit	844.0	9.7%	82.0	0.009	0.001	15	$1,128	25%	25%	79%	13%	35%	30%	0.14
5317	HVAC Equipment	Whole House Attic Fan	Midstream	MF	N/A	NC	844.0	9.7%	82.0	0.009	0.001	15	$1,128	25%	25%	100%	13%	31%	30%	0.14
5318	HVAC Equipment	HVAC Economizer	Midstream	SF	NLI	Retrofit	1,475.0	10.0%	147.5	0.050	0.026	20	$600	25%	25%	100%	0%	23%	23%	0.87
5319	HVAC Equipment	HVAC Economizer	Midstream	SF	LI	Retrofit	1,475.0	10.0%	147.5	0.050	0.026	20	$600	25%	25%	100%	0%	14%	14%	0.87
5320	HVAC Equipment	HVAC Economizer	Midstream	SF	N/A	NC	1,475.0	10.0%	147.5	0.050	0.026	20	$600	25%	25%	100%	0%	23%	23%	0.87
5321	HVAC Equipment	HVAC Economizer	Midstream	MF	NLI	Retrofit	1,475.0	10.0%	147.5	0.050	0.032	20	$400	25%	25%	100%	0%	21%	21%	1.30
5322	HVAC Equipment	HVAC Economizer	Midstream	MF	LI	Retrofit	1,475.0	10.0%	147.5	0.050	0.032	20	$400	50%	25%	100%	0%	27%	25%	1.30
5323	HVAC Equipment	HVAC Economizer	Midstream	MF	N/A	NC	1,475.0	10.0%	147.5	0.050	0.032	20	$400	25%	25%	100%	0%	21%	21%	1.30
5324	HVAC Equipment	High Efficiency Bathroom Exhaust Fan	Home Energy Products	SF	NLI	Retrofit	46.6	84.5%	39.4	0.005	0.005	19	$48	25%	25%	100%	23%	40%	38%	1.86
5325	HVAC Equipment	High Efficiency Bathroom Exhaust Fan	Income Qualified Weatherproofing	SF	LI	Retrofit	46.6	84.5%	39.4	0.005	0.005	19	$48	100%	100%	100%	23%	63%	63%	0.47
5326	HVAC Equipment	High Efficiency Bathroom Exhaust Fan	Home Energy Products	SF	N/A	NC	46.6	84.5%	39.4	0.005	0.005	19	$48	25%	25%	100%	23%	40%	38%	1.86
5327	HVAC Equipment	High Efficiency Bathroom Exhaust Fan	Home Energy Products	MF	NLI	Retrofit	46.6	84.5%	39.4	0.005	0.006	19	$48	25%	25%	100%	23%	39%	38%	1.87
5328	HVAC Equipment	High Efficiency Bathroom Exhaust Fan	Income Qualified Weatherproofing	MF	LI	Retrofit	46.6	84.5%	39.4	0.005	0.006	19	$48	100%	100%	100%	23%	53%	53%	0.47
5329	HVAC Equipment	High Efficiency Bathroom Exhaust Fan	Home Energy Products	MF	N/A	NC	46.6	84.5%	39.4	0.005	0.006	19	$48	25%	25%	100%	23%	39%	38%	1.87
5330	HVAC Equipment	ENERGY STAR Ceiling Fan	Home Energy Products	SF	NLI	MO	103.4	71.7%	74.1	0.016	0.016	10	$46	50%	25%	100%	23%	46%	38%	2.82
5331	HVAC Equipment	ENERGY STAR Ceiling Fan	Home Energy Products	SF	LI	MO	103.4	71.7%	74.1	0.016	0.010	10	$46	100%	25%	100%	23%	63%	34%	2.82
5332	HVAC Equipment	ENERGY STAR Ceiling Fan	Home Energy Products	SF	N/A	NC	103.4	71.7%	74.1	0.016	0.010	10	$46	50%	25%	100%	23%	46%	38%	2.82
5333	HVAC Equipment	ENERGY STAR Ceiling Fan	Home Energy Products	MF	NLI	MO	103.4	71.7%	74.1	0.016	0.011	10	$46	50%	25%	100%	23%	46%	38%	2.82
5334	HVAC Equipment	ENERGY STAR Ceiling Fan	Home Energy Products	MF	LI	MO	103.4	71.7%	74.1	0.016	0.011	10	$46	100%	25%	100%	23%	53%	38%	2.82
5335	HVAC Equipment	ENERGY STAR Ceiling Fan	Home Energy Products	MF	N/A	NC	103.4	71.7%	74.1	0.016	0.011	10	$46	50%	25%	100%	23%	46%	38%	2.82
5336	HVAC Equipment	Energy Recovery Ventilator	Midstream	SF	NLI	Retrofit	-	-	1,457.8	0.117	0.203	15	$4,850	25%	25%	100%	0%	23%	23%	0.53
5337	HVAC Equipment	Energy Recovery Ventilator	Midstream	SF	LI	Retrofit	-	-	1,457.8	0.117	0.203	15	$4,850	25%	25%	100%	0%	14%	14%	0.53
5338	HVAC Equipment	Energy Recovery Ventilator	Midstream	SF	N/A	NC	-	-	950.3	0.076	0.132	15	$4,850	25%	25%	100%	0%	23%	23%	0.35
5339	HVAC Equipment	Energy Recovery Ventilator	Midstream	MF	NLI	Retrofit	-	-	410.9	0.033	0.060	15	$3,600	25%	25%	100%	0%	21%	21%	0.20
5340	HVAC Equipment	Energy Recovery Ventilator	Midstream	MF	LI	Retrofit	-	-	410.9	0.033	0.060	15	$3,600	25%	25%	100%	0%	25%	25%	0.20
5341	HVAC Equipment	Energy Recovery Ventilator	Midstream	MF	N/A	NC	-	-	125.9	0.010	0.018	15	$3,600	25%	25%	100%	0%	21%	21%	0.06
5342	HVAC Equipment	Air Handler Filter Cleaning/Replacement	Midstream	SF	NLI	Retrofit	660.1	10.0%	66.0	0.018	0.012	3	$50	25%	25%	100%	70%	77%	76%	0.88
5343	HVAC Equipment	Air Handler Filter Cleaning/Replacement	Midstream	SF	LI	Retrofit	660.1	10.0%	66.0	0.018	0.012	3	$50	25%	25%	100%	70%	74%	74%	0.88
5344	HVAC Equipment	Air Handler Filter Cleaning/Replacement	Midstream	SF	N/A	NC	660.1	10.0%	66.0	0.018	0.012	3	$50	25%	25%	100%	70%	77%	76%	0.88
5345	HVAC Equipment	Air Handler Filter Cleaning/Replacement	Midstream	MF	NLI	Retrofit	660.1	10.0%	66.0	0.018	0.014	3	$50	25%	25%	100%	70%	76%	76%	0.89
5346	HVAC Equipment	Air Handler Filter Cleaning/Replacement	Midstream	MF	LI	Retrofit	660.1	10.0%	66.0	0.018	0.014	3	$50	25%	25%	100%	70%	77%	76%	0.89
5347	HVAC Equipment	Air Handler Filter Cleaning/Replacement	Midstream	MF	N/A	NC	660.1	10.0%	66.0	0.018	0.014	3	$50	25%	25%	100%	70%	76%	76%	0.89
5348	HVAC Equipment	High Efficiency Kitchen Exhaust Fans	Home Energy Products	SF	NLI	Retrofit	7.3	46.7%	3.4	0.000	0.000	19	$107	25%	25%	100%	23%	40%	38%	0.05
5349	HVAC Equipment	High Efficiency Kitchen Exhaust Fans	Home Energy Products	SF	LI	Retrofit	7.3	46.7%	3.4	0.000	0.000	19	$107	100%	100%	100%	23%	63%	63%	0.01
5350	HVAC Equipment	High Efficiency Kitchen Exhaust Fans	Home Energy Products	SF	N/A	NC	7.3	46.7%	3.4	0.000	0.000	19	$107	25%	25%	100%	23%	40%	38%	0.05
5351	HVAC Equipment	High Efficiency Kitchen Exhaust Fans	Home Energy Products	MF	NLI	Retrofit	7.3	46.7%	3.4	0.000	0.000	19	$107	25%	25%	100%	23%	39%	38%	0.05
5352	HVAC Equipment	High Efficiency Kitchen Exhaust Fans	Home Energy Products	MF	LI	Retrofit	7.3	46.7%	3.4	0.000	0.000	19	$107	100%	100%	100%	23%	53%	53%	0.01
5353	HVAC Equipment	High Efficiency Kitchen Exhaust Fans	Home Energy Products	MF	N/A	NC	7.3	46.7%	3.4	0.000	0.000	19	$107	25%	25%	100%	23%	39%	38%	0.05
6001	Lighting	LED A-line 450-799 lumens	Residential Online Energy Check-up	SF	NLI	Retrofit	24.3	80.5%	19.6	0.002	0.005	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6002	Lighting	LED A-line 450-799 lumens	Income Qualified Weatherproofing	SF	LI	Retrofit	24.3	80.5%	19.6	0.002	0.005	8	$0	100%	100%	2041%	67%	77%	74%	1.00
6003	Lighting	LED A-line 450-799 lumens	Residential Online Energy Check-up	SF	N/A	NC	24.3	80.5%	19.6	0.002	0.005	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6004	Lighting	LED A-line 450-799 lumens	Residential Multi-Family DI	MF	NLI	Retrofit	24.3	80.5%	19.6	0.002	0.005	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6005	Lighting	LED A-line 450-799 lumens	Income Qualified Weatherproofing	MF	LI	Retrofit	24.3	80.5%	19.6	0.002	0.005	8	$0	100%	100%	1021%	67%	77%	74%	1.00
6006	Lighting	LED A-line 450-799 lumens	Residential Multi-Family DI	MF	N/A	NC	24.3	80.5%	19.6	0.002	0.005	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6007	Lighting	LED A-line 800-1099 lumens	Residential Online Energy Check-up	SF	NLI	Retrofit	36.1	79.0%	28.5	0.002	0.007	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6008	Lighting	LED A-line 800-1099 lumens	Income Qualified Weatherproofing	SF	LI	Retrofit	36.1	79.0%	28.5	0.002	0.007	8	$0	100%	100%	2041%	67%	77%	74%	1.00
6009	Lighting	LED A-line 800-1099 lumens	Residential Online Energy Check-up	SF	N/A	NC	36.1	79.0%	28.5	0.002	0.007	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6010	Lighting	LED A-line 800-1099 lumens	Residential Multi-Family DI	MF	NLI	Retrofit	36.1	79.0%	28.5	0.002	0.007	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6011	Lighting	LED A-line 800-1099 lumens	Income Qualified Weatherproofing	MF	LI	Retrofit	36.1	79.0%	28.5	0.002	0.007	8	$0	100%	100%	1021%	67%	77%	74%	1.00
6012	Lighting	LED A-line 800-1099 lumens	Residential Multi-Family DI	MF	N/A	NC	36.1	79.0%	28.5	0.002	0.007	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6013	Lighting	LED A-line 1100-1599 lumens	Residential Online Energy Check-up	SF	NLI	Retrofit	44.5	77.8%	34.6	0.003	0.008	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6014	Lighting	LED A-line 1100-1599 lumens	Income Qualified Weatherproofing	SF	LI	Retrofit	44.5	77.8%	34.6	0.003	0.008	8	$0	100%	100%	2041%	67%	77%	74%	1.00
6015	Lighting	LED A-line 1100-1599 lumens	Residential Online Energy Check-up	SF	N/A	NC	44.5	77.8%	34.6	0.003	0.008	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6016	Lighting	LED A-line 1100-1599 lumens	Residential Multi-Family DI	MF	NLI	Retrofit	44.5	77.8%	34.6	0.003	0.008	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6017	Lighting	LED A-line 1100-1599 lumens	Income Qualified Weatherproofing	MF	LI	Retrofit	44.5	77.8%	34.6	0.003	0.008	8	$0	100%	100%	1021%	67%	77%	74%	1.00
6018	Lighting	LED A-line 1100-1599 lumens	Residential Multi-Family DI	MF	N/A	NC	44.5	77.8%	34.6	0.003	0.008	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6019	Lighting	LED A-line 1600-1999 lumens	Residential Online Energy Check-up	SF	NLI	Retrofit	60.4	78.1%	47.2	0.004	0.011	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6020	Lighting	LED A-line 1600-1999 lumens	Income Qualified Weatherproofing	SF	LI	Retrofit	60.4	78.1%	47.2	0.004	0.011	8	$0	100%	100%	2041%	67%	77%	74%	1.00
6021	Lighting	LED A-line 1600-1999 lumens	Residential Online Energy Check-up	SF	N/A	NC	60.4	78.1%	47.2	0.004	0.011	2	$0	100%	100%	2041%	67%	77%	74%	1.00
6022	Lighting	LED A-line 1600-1999 lumens	Residential Multi-Family DI	MF	NLI	Retrofit	60.4	78.1%	47.2	0.004	0.011	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6023	Lighting	LED A-line 1600-1999 lumens	Income Qualified Weatherproofing	MF	LI	Retrofit	60.4	78.1%	47.2	0.004	0.011	8	$0	100%	100%	1021%	67%	77%	74%	1.00
6024	Lighting	LED A-line 1600-1999 lumens	Residential Multi-Family DI	MF	N/A	NC	60.4	78.1%	47.2	0.004	0.011	2	$0	100%	100%	1021%	67%	77%	74%	1.00
6025	Lighting	LED Globe	Residential Online Energy Check-up	SF	NLI	Retrofit	31.5	85.5%	26.9	0.002	0.007	2	$0	100%	100%	587%	67%	77%	74%	1.00

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
6026	Lighting	LED Globe	Income Qualified Weatherproofing	SF	LI	Retrofit	31.5	85.5%	26.9	0.002	0.007	8	$0	100%	100%	587%	67%	77%	74%	1.00
6027	Lighting	LED Globe	Residential Online Energy Check-up	SF	N/A	NC	31.5	85.5%	26.9	0.002	0.007	2	$0	100%	100%	587%	67%	77%	74%	1.00
6028	Lighting	LED Globe	Residential Multi-Family DI	MF	NLI	Retrofit	31.5	85.5%	26.9	0.002	0.007	2	$0	100%	100%	587%	67%	77%	74%	1.00
6029	Lighting	LED Globe	Income Qualified Weatherproofing	MF	LI	Retrofit	31.5	85.5%	26.9	0.002	0.007	8	$0	100%	100%	587%	67%	77%	74%	1.00
6030	Lighting	LED Globe	Residential Multi-Family DI	MF	N/A	NC	31.5	85.5%	26.9	0.002	0.007	2	$0	100%	100%	587%	67%	77%	74%	1.00
6031	Lighting	LED PAR/R/BR	Residential Online Energy Check-up	SF	NLI	Retrofit	65.5	82.1%	53.7	0.005	0.013	2	$0	100%	100%	587%	67%	77%	74%	1.00
6032	Lighting	LED PAR/R/BR	Income Qualified Weatherproofing	SF	LI	Retrofit	65.5	82.1%	53.7	0.005	0.013	8	$0	100%	100%	587%	67%	77%	74%	1.00
6033	Lighting	LED PAR/R/BR	Residential Online Energy Check-up	SF	N/A	NC	65.5	82.1%	53.7	0.005	0.013	2	$0	100%	100%	587%	67%	77%	74%	1.00
6034	Lighting	LED PAR/R/BR	Residential Multi-Family DI	MF	NLI	Retrofit	65.5	82.1%	53.7	0.005	0.013	2	$0	100%	100%	587%	67%	77%	74%	1.00
6035	Lighting	LED PAR/R/BR	Income Qualified Weatherproofing	MF	LI	Retrofit	65.5	82.1%	53.7	0.005	0.013	8	$0	100%	100%	587%	67%	77%	74%	1.00
6036	Lighting	LED PAR/R/BR	Residential Multi-Family DI	MF	N/A	NC	65.5	82.1%	53.7	0.005	0.013	2	$0	100%	100%	587%	67%	77%	74%	1.00
6037	Lighting	LED Candelabra	Residential Online Energy Check-up	SF	NLI	Retrofit	27.5	86.2%	23.7	0.002	0.006	2	$0	100%	100%	547%	67%	77%	74%	1.00
6038	Lighting	LED Candelabra	Income Qualified Weatherproofing	SF	LI	Retrofit	27.5	86.2%	23.7	0.002	0.006	8	$0	100%	100%	547%	67%	77%	74%	1.00
6039	Lighting	LED Candelabra	Residential Online Energy Check-up	SF	N/A	NC	27.5	86.2%	23.7	0.002	0.006	2	$0	100%	100%	547%	67%	77%	74%	1.00
6040	Lighting	LED Candelabra	Residential Multi-Family DI	MF	NLI	Retrofit	27.5	86.2%	23.7	0.002	0.006	2	$0	100%	100%	547%	67%	77%	74%	1.00
6041	Lighting	LED Candelabra	Income Qualified Weatherproofing	MF	LI	Retrofit	27.5	86.2%	23.7	0.002	0.006	8	$0	100%	100%	547%	67%	77%	74%	1.00
6042	Lighting	LED Candelabra	Residential Multi-Family DI	MF	N/A	NC	27.5	86.2%	23.7	0.002	0.006	2	$0	100%	100%	547%	67%	77%	74%	1.00
6043	Lighting	LED Nightlights	Residential Online Energy Check-up	SF	NLI	MO	26.0	84.6%	22.0	0.000	0.005	12	$3	100%	90%	34%	67%	77%	74%	2.28
6044	Lighting	LED Nightlights	Income Qualified Weatherproofing	SF	LI	Retrofit	26.0	84.6%	22.0	0.000	0.005	12	$6	100%	100%	34%	67%	77%	74%	1.10
6045	Lighting	LED Nightlights	Residential Online Energy Check-up	SF	N/A	NC	26.0	84.6%	22.0	0.000	0.005	12	$3	100%	90%	34%	67%	77%	74%	2.28
6046	Lighting	LED Nightlights	Residential Multi-Family DI	MF	NLI	MO	26.0	84.6%	22.0	0.000	0.005	12	$3	100%	50%	34%	67%	77%	74%	4.08
6047	Lighting	LED Nightlights	Income Qualified Weatherproofing	MF	LI	Retrofit	26.0	84.6%	22.0	0.000	0.005	12	$6	100%	100%	34%	67%	77%	74%	1.10
6048	Lighting	LED Nightlights	Residential Multi-Family DI	MF	N/A	NC	26.0	84.6%	22.0	0.000	0.005	12	$3	100%	50%	34%	67%	77%	74%	4.08
6049	Lighting	Exterior LED Lamp	Residential Online Energy Check-up	SF	NLI	Retrofit	68.0	86.4%	58.8	0.000	0.010	2	$0	100%	100%	100%	67%	77%	74%	1.00
6050	Lighting	Exterior LED Lamp	Income Qualified Weatherproofing	SF	LI	Retrofit	68.0	86.4%	58.8	0.000	0.010	8	$0	100%	100%	100%	67%	77%	74%	1.00
6051	Lighting	Exterior LED Lamp	Residential Online Energy Check-up	SF	N/A	NC	68.0	86.4%	58.8	0.000	0.010	2	$0	100%	100%	100%	67%	77%	74%	1.00
6052	Lighting	Exterior LED Lamp	Home Energy Products	MF	NLI	Retrofit	68.0	86.4%	58.8	0.000	0.010	2	$0	100%	100%	100%	67%	77%	74%	1.00
6053	Lighting	Exterior LED Lamp	Income Qualified Weatherproofing	MF	LI	Retrofit	68.0	86.4%	58.8	0.000	0.010	8	$0	100%	100%	100%	67%	77%	74%	1.00
6054	Lighting	Exterior LED Lamp	Home Energy Products	MF	N/A	NC	68.0	86.4%	58.8	0.000	0.010	2	$0	100%	100%	100%	67%	77%	74%	1.00
6055	Lighting	Linear LED	Residential Online Energy Check-up	SF	NLI	MO	40.6	44.5%	18.1	0.002	0.004	10	$10	50%	25%	427%	67%	77%	74%	2.43
6056	Lighting	Linear LED	Income Qualified Weatherproofing	SF	LI	Retrofit	40.6	44.5%	18.1	0.002	0.004	10	$10	100%	100%	427%	67%	77%	74%	0.61
6057	Lighting	Linear LED	Residential Online Energy Check-up	SF	N/A	NC	40.6	44.5%	18.1	0.002	0.004	10	$10	50%	50%	427%	67%	77%	74%	1.22
6058	Lighting	Linear LED	Home Energy Products	MF	NLI	MO	40.6	44.5%	18.1	0.002	0.004	10	$10	50%	25%	427%	67%	77%	74%	2.43
6059	Lighting	Linear LED	Income Qualified Weatherproofing	MF	LI	Retrofit	40.6	44.5%	18.1	0.002	0.004	10	$10	100%	100%	427%	67%	77%	74%	0.61
6060	Lighting	Linear LED	Home Energy Products	MF	N/A	NC	40.6	44.5%	18.1	0.002	0.004	10	$10	50%	50%	427%	67%	77%	74%	1.22
6061	Lighting	LED Fixture	Residential Online Energy Check-up	SF	NLI	MO	86.9	74.7%	64.9	0.073	0.016	2	$26	50%	25%	2041%	67%	77%	74%	2.66
6062	Lighting	LED Fixture	Income Qualified Weatherproofing	SF	LI	Retrofit	86.9	74.7%	64.9	0.073	0.016	8	$26	100%	100%	2041%	67%	77%	74%	2.45
6063	Lighting	LED Fixture	Residential Online Energy Check-up	SF	N/A	NC	86.9	74.7%	64.9	0.073	0.016	2	$26	50%	25%	2041%	67%	77%	74%	2.66
6064	Lighting	LED Fixture	Home Energy Products	MF	NLI	MO	86.9	74.7%	64.9	0.073	0.016	2	$26	50%	25%	2041%	67%	77%	74%	2.66
6065	Lighting	LED Fixture	Income Qualified Weatherproofing	MF	LI	Retrofit	86.9	74.7%	64.9	0.073	0.016	8	$26	100%	100%	2041%	67%	77%	74%	2.45
6066	Lighting	LED Fixture	Home Energy Products	MF	N/A	NC	86.9	74.7%	64.9	0.073	0.016	2	$26	50%	25%	2041%	67%	77%	74%	2.66
6067	Lighting	Occupancy Sensor	Home Energy Products	SF	NLI	Retrofit	302.2	29.6%	89.4	0.008	0.022	10	$30	75%	25%	100%	42%	59%	54%	4.00
6068	Lighting	Occupancy Sensor	Home Energy Products	SF	LI	Retrofit	302.2	29.6%	89.4	0.008	0.022	10	$30	100%	25%	100%	42%	68%	54%	4.00
6069	Lighting	Occupancy Sensor	Home Energy Products	SF	N/A	NC	302.2	29.6%	89.4	0.008	0.022	10	$30	75%	25%	100%	42%	59%	54%	4.00
6070	Lighting	Occupancy Sensor	Home Energy Products	MF	NLI	Retrofit	302.2	29.6%	89.4	0.008	0.022	10	$30	75%	25%	100%	42%	59%	54%	4.00
6071	Lighting	Occupancy Sensor	Home Energy Products	MF	LI	Retrofit	302.2	29.6%	89.4	0.008	0.022	10	$30	100%	25%	100%	42%	59%	54%	4.00
6072	Lighting	Occupancy Sensor	Home Energy Products	MF	N/A	NC	302.2	29.6%	89.4	0.008	0.022	10	$30	75%	25%	100%	42%	59%	54%	4.00
6073	Lighting	Exterior Lighting Controls	Home Energy Products	SF	NLI	Retrofit	108.0	80.0%	86.4	0.000	0.015	10	$3	100%	25%	41%	42%	64%	54%	30.51
6074	Lighting	Exterior Lighting Controls	Home Energy Products	SF	LI	Retrofit	108.0	80.0%	86.4	0.000	0.015	10	$3	100%	25%	41%	42%	68%	54%	30.51
6075	Lighting	Exterior Lighting Controls	Home Energy Products	SF	N/A	NC	108.0	80.0%	86.4	0.000	0.015	10	$3	100%	25%	41%	42%	64%	54%	30.51
6076	Lighting	Exterior Lighting Controls	Home Energy Products	MF	NLI	Retrofit	108.0	80.0%	86.4	0.000	0.015	10	$3	100%	25%	41%	42%	62%	54%	30.50
6077	Lighting	Exterior Lighting Controls	Home Energy Products	MF	LI	Retrofit	108.0	80.0%	86.4	0.000	0.015	10	$3	100%	25%	41%	42%	59%	54%	30.50
6078	Lighting	Exterior Lighting Controls	Home Energy Products	MF	N/A	NC	108.0	80.0%	86.4	0.000	0.015	10	$3	100%	25%	41%	42%	62%	54%	30.50
6079	Lighting	LED Exit Signs	Residential Multi-Family DI	MF	NLI	MO	122.7	74.3%	91.2	0.010	0.022	5	$33	50%	25%	20%	67%	77%	74%	2.23
6080	Lighting	LED Exit Signs	Residential Multi-Family DI	MF	LI	MO	122.7	74.3%	91.2	0.010	0.022	5	$33	100%	25%	20%	67%	77%	74%	2.23
6081	Lighting	LED Exit Signs	Residential Multi-Family DI	MF	N/A	NC	122.7	74.3%	91.2	0.010	0.022	5	$33	50%	25%	20%	67%	77%	74%	2.23
6082	Lighting	Connected LED Lamps	Residential Online Energy Check-up	SF	NLI	MO	8.7	32.9%	2.9	0.000	0.001	10	$20	25%	25%	2041%	67%	77%	74%	0.22
6083	Lighting	Connected LED Lamps	Residential Online Energy Check-up	SF	LI	MO	8.7	32.9%	2.9	0.000	0.001	10	$20	25%	25%	2041%	67%	77%	74%	0.22
6084	Lighting	Connected LED Lamps	Residential Online Energy Check-up	SF	N/A	NC	8.7	32.9%	2.9	0.000	0.001	10	$20	25%	25%	2041%	67%	77%	74%	0.22
6085	Lighting	Connected LED Lamps	Residential Online Energy Check-up	MF	NLI	MO	8.7	32.9%	2.9	0.000	0.001	10	$20	25%	25%	2041%	67%	77%	74%	0.22
6086	Lighting	Connected LED Lamps	Residential Online Energy Check-up	MF	LI	MO	8.7	32.9%	2.9	0.000	0.001	10	$20	25%	25%	2041%	67%	77%	74%	0.22
6087	Lighting	Connected LED Lamps	Residential Online Energy Check-up	MF	N/A	NC	8.7	32.9%	2.9	0.000	0.001	10	$20	25%	25%	2041%	67%	77%	74%	0.22
6088	Lighting	EISA Exempt LED	Residential Online Energy Check-up	SF	NLI	MO	26.7	92.1%	24.6	0.034	0.006	15	$2	100%	25%	100%	67%	77%	74%	109.87
6089	Lighting	EISA Exempt LED	Residential Online Energy Check-up	SF	LI	MO	26.7	92.1%	24.6	0.034	0.006	15	$2	100%	25%	100%	67%	77%	74%	109.87
6090	Lighting	EISA Exempt LED	Residential Online Energy Check-up	SF	N/A	NC	26.7	92.1%	24.6	0.034	0.006	15	$2	100%	25%	100%	67%	77%	74%	109.87
6091	Lighting	EISA Exempt LED	Residential Online Energy Check-up	MF	NLI	MO	26.7	90.3%	24.1	0.033	0.006	15	$2	100%	25%	100%	67%	77%	74%	106.28
6092	Lighting	EISA Exempt LED	Residential Online Energy Check-up	MF	LI	MO	26.7	90.3%	24.1	0.033	0.006	15	$2	100%	25%	100%	67%	77%	74%	106.28

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
6093	Lighting	EISA Exempt LED	Residential Online Energy Check-up	MF	N/A	NC	26.7	90.3%	24.1	0.033	0.006	15	$2	100%	25%	100%	67%	77%	74%	106.28
6094	Lighting	Ultra-Efficient LED	Residential Online Energy Check-up	SF	NLI	MO	11.1	50.0%	5.5	0.005	0.001	20	$3	100%	25%	2041%	67%	77%	74%	13.79
6095	Lighting	Ultra-Efficient LED	Residential Online Energy Check-up	SF	LI	MO	11.1	50.0%	5.5	0.005	0.001	20	$3	100%	25%	2041%	67%	77%	74%	13.79
6096	Lighting	Ultra-Efficient LED	Residential Online Energy Check-up	SF	N/A	NC	11.1	50.0%	5.5	0.005	0.001	20	$3	100%	25%	2041%	67%	77%	74%	13.79
6097	Lighting	Ultra-Efficient LED	Residential Online Energy Check-up	MF	NLI	MO	10.9	50.0%	5.4	0.005	0.001	20	$3	100%	25%	2041%	67%	77%	74%	13.36
6098	Lighting	Ultra-Efficient LED	Residential Online Energy Check-up	MF	LI	MO	10.9	50.0%	5.4	0.005	0.001	20	$3	100%	25%	2041%	67%	77%	74%	13.36
6099	Lighting	Ultra-Efficient LED	Residential Online Energy Check-up	MF	N/A	NC	10.9	50.0%	5.4	0.005	0.001	20	$3	100%	25%	2041%	67%	77%	74%	13.36
7001	New Construction	New Construction - Silver 62-59 Electric (>=July 2021)	New Construction	SF	N/A	NC	11,297.0	4.1%	460.0	0.240	0.080	23	$688	75%	25%	100%	0%	53%	29%	3.23
7002	New Construction	New Construction - Silver 62-59 Electric (>=July 2021)	New Construction	MF	N/A	NC	7,531.0	6.1%	460.0	0.240	0.089	23	$688	75%	25%	100%	0%	49%	31%	3.23
7003	New Construction	New Construction - Gold 58-57 Electric (>=July 2021)	New Construction	SF	N/A	NC	11,297.0	4.1%	460.0	0.240	0.080	23	$688	75%	25%	100%	0%	53%	29%	3.23
7004	New Construction	New Construction - Gold 58-57 Electric (>=July 2021)	New Construction	MF	N/A	NC	7,531.0	6.1%	460.0	0.240	0.089	23	$688	75%	25%	100%	0%	49%	31%	3.23
7005	New Construction	New Construction - Platinum ≤ 56 Electric (>=July	New Construction	SF	N/A	NC	11,297.0	4.1%	460.0	0.240	0.080	23	$688	75%	25%	100%	0%	53%	29%	3.23
7006	New Construction	New Construction - Platinum ≤ 56 Electric (>=July	New Construction	MF	N/A	NC	7,531.0	6.1%	460.0	0.240	0.089	23	$688	75%	25%	100%	0%	49%	31%	3.23
8001	Pools/Pumps	Heat Pump Swimming Pool Heater	Residential Online Energy Check-up	SF	NLI	MO	14,584.9	71.4%	10,417.8	0.000	1.520	15	$1,916	100%	12%	5%	36%	64%	49%	16.78
8002	Pools/Pumps	Heat Pump Swimming Pool Heater	Residential Online Energy Check-up	SF	LI	MO	14,584.9	71.4%	10,417.8	0.000	1.520	15	$1,916	100%	12%	5%	36%	64%	49%	16.78
8003	Pools/Pumps	Heat Pump Swimming Pool Heater	Residential Online Energy Check-up	SF	N/A	NC	14,584.9	71.4%	10,417.8	0.000	1.520	15	$1,916	100%	12%	5%	36%	64%	49%	16.78
8004	Pools/Pumps	Heat Pump Swimming Pool Heater	Residential Online Energy Check-up	MF	NLI	MO	14,584.9	71.4%	10,417.8	0.000	1.520	15	$1,916	100%	12%	5%	36%	62%	49%	16.78
8005	Pools/Pumps	Heat Pump Swimming Pool Heater	Residential Online Energy Check-up	MF	LI	MO	14,584.9	71.4%	10,417.8	0.000	1.520	15	$1,916	100%	12%	5%	36%	62%	49%	16.78
8006	Pools/Pumps	Heat Pump Swimming Pool Heater	Residential Online Energy Check-up	MF	N/A	NC	14,584.9	71.4%	10,417.8	0.000	1.520	15	$1,916	100%	12%	5%	36%	62%	49%	16.78
8007	Pools/Pumps	Variable Speed Pool Pump	Home Energy Products	SF	NLI	MO	728.4	20.2%	147.4	1.004	0.020	7	$314	100%	40%	12%	36%	64%	49%	5.05
8008	Pools/Pumps	Variable Speed Pool Pump	Home Energy Products	SF	LI	MO	728.4	20.2%	147.4	1.004	0.020	7	$314	100%	40%	12%	36%	64%	49%	5.05
8009	Pools/Pumps	Variable Speed Pool Pump	Home Energy Products	SF	N/A	NC	728.4	20.2%	147.4	1.004	0.020	7	$314	100%	40%	12%	36%	64%	49%	5.05
8010	Pools/Pumps	Variable Speed Pool Pump	Home Energy Products	MF	NLI	MO	728.4	20.2%	147.4	1.004	0.020	7	$314	100%	40%	12%	36%	62%	49%	5.05
8011	Pools/Pumps	Variable Speed Pool Pump	Home Energy Products	MF	LI	MO	728.4	20.2%	147.4	1.004	0.020	7	$314	100%	40%	12%	36%	62%	49%	5.05
8012	Pools/Pumps	Variable Speed Pool Pump	Home Energy Products	MF	N/A	NC	728.4	20.2%	147.4	1.004	0.020	7	$314	100%	40%	12%	36%	62%	49%	5.05
8013	Pools/Pumps	Pool Timer	Residential Online Energy Check-up	SF	NLI	Retrofit	1,159.4	20.0%	231.9	1.579	0.032	25	$115	100%	100%	12%	36%	64%	64%	21.12
8014	Pools/Pumps	Pool Timer	Residential Online Energy Check-up	SF	LI	Retrofit	1,159.4	20.0%	231.9	1.579	0.032	25	$115	100%	100%	12%	36%	64%	64%	21.12
8015	Pools/Pumps	Pool Timer	Residential Online Energy Check-up	SF	N/A	NC	1,159.4	20.0%	231.9	1.579	0.032	25	$115	100%	100%	12%	36%	64%	64%	21.12
8016	Pools/Pumps	Pool Timer	Residential Online Energy Check-up	MF	NLI	Retrofit	1,159.4	20.0%	231.9	1.579	0.032	25	$115	100%	100%	12%	36%	62%	62%	21.12
8017	Pools/Pumps	Pool Timer	Residential Online Energy Check-up	MF	LI	Retrofit	1,159.4	20.0%	231.9	1.579	0.032	25	$115	100%	100%	12%	36%	62%	62%	21.12
8018	Pools/Pumps	Pool Timer	Residential Online Energy Check-up	MF	N/A	NC	1,159.4	20.0%	231.9	1.579	0.032	25	$115	100%	100%	12%	36%	62%	62%	21.12
8019	Pools/Pumps	Well Pump	Residential Online Energy Check-up	SF	NLI	MO	561.0	33.3%	187.0	0.022	0.032	20	$110	75%	50%	14%	36%	55%	49%	1.99
8020	Pools/Pumps	Well Pump	Residential Online Energy Check-up	SF	LI	MO	561.0	33.3%	187.0	0.022	0.032	20	$110	100%	50%	14%	36%	64%	49%	1.99
8021	Pools/Pumps	Well Pump	Residential Online Energy Check-up	SF	N/A	NC	561.0	33.3%	187.0	0.022	0.032	20	$110	75%	50%	14%	36%	55%	49%	1.99
8022	Pools/Pumps	Well Pump	Residential Online Energy Check-up	MF	NLI	MO	561.0	33.3%	187.0	0.022	0.032	20	$110	75%	50%	14%	36%	55%	49%	1.99
8023	Pools/Pumps	Well Pump	Residential Online Energy Check-up	MF	LI	MO	561.0	33.3%	187.0	0.022	0.032	20	$110	100%	50%	14%	36%	62%	49%	1.99
8024	Pools/Pumps	Well Pump	Residential Online Energy Check-up	MF	N/A	NC	561.0	33.3%	187.0	0.022	0.032	20	$110	75%	50%	14%	36%	55%	49%	1.99
9001	Shell	Duct Sealing - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	11.2%	259.5	0.102	0.013	20	$910	25%	25%	74%	80%	86%	84%	1.08
9002	Shell	Duct Sealing - gas heating	Income Qualified Weatherproofing	SF	LI	Retrofit	2,307.3	11.2%	259.5	0.102	0.013	20	$910	50%	25%	74%	80%	86%	84%	1.08
9003	Shell	Duct Sealing - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	11.2%	259.5	0.102	0.013	20	$910	25%	25%	74%	80%	86%	84%	1.08
9004	Shell	Duct Sealing - gas heating	Home Energy Products	MF	NLI	Retrofit	1,675.6	9.2%	154.5	0.059	0.006	20	$455	25%	25%	74%	83%	88%	86%	1.27
9005	Shell	Duct Sealing - gas heating	Income Qualified Weatherproofing	MF	LI	Retrofit	1,675.6	9.2%	154.5	0.059	0.006	20	$455	50%	25%	74%	83%	87%	86%	0.32
9006	Shell	Duct Sealing - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	9.2%	154.5	0.059	0.006	20	$455	25%	25%	74%	83%	88%	86%	1.27
9007	Shell	Duct Sealing - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	17.3%	1,295.0	0.233	0.233	20	$910	75%	25%	6%	80%	86%	84%	3.85
9008	Shell	Duct Sealing - heat pump heating	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	17.3%	1,295.0	0.233	0.233	20	$910	100%	100%	6%	80%	86%	84%	0.96
9009	Shell	Duct Sealing - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	17.3%	1,295.0	0.233	0.233	20	$910	75%	25%	6%	80%	86%	84%	3.85
9010	Shell	Duct Sealing - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,870.0	14.4%	844.8	0.091	0.183	20	$455	100%	25%	6%	83%	88%	86%	4.33
9011	Shell	Duct Sealing - heat pump heating	Income Qualified Weatherproofing	MF	LI	Retrofit	5,870.0	14.4%	844.8	0.091	0.183	20	$455	100%	100%	6%	83%	88%	86%	1.08
9012	Shell	Duct Sealing - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	14.4%	844.8	0.091	0.183	20	$455	100%	25%	6%	83%	88%	86%	4.33
9013	Shell	Duct Sealing - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	12.4%	2,061.3	0.371	0.370	20	$910	100%	25%	8%	80%	86%	84%	6.12
9014	Shell	Duct Sealing - electric resistance heating	Income Qualified Weatherproofing	SF	LI	Retrofit	16,673.2	12.4%	2,061.3	0.371	0.370	20	$910	100%	100%	8%	80%	86%	84%	1.53
9015	Shell	Duct Sealing - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	12.4%	2,061.3	0.371	0.370	20	$910	100%	25%	8%	80%	86%	84%	6.12
9016	Shell	Duct Sealing - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	13,206.7	10.3%	1,355.6	0.146	0.294	20	$455	100%	25%	8%	83%	88%	86%	6.95
9017	Shell	Duct Sealing - electric resistance heating	Income Qualified Weatherproofing	MF	LI	Retrofit	13,206.7	10.3%	1,355.6	0.146	0.294	20	$455	100%	100%	8%	83%	88%	86%	1.74
9018	Shell	Duct Sealing - electric resistance heating	Home Energy Products	MF	N/A	NC	13,206.7	10.3%	1,355.6	0.146	0.294	20	$455	100%	25%	8%	83%	88%	86%	6.95
9019	Shell	Air Sealing - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	13.4%	308.7	0.121	0.015	20	$2,297	25%	25%	74%	80%	86%	84%	0.51
9020	Shell	Air Sealing - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	13.4%	308.7	0.121	0.015	20	$2,297	25%	25%	74%	80%	86%	84%	0.51
9021	Shell	Air Sealing - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	13.4%	308.7	0.121	0.015	20	$2,297	25%	25%	74%	80%	86%	84%	0.51
9022	Shell	Air Sealing - gas heating	Residential Multi-Family DI	MF	NLI	Retrofit	1,675.6	8.0%	134.0	0.051	0.005	20	$1,148	28%	28%	74%	83%	88%	86%	0.39
9023	Shell	Air Sealing - gas heating	Home Energy Products	MF	LI	Retrofit	1,675.6	8.0%	134.0	0.051	0.005	20	$1,148	25%	25%	74%	83%	86%	86%	0.44
9024	Shell	Air Sealing - gas heating	Residential Multi-Family DI	MF	N/A	NC	1,675.6	8.0%	134.0	0.051	0.005	20	$1,148	28%	28%	74%	83%	88%	86%	0.39
9025	Shell	Air Sealing - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	18.9%	1,419.4	0.256	0.255	20	$2,297	25%	25%	6%	80%	86%	84%	1.67
9026	Shell	Air Sealing - heat pump heating	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	18.9%	1,419.4	0.256	0.255	20	$2,297	100%	100%	6%	80%	86%	84%	0.42
9027	Shell	Air Sealing - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	18.9%	1,419.4	0.256	0.255	20	$2,297	25%	25%	6%	80%	86%	84%	1.67
9028	Shell	Air Sealing - heat pump heating	Residential Multi-Family DI	MF	NLI	Retrofit	5,870.0	10.0%	587.0	0.063	0.127	20	$1,148	28%	28%	6%	83%	88%	86%	1.05
9029	Shell	Air Sealing - heat pump heating	Income Qualified Weatherproofing	MF	LI	Retrofit	5,870.0	10.0%	587.0	0.063	0.127	20	$1,148	100%	100%	6%	83%	88%	86%	0.30
9030	Shell	Air Sealing - heat pump heating	Residential Multi-Family DI	MF	N/A	NC	5,870.0	10.0%	587.0	0.063	0.127	20	$1,148	28%	28%	6%	83%	88%	86%	1.05

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
9031	Shell	Air Sealing - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	13.8%	2,294.2	0.413	0.412	20	$2,297	50%	25%	8%	80%	86%	84%	2.70
9032	Shell	Air Sealing - electric resistance heating	Income Qualified Weatherproofing	SF	LI	Retrofit	16,673.2	13.8%	2,294.2	0.413	0.412	20	$2,297	100%	100%	8%	80%	86%	84%	0.67
9033	Shell	Air Sealing - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	13.8%	2,294.2	0.413	0.412	20	$2,297	50%	25%	8%	80%	86%	84%	2.70
9034	Shell	Air Sealing - electric resistance heating	Residential Multi-Family DI	MF	NLI	Retrofit	13,206.7	7.2%	948.7	0.102	0.206	20	$1,148	28%	28%	8%	83%	88%	86%	1.70
9035	Shell	Air Sealing - electric resistance heating	Income Qualified Weatherproofing	MF	LI	Retrofit	13,206.7	7.2%	948.7	0.102	0.206	20	$1,148	100%	100%	8%	83%	88%	86%	0.48
9036	Shell	Air Sealing - electric resistance heating	Residential Multi-Family DI	MF	N/A	NC	13,206.7	7.2%	948.7	0.102	0.206	20	$1,148	28%	28%	8%	83%	88%	86%	1.70
9037	Shell	Basement Sidewall Insulation - gas heating	Home Energy Products	SF	NLI	Retrofit	1,926.8	3.6%	69.9	0.027	0.003	30	$5,171	25%	25%	74%	76%	83%	80%	0.06
9038	Shell	Basement Sidewall Insulation - gas heating	Home Energy Products	SF	LI	Retrofit	1,926.8	3.6%	69.9	0.027	0.003	30	$5,171	25%	25%	74%	76%	83%	80%	0.06
9039	Shell	Basement Sidewall Insulation - gas heating	Home Energy Products	SF	N/A	NC	1,926.8	3.6%	69.9	0.027	0.003	30	$5,171	25%	25%	74%	76%	83%	80%	0.06
9040	Shell	Basement Sidewall Insulation - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	20.4%	1,529.0	0.275	0.275	30	$5,171	25%	25%	6%	76%	83%	80%	1.00
9041	Shell	Basement Sidewall Insulation - heat pump heating	Home Energy Products	SF	LI	Retrofit	7,502.4	20.4%	1,529.0	0.275	0.275	30	$5,171	25%	25%	6%	76%	83%	80%	1.00
9042	Shell	Basement Sidewall Insulation - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	20.4%	1,529.0	0.275	0.275	30	$5,171	25%	25%	6%	76%	83%	80%	1.00
9043	Shell	Basement Sidewall Insulation - electric resistance	Home Energy Products	SF	NLI	Retrofit	16,673.2	16.0%	2,660.4	0.479	0.478	30	$5,171	25%	25%	8%	76%	83%	80%	1.73
9044	Shell	Basement Sidewall Insulation - electric resistance	Home Energy Products	SF	LI	Retrofit	16,673.2	16.0%	2,660.4	0.479	0.478	30	$5,171	75%	25%	8%	76%	83%	80%	1.73
9045	Shell	Basement Sidewall Insulation - electric resistance	Home Energy Products	SF	N/A	NC	16,673.2	16.0%	2,660.4	0.479	0.478	30	$5,171	25%	25%	8%	76%	83%	80%	1.73
9046	Shell	Floor Insulation Above Crawlspace - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	7.1%	164.3	0.065	0.008	30	$1,627	25%	25%	74%	69%	79%	76%	0.48
9047	Shell	Floor Insulation Above Crawlspace - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	7.1%	164.3	0.065	0.008	30	$1,627	25%	25%	74%	69%	79%	76%	0.48
9048	Shell	Floor Insulation Above Crawlspace - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	7.1%	164.3	0.065	0.008	30	$1,627	25%	25%	74%	69%	79%	76%	0.48
9049	Shell	Floor Insulation Above Crawlspace - heat pump	Home Energy Products	SF	NLI	Retrofit	7,502.4	23.2%	1,743.8	0.314	0.313	30	$1,627	75%	25%	6%	69%	79%	76%	3.61
9050	Shell	Floor Insulation Above Crawlspace - heat pump	Home Energy Products	SF	LI	Retrofit	7,502.4	23.2%	1,743.8	0.314	0.313	30	$1,627	100%	25%	6%	69%	79%	76%	3.61
9051	Shell	Floor Insulation Above Crawlspace - heat pump	Home Energy Products	SF	N/A	NC	7,502.4	23.2%	1,743.8	0.314	0.313	30	$1,627	75%	25%	6%	69%	79%	76%	3.61
9052	Shell	Floor Insulation Above Crawlspace - electric resistance	Home Energy Products	SF	NLI	Retrofit	16,673.2	17.7%	2,957.9	0.533	0.531	30	$1,627	100%	25%	8%	69%	79%	76%	6.13
9053	Shell	Floor Insulation Above Crawlspace - electric resistance	Home Energy Products	SF	LI	Retrofit	16,673.2	17.7%	2,957.9	0.533	0.531	30	$1,627	100%	25%	8%	69%	79%	76%	6.13
9054	Shell	Floor Insulation Above Crawlspace - electric resistance	Home Energy Products	SF	N/A	NC	16,673.2	17.7%	2,957.9	0.533	0.531	30	$1,627	100%	25%	8%	69%	79%	76%	6.13
9055	Shell	Wall Insulation - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	11.7%	269.5	0.106	0.013	30	$1,539	25%	25%	74%	87%	91%	89%	0.83
9056	Shell	Wall Insulation - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	11.7%	269.5	0.106	0.013	30	$1,539	25%	25%	74%	87%	91%	89%	0.83
9057	Shell	Wall Insulation - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	11.7%	269.5	0.106	0.013	30	$1,539	25%	25%	74%	87%	91%	89%	0.83
9058	Shell	Wall Insulation - gas heating	Home Energy Products	MF	NLI	Retrofit	1,675.6	5.1%	85.1	0.033	0.003	30	$363	25%	25%	74%	87%	91%	89%	1.09
9059	Shell	Wall Insulation - gas heating	Home Energy Products	MF	LI	Retrofit	1,675.6	5.1%	85.1	0.033	0.003	30	$363	50%	25%	74%	87%	90%	89%	1.09
9060	Shell	Wall Insulation - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	5.1%	85.1	0.033	0.003	30	$363	25%	25%	74%	87%	91%	89%	1.09
9061	Shell	Wall Insulation - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	25.7%	1,928.8	0.347	0.346	30	$1,539	100%	25%	6%	87%	91%	89%	4.22
9062	Shell	Wall Insulation - heat pump heating	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	25.7%	1,928.8	0.347	0.346	30	$1,539	100%	100%	6%	87%	91%	89%	1.06
9063	Shell	Wall Insulation - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	25.7%	1,928.8	0.347	0.346	30	$1,539	100%	25%	6%	87%	91%	89%	4.22
9064	Shell	Wall Insulation - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,870.0	7.7%	454.5	0.049	0.098	30	$363	75%	25%	6%	87%	91%	89%	3.65
9065	Shell	Wall Insulation - heat pump heating	Income Qualified Weatherproofing	MF	LI	Retrofit	5,870.0	7.7%	454.5	0.049	0.098	30	$363	100%	100%	6%	87%	91%	89%	0.91
9066	Shell	Wall Insulation - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	7.7%	454.5	0.049	0.098	30	$363	75%	25%	6%	87%	91%	89%	3.65
9067	Shell	Wall Insulation - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	19.3%	3,217.3	0.579	0.578	30	$1,539	100%	25%	8%	87%	91%	89%	7.04
9068	Shell	Wall Insulation - electric resistance heating	Income Qualified Weatherproofing	SF	LI	Retrofit	16,673.2	19.3%	3,217.3	0.579	0.578	30	$1,539	100%	100%	8%	87%	91%	89%	1.76
9069	Shell	Wall Insulation - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	19.3%	3,217.3	0.579	0.578	30	$1,539	100%	25%	8%	87%	91%	89%	7.04
9070	Shell	Wall Insulation - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	13,206.7	5.7%	758.1	0.082	0.164	30	$363	100%	25%	8%	87%	91%	89%	6.08
9071	Shell	Wall Insulation - electric resistance heating	Income Qualified Weatherproofing	MF	LI	Retrofit	13,206.7	5.7%	758.1	0.082	0.164	30	$363	100%	100%	8%	87%	91%	89%	1.52
9072	Shell	Wall Insulation - electric resistance heating	Home Energy Products	MF	N/A	NC	13,206.7	5.7%	758.1	0.082	0.164	30	$363	100%	25%	8%	87%	91%	89%	6.08
9073	Shell	Advanced Walls Insulation - gas heating	Home Energy Products	SF	NLI	Retrofit	1,926.8	7.5%	144.5	0.057	0.007	30	$2,993	25%	25%	74%	87%	91%	89%	0.23
9074	Shell	Advanced Walls Insulation - gas heating	Home Energy Products	SF	LI	Retrofit	1,926.8	7.5%	144.5	0.057	0.007	30	$2,993	25%	25%	74%	87%	91%	89%	0.23
9075	Shell	Advanced Walls Insulation - gas heating	Home Energy Products	SF	N/A	NC	1,926.8	7.5%	144.5	0.057	0.007	30	$2,993	25%	25%	74%	87%	91%	89%	0.23
9076	Shell	Advanced Walls Insulation - gas heating	Home Energy Products	MF	NLI	Retrofit	1,421.9	7.5%	106.6	0.041	0.004	30	$705	25%	25%	74%	87%	91%	89%	0.70
9077	Shell	Advanced Walls Insulation - gas heating	Home Energy Products	MF	LI	Retrofit	1,421.9	7.5%	106.6	0.041	0.004	30	$705	25%	25%	74%	87%	89%	89%	0.70
9078	Shell	Advanced Walls Insulation - gas heating	Home Energy Products	MF	N/A	NC	1,421.9	7.5%	106.6	0.041	0.004	30	$705	25%	25%	74%	87%	91%	89%	0.70
9079	Shell	Advanced Walls Insulation - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,135.7	7.5%	535.2	0.096	0.096	30	$2,993	25%	25%	6%	87%	91%	89%	0.60
9080	Shell	Advanced Walls Insulation - heat pump heating	Home Energy Products	SF	LI	Retrofit	7,135.7	7.5%	535.2	0.096	0.096	30	$2,993	25%	25%	6%	87%	91%	89%	0.60
9081	Shell	Advanced Walls Insulation - heat pump heating	Home Energy Products	SF	N/A	NC	7,135.7	7.5%	535.2	0.096	0.096	30	$2,993	25%	25%	6%	87%	91%	89%	0.60
9082	Shell	Advanced Walls Insulation - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,627.3	7.5%	422.1	0.046	0.091	30	$705	25%	25%	6%	87%	91%	89%	1.74
9083	Shell	Advanced Walls Insulation - heat pump heating	Home Energy Products	MF	LI	Retrofit	5,627.3	7.5%	422.1	0.046	0.091	30	$705	75%	25%	6%	87%	91%	89%	1.74
9084	Shell	Advanced Walls Insulation - heat pump heating	Home Energy Products	MF	N/A	NC	5,627.3	7.5%	422.1	0.046	0.091	30	$705	25%	25%	6%	87%	91%	89%	1.74
9085	Shell	Advanced Walls Insulation - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,327.9	7.5%	1,224.6	0.221	0.220	30	$2,993	25%	25%	8%	87%	91%	89%	1.38
9086	Shell	Advanced Walls Insulation - electric resistance heating	Home Energy Products	SF	LI	Retrofit	16,327.9	7.5%	1,224.6	0.221	0.220	30	$2,993	50%	25%	8%	87%	91%	89%	1.38
9087	Shell	Advanced Walls Insulation - electric resistance heating	Home Energy Products	SF	N/A	NC	16,327.9	7.5%	1,224.6	0.221	0.220	30	$2,993	25%	25%	8%	87%	91%	89%	1.38
9088	Shell	Advanced Walls Insulation - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	12,981.1	7.5%	973.6	0.105	0.211	30	$705	100%	25%	8%	87%	91%	89%	4.02
9089	Shell	Advanced Walls Insulation - electric resistance heating	Home Energy Products	MF	LI	Retrofit	12,981.1	7.5%	973.6	0.105	0.211	30	$705	100%	25%	8%	87%	91%	89%	4.02
9090	Shell	Advanced Walls Insulation - electric resistance heating	Home Energy Products	MF	N/A	NC	12,981.1	7.5%	973.6	0.105	0.211	30	$705	100%	25%	8%	87%	91%	89%	4.02
9091	Shell	Ceiling/Attic Insulation - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	11.6%	268.8	0.106	0.013	30	$1,271	25%	25%	74%	83%	88%	86%	1.00
9092	Shell	Ceiling/Attic Insulation - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	11.6%	268.8	0.106	0.013	30	$1,271	25%	25%	74%	83%	88%	86%	1.00
9093	Shell	Ceiling/Attic Insulation - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	11.6%	268.8	0.106	0.013	30	$1,271	25%	25%	74%	83%	88%	86%	1.00
9094	Shell	Ceiling/Attic Insulation - gas heating	Home Energy Products	MF	NLI	Retrofit	1,675.6	7.9%	132.5	0.051	0.005	30	$614	25%	25%	74%	83%	88%	86%	1.00
9095	Shell	Ceiling/Attic Insulation - gas heating	Home Energy Products	MF	LI	Retrofit	1,675.6	7.9%	132.5	0.051	0.005	30	$614	50%	25%	74%	83%	87%	86%	1.00
9096	Shell	Ceiling/Attic Insulation - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	7.9%	132.5	0.051	0.005	30	$614	25%	25%	74%	83%	88%	86%	1.00
9097	Shell	Ceiling/Attic Insulation - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	10.7%	801.7	0.144	0.144	30	$1,271	50%	25%	6%	83%	88%	86%	2.13

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
9098	Shell	Ceiling/Attic Insulation - heat pump heating	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	10.7%	801.7	0.144	0.144	30	$1,271	100%	100%	6%	83%	88%	86%	0.53
9099	Shell	Ceiling/Attic Insulation - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	10.7%	801.7	0.144	0.144	30	$1,271	50%	25%	6%	83%	88%	86%	2.13
9100	Shell	Ceiling/Attic Insulation - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,870.0	6.6%	387.3	0.042	0.084	30	$614	25%	25%	6%	83%	88%	86%	1.84
9101	Shell	Ceiling/Attic Insulation - heat pump heating	Income Qualified Weatherproofing	MF	LI	Retrofit	5,870.0	6.6%	387.3	0.042	0.084	30	$614	100%	100%	6%	83%	88%	86%	0.46
9102	Shell	Ceiling/Attic Insulation - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	6.6%	387.3	0.042	0.084	30	$614	25%	25%	6%	83%	88%	86%	1.84
9103	Shell	Ceiling/Attic Insulation - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	7.9%	1,311.5	0.236	0.236	30	$1,271	75%	25%	8%	83%	88%	86%	3.48
9104	Shell	Ceiling/Attic Insulation - electric resistance heating	Income Qualified Weatherproofing	SF	LI	Retrofit	16,673.2	7.9%	1,311.5	0.236	0.236	30	$1,271	100%	100%	8%	83%	88%	86%	0.87
9105	Shell	Ceiling/Attic Insulation - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	7.9%	1,311.5	0.236	0.236	30	$1,271	75%	25%	8%	83%	88%	86%	3.48
9106	Shell	Ceiling/Attic Insulation - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	13,206.7	4.8%	633.6	0.068	0.137	30	$614	75%	25%	8%	83%	88%	86%	3.00
9107	Shell	Ceiling/Attic Insulation - electric resistance heating	Income Qualified Weatherproofing	MF	LI	Retrofit	13,206.7	4.8%	633.6	0.068	0.137	30	$614	100%	100%	8%	83%	88%	86%	0.75
9108	Shell	Ceiling/Attic Insulation - electric resistance heating	Home Energy Products	MF	N/A	NC	13,206.7	4.8%	633.6	0.068	0.137	30	$614	75%	25%	8%	83%	88%	86%	3.00
9109	Shell	Rim/Band Joist Insulation - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	1.0%	23.0	0.009	0.001	30	$217	25%	25%	74%	87%	91%	89%	0.50
9110	Shell	Rim/Band Joist Insulation - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	1.0%	23.0	0.009	0.001	30	$217	25%	25%	74%	87%	91%	89%	0.50
9111	Shell	Rim/Band Joist Insulation - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	1.0%	23.0	0.009	0.001	30	$217	25%	25%	74%	87%	91%	89%	0.50
9112	Shell	Rim/Band Joist Insulation - gas heating	Home Energy Products	MF	NLI	Retrofit	1,675.6	1.2%	19.5	0.007	0.001	30	$109	25%	25%	74%	87%	91%	89%	0.83
9113	Shell	Rim/Band Joist Insulation - gas heating	Home Energy Products	MF	LI	Retrofit	1,675.6	1.2%	19.5	0.007	0.001	30	$109	25%	25%	74%	87%	89%	89%	0.83
9114	Shell	Rim/Band Joist Insulation - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	1.2%	19.5	0.007	0.001	30	$109	25%	25%	74%	87%	91%	89%	0.83
9115	Shell	Rim/Band Joist Insulation - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	2.2%	164.1	0.030	0.029	30	$217	50%	25%	6%	87%	91%	89%	2.54
9116	Shell	Rim/Band Joist Insulation - heat pump heating	Home Energy Products	SF	LI	Retrofit	7,502.4	2.2%	164.1	0.030	0.029	30	$217	100%	25%	6%	87%	91%	89%	2.54
9117	Shell	Rim/Band Joist Insulation - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	2.2%	164.1	0.030	0.029	30	$217	50%	25%	6%	87%	91%	89%	2.54
9118	Shell	Rim/Band Joist Insulation - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,870.0	2.8%	164.1	0.018	0.036	30	$109	100%	25%	6%	87%	91%	89%	4.39
9119	Shell	Rim/Band Joist Insulation - heat pump heating	Home Energy Products	MF	LI	Retrofit	5,870.0	2.8%	164.1	0.018	0.036	30	$109	100%	25%	6%	87%	91%	89%	4.39
9120	Shell	Rim/Band Joist Insulation - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	2.8%	164.1	0.018	0.036	30	$109	100%	25%	6%	87%	91%	89%	4.39
9121	Shell	Rim/Band Joist Insulation - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	1.6%	273.8	0.049	0.049	30	$217	100%	25%	8%	87%	91%	89%	4.24
9122	Shell	Rim/Band Joist Insulation - electric resistance heating	Home Energy Products	SF	LI	Retrofit	16,673.2	1.6%	273.8	0.049	0.049	30	$217	100%	25%	8%	87%	91%	89%	4.24
9123	Shell	Rim/Band Joist Insulation - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	1.6%	273.8	0.049	0.049	30	$217	100%	25%	8%	87%	91%	89%	4.24
9124	Shell	Rim/Band Joist Insulation - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	13,206.7	2.1%	273.8	0.030	0.059	30	$109	100%	25%	8%	87%	91%	89%	7.33
9125	Shell	Rim/Band Joist Insulation - electric resistance heating	Home Energy Products	MF	LI	Retrofit	13,206.7	2.1%	273.8	0.030	0.059	30	$109	100%	25%	8%	87%	91%	89%	7.33
9126	Shell	Rim/Band Joist Insulation - electric resistance heating	Home Energy Products	MF	N/A	NC	13,206.7	2.1%	273.8	0.030	0.059	30	$109	100%	25%	8%	87%	91%	89%	7.33
9127	Shell	Low-E Storm Window - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	10.2%	234.5	0.092	0.012	20	$2,253	25%	25%	74%	88%	92%	90%	0.39
9128	Shell	Low-E Storm Window - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	10.2%	234.5	0.092	0.012	20	$2,253	25%	25%	74%	80%	86%	84%	0.39
9129	Shell	Low-E Storm Window - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	10.2%	234.5	0.092	0.012	20	$2,253	25%	25%	74%	88%	92%	90%	0.39
9130	Shell	Low-E Storm Window - gas heating	Residential Multi-Family DI	MF	NLI	Retrofit	1,675.6	7.0%	117.5	0.045	0.004	20	$1,130	25%	25%	74%	60%	72%	68%	0.39
9131	Shell	Low-E Storm Window - gas heating	Residential Multi-Family DI	MF	LI	Retrofit	1,675.6	7.0%	117.5	0.045	0.004	20	$1,130	25%	25%	74%	54%	63%	63%	0.39
9132	Shell	Low-E Storm Window - gas heating	Residential Multi-Family DI	MF	N/A	NC	1,675.6	7.0%	117.5	0.045	0.004	20	$1,130	25%	25%	74%	60%	72%	68%	0.39
9133	Shell	Low-E Storm Window - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	34.7%	2,606.0	0.469	0.468	20	$2,253	75%	25%	6%	88%	92%	90%	3.13
9134	Shell	Low-E Storm Window - heat pump heating	Home Energy Products	SF	LI	Retrofit	7,502.4	34.7%	2,606.0	0.469	0.468	20	$2,253	100%	25%	6%	80%	86%	84%	3.13
9135	Shell	Low-E Storm Window - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	3.8%	287.0	0.052	0.052	20	$2,253	25%	25%	6%	88%	92%	90%	0.34
9136	Shell	Low-E Storm Window - heat pump heating	Residential Multi-Family DI	MF	NLI	Retrofit	5,870.0	22.3%	1,307.5	0.141	0.283	20	$1,130	50%	25%	6%	60%	72%	68%	2.70
9137	Shell	Low-E Storm Window - heat pump heating	Residential Multi-Family DI	MF	LI	Retrofit	5,870.0	22.3%	1,307.5	0.141	0.283	20	$1,130	100%	25%	6%	54%	68%	63%	2.70
9138	Shell	Low-E Storm Window - heat pump heating	Residential Multi-Family DI	MF	N/A	NC	5,870.0	2.5%	144.0	0.016	0.031	20	$1,130	25%	25%	6%	60%	72%	68%	0.30
9139	Shell	Low-E Storm Window - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	27.6%	4,597.7	0.828	0.826	20	$2,253	100%	25%	8%	88%	92%	90%	5.51
9140	Shell	Low-E Storm Window - electric resistance heating	Home Energy Products	SF	LI	Retrofit	16,673.2	27.6%	4,597.7	0.828	0.826	20	$2,253	100%	25%	8%	80%	86%	84%	5.51
9141	Shell	Low-E Storm Window - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	3.0%	502.3	0.090	0.090	20	$2,253	25%	25%	8%	88%	92%	90%	0.60
9142	Shell	Low-E Storm Window - electric resistance heating	Residential Multi-Family DI	MF	NLI	Retrofit	13,206.7	17.5%	2,306.9	0.249	0.500	20	$1,130	100%	25%	8%	60%	72%	68%	4.76
9143	Shell	Low-E Storm Window - electric resistance heating	Residential Multi-Family DI	MF	LI	Retrofit	13,206.7	17.5%	2,306.9	0.249	0.500	20	$1,130	100%	25%	8%	54%	68%	63%	4.76
9144	Shell	Low-E Storm Window - electric resistance heating	Residential Multi-Family DI	MF	N/A	NC	13,206.7	1.9%	252.0	0.027	0.055	20	$1,130	25%	25%	8%	60%	72%	68%	0.52
9145	Shell	High Performance Windows - gas heating	Home Energy Products	SF	NLI	MO	2,307.3	9.2%	211.6	0.083	0.010	40	$1,105	25%	25%	74%	76%	83%	81%	1.01
9146	Shell	High Performance Windows - gas heating	Home Energy Products	SF	LI	MO	2,307.3	9.2%	211.6	0.083	0.010	40	$1,105	50%	25%	74%	61%	73%	69%	1.01
9147	Shell	High Performance Windows - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	9.2%	211.6	0.083	0.010	40	$1,105	25%	25%	74%	76%	83%	81%	1.01
9148	Shell	High Performance Windows - gas heating	Home Energy Products	MF	NLI	MO	1,675.6	6.3%	106.2	0.041	0.004	40	$554	25%	25%	74%	41%	59%	53%	1.00
9149	Shell	High Performance Windows - gas heating	Home Energy Products	MF	LI	MO	1,675.6	6.3%	106.2	0.041	0.004	40	$554	25%	25%	74%	33%	47%	46%	1.00
9150	Shell	High Performance Windows - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	6.3%	106.2	0.041	0.004	40	$554	25%	25%	74%	41%	59%	53%	1.00
9151	Shell	High Performance Windows - heat pump heating	Home Energy Products	SF	NLI	MO	7,502.4	6.7%	502.3	0.090	0.090	40	$1,105	25%	25%	6%	76%	83%	81%	1.72
9152	Shell	High Performance Windows - heat pump heating	Home Energy Products	SF	LI	MO	7,502.4	6.7%	502.3	0.090	0.090	40	$1,105	75%	25%	6%	61%	73%	69%	1.72
9153	Shell	High Performance Windows - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	6.7%	502.3	0.090	0.090	40	$1,105	25%	25%	6%	76%	83%	81%	1.72
9154	Shell	High Performance Windows - heat pump heating	Home Energy Products	MF	NLI	MO	5,870.0	4.3%	252.0	0.027	0.055	40	$554	25%	25%	6%	41%	59%	53%	1.48
9155	Shell	High Performance Windows - heat pump heating	Home Energy Products	MF	LI	MO	5,870.0	4.3%	252.0	0.027	0.055	40	$554	50%	25%	6%	33%	51%	46%	1.48
9156	Shell	High Performance Windows - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	4.3%	252.0	0.027	0.055	40	$554	25%	25%	6%	41%	59%	53%	1.48
9157	Shell	High Performance Windows - electric resistance	Home Energy Products	SF	NLI	MO	16,673.2	4.7%	789.3	0.142	0.142	40	$1,105	50%	25%	8%	76%	83%	81%	2.70
9158	Shell	High Performance Windows - electric resistance	Home Energy Products	SF	LI	MO	16,673.2	4.7%	789.3	0.142	0.142	40	$1,105	100%	25%	8%	61%	73%	69%	2.70
9159	Shell	High Performance Windows - electric resistance	Home Energy Products	SF	N/A	NC	16,673.2	4.7%	789.3	0.142	0.142	40	$1,105	50%	25%	8%	76%	83%	81%	2.70
9160	Shell	High Performance Windows - electric resistance	Home Energy Products	MF	NLI	MO	13,206.7	3.0%	396.0	0.043	0.086	40	$554	50%	25%	8%	41%	59%	53%	2.33
9161	Shell	High Performance Windows - electric resistance	Home Energy Products	MF	LI	MO	13,206.7	3.0%	396.0	0.043	0.086	40	$554	100%	25%	8%	33%	53%	46%	2.33
9162	Shell	High Performance Windows - electric resistance	Home Energy Products	MF	N/A	NC	13,206.7	3.0%	396.0	0.043	0.086	40	$554	50%	25%	8%	41%	59%	53%	2.33
9163	Shell	Insulated Cellular Shades - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	4.0%	92.3	0.036	0.005	10	$600	25%	25%	74%	49%	64%	59%	0.36
9164	Shell	Insulated Cellular Shades - gas heating	Home Energy Products	SF	LI	Retrofit	2,307.3	4.0%	92.3	0.036	0.005	10	$600	25%	25%	74%	49%	64%	59%	0.36

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
9165	Shell	Insulated Cellular Shades - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	4.0%	92.3	0.036	0.005	10	$600	25%	25%	74%	49%	64%	59%	0.36
9166	Shell	Insulated Cellular Shades - gas heating	Home Energy Products	MF	NLI	Retrofit	1,675.6	4.0%	66.4	0.026	0.002	10	$240	25%	25%	74%	49%	64%	59%	0.64
9167	Shell	Insulated Cellular Shades - gas heating	Home Energy Products	MF	LI	Retrofit	1,675.6	4.0%	66.4	0.026	0.002	10	$240	25%	25%	74%	49%	59%	59%	0.64
9168	Shell	Insulated Cellular Shades - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	4.0%	66.4	0.026	0.002	10	$240	25%	25%	74%	49%	64%	59%	0.64
9169	Shell	Insulated Cellular Shades - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	2.6%	196.2	0.035	0.035	10	$600	25%	25%	6%	49%	64%	59%	0.54
9170	Shell	Insulated Cellular Shades - heat pump heating	Home Energy Products	SF	LI	Retrofit	7,502.4	2.6%	196.2	0.035	0.035	10	$600	25%	25%	6%	49%	64%	59%	0.54
9171	Shell	Insulated Cellular Shades - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	2.6%	196.2	0.035	0.035	10	$600	25%	25%	6%	49%	64%	59%	0.54
9172	Shell	Insulated Cellular Shades - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,870.0	3.2%	187.9	0.020	0.041	10	$240	25%	25%	6%	49%	64%	59%	1.12
9173	Shell	Insulated Cellular Shades - heat pump heating	Home Energy Products	MF	LI	Retrofit	5,870.0	3.2%	187.9	0.020	0.041	10	$240	50%	25%	6%	49%	62%	59%	1.12
9174	Shell	Insulated Cellular Shades - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	3.2%	187.9	0.020	0.041	10	$240	25%	25%	6%	49%	64%	59%	1.12
9175	Shell	Insulated Cellular Shades - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	2.3%	379.6	0.068	0.068	10	$600	25%	25%	8%	49%	64%	59%	1.05
9176	Shell	Insulated Cellular Shades - electric resistance heating	Home Energy Products	SF	LI	Retrofit	16,673.2	2.3%	379.6	0.068	0.068	10	$600	50%	25%	8%	49%	64%	59%	1.05
9177	Shell	Insulated Cellular Shades - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	2.3%	379.6	0.068	0.068	10	$600	25%	25%	8%	49%	64%	59%	1.05
9178	Shell	Insulated Cellular Shades - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	13,206.7	2.8%	371.3	0.040	0.080	10	$240	50%	25%	8%	49%	64%	59%	2.22
9179	Shell	Insulated Cellular Shades - electric resistance heating	Home Energy Products	MF	LI	Retrofit	13,206.7	2.8%	371.3	0.040	0.080	10	$240	100%	25%	8%	49%	64%	59%	2.22
9180	Shell	Insulated Cellular Shades - electric resistance heating	Home Energy Products	MF	N/A	NC	13,206.7	2.8%	371.3	0.040	0.080	10	$240	50%	25%	8%	49%	64%	59%	2.22
9181	Shell	Window Film - gas heating	Home Energy Products	SF	NLI	Retrofit	2,307.3	11.6%	267.8	0.149	0.013	10	$441	25%	25%	69%	76%	83%	81%	0.65
9182	Shell	Window Film - gas heating	Income Qualified Weatherproofing	SF	LI	Retrofit	2,307.3	11.6%	267.8	0.149	0.013	10	$441	100%	100%	69%	61%	73%	69%	0.16
9183	Shell	Window Film - gas heating	Home Energy Products	SF	N/A	NC	2,307.3	11.6%	267.8	0.149	0.013	10	$441	25%	25%	69%	76%	83%	81%	0.65
9184	Shell	Window Film - gas heating	Home Energy Products	MF	NLI	Retrofit	1,675.6	4.2%	71.2	0.073	0.003	10	$221	25%	25%	69%	41%	59%	53%	0.34
9185	Shell	Window Film - gas heating	Income Qualified Weatherproofing	MF	LI	Retrofit	1,675.6	4.2%	71.2	0.073	0.003	10	$221	100%	100%	69%	33%	53%	46%	0.09
9186	Shell	Window Film - gas heating	Home Energy Products	MF	N/A	NC	1,675.6	4.2%	71.2	0.073	0.003	10	$221	25%	25%	69%	41%	59%	53%	0.34
9187	Shell	Window Film - heat pump heating	Home Energy Products	SF	NLI	Retrofit	7,502.4	-2.6%	-198.6	0.150	-0.036	10	$441	100%	25%	5%	76%	83%	81%	0.00
9188	Shell	Window Film - heat pump heating	Income Qualified Weatherproofing	SF	LI	Retrofit	7,502.4	-2.6%	-198.6	0.150	-0.036	10	$441	100%	100%	5%	61%	73%	69%	0.00
9189	Shell	Window Film - heat pump heating	Home Energy Products	SF	N/A	NC	7,502.4	-2.6%	-198.6	0.150	-0.036	10	$441	100%	25%	5%	76%	83%	81%	0.00
9190	Shell	Window Film - heat pump heating	Home Energy Products	MF	NLI	Retrofit	5,870.0	-2.2%	-127.4	0.070	-0.028	10	$221	100%	25%	5%	41%	61%	53%	0.00
9191	Shell	Window Film - heat pump heating	Income Qualified Weatherproofing	MF	LI	Retrofit	5,870.0	-2.2%	-127.4	0.070	-0.028	10	$221	100%	100%	5%	33%	53%	46%	0.00
9192	Shell	Window Film - heat pump heating	Home Energy Products	MF	N/A	NC	5,870.0	-2.2%	-127.4	0.070	-0.028	10	$221	100%	25%	5%	41%	61%	53%	0.00
9193	Shell	Window Film - electric resistance heating	Home Energy Products	SF	NLI	Retrofit	16,673.2	-3.6%	-595.7	0.149	-0.107	10	$441	100%	25%	5%	76%	83%	81%	0.00
9194	Shell	Window Film - electric resistance heating	Income Qualified Weatherproofing	SF	LI	Retrofit	16,673.2	-3.6%	-595.7	0.149	-0.107	10	$441	100%	100%	5%	61%	73%	69%	0.00
9195	Shell	Window Film - electric resistance heating	Home Energy Products	SF	N/A	NC	16,673.2	-3.6%	-595.7	0.149	-0.107	10	$441	100%	25%	5%	76%	83%	81%	0.00
9196	Shell	Window Film - electric resistance heating	Home Energy Products	MF	NLI	Retrofit	13,206.7	-2.2%	-294.5	0.073	-0.064	10	$221	100%	25%	5%	41%	61%	53%	0.00
9197	Shell	Window Film - electric resistance heating	Income Qualified Weatherproofing	MF	LI	Retrofit	13,206.7	-2.2%	-294.5	0.073	-0.064	10	$221	100%	100%	5%	33%	53%	46%	0.00
9198	Shell	Window Film - electric resistance heating	Home Energy Products	MF	N/A	NC	13,206.7	-2.2%	-294.5	0.073	-0.064	10	$221	100%	25%	5%	41%	61%	53%	0.00
9199	Shell	Multifamily Whole Building Aerosol Sealing - gas	Home Energy Products	MF	NLI	Retrofit	1,421.9	0.0%	0.0	0.000	0.000	20	$479	100%	25%	74%	83%	88%	86%	0.00
9200	Shell	Multifamily Whole Building Aerosol Sealing - gas	Home Energy Products	MF	LI	Retrofit	1,421.9	0.0%	0.0	0.000	0.000	20	$479	100%	25%	74%	83%	88%	86%	0.00
9201	Shell	Multifamily Whole Building Aerosol Sealing - gas	Home Energy Products	MF	N/A	NC	1,421.9	0.0%	0.0	0.000	0.000	20	$479	100%	25%	74%	83%	88%	86%	0.00
9202	Shell	Multifamily Whole Building Aerosol Sealing - heat	Home Energy Products	MF	NLI	Retrofit	5,627.3	14.7%	829.1	0.089	0.180	20	$479	100%	25%	6%	83%	88%	86%	4.04
9203	Shell	Multifamily Whole Building Aerosol Sealing - heat	Home Energy Products	MF	LI	Retrofit	5,627.3	14.7%	829.1	0.089	0.180	20	$479	100%	25%	6%	83%	88%	86%	4.04
9204	Shell	Multifamily Whole Building Aerosol Sealing - heat	Home Energy Products	MF	N/A	NC	5,627.3	9.3%	521.9	0.056	0.113	20	$479	50%	25%	6%	83%	88%	86%	2.54
9205	Shell	Multifamily Whole Building Aerosol Sealing - electric	Home Energy Products	MF	NLI	Retrofit	12,981.1	11.1%	1,442.6	0.156	0.313	20	$479	100%	25%	8%	83%	88%	86%	7.03
9206	Shell	Multifamily Whole Building Aerosol Sealing - electric	Home Energy Products	MF	LI	Retrofit	12,981.1	11.1%	1,442.6	0.156	0.313	20	$479	100%	25%	8%	83%	88%	86%	7.03
9207	Shell	Multifamily Whole Building Aerosol Sealing - electric	Home Energy Products	MF	N/A	NC	12,981.1	7.0%	908.1	0.098	0.197	20	$479	100%	25%	8%	83%	88%	86%	4.42
9208	Shell	Insulated Concrete Forms - gas heating	New Construction	SF	N/A	NC	1,926.8	1.5%	28.4	0.011	0.001	40	$31,258	25%	25%	74%	0%	30%	30%	0.00
9209	Shell	Insulated Concrete Forms - gas heating	New Construction	MF	N/A	NC	1,421.9	1.0%	14.2	0.005	0.001	40	$7,366	25%	25%	74%	0%	36%	36%	0.01
9210	Shell	Insulated Concrete Forms - heat pump heating	New Construction	SF	N/A	NC	7,502.4	6.7%	505.1	0.091	0.091	40	$31,258	25%	25%	6%	0%	30%	30%	0.06
9211	Shell	Insulated Concrete Forms - heat pump heating	New Construction	MF	N/A	NC	5,870.0	2.0%	119.0	0.013	0.026	40	$7,366	25%	25%	6%	0%	36%	36%	0.05
9212	Shell	Insulated Concrete Forms - electric resistance heating	New Construction	SF	N/A	NC	16,673.2	5.1%	842.6	0.152	0.151	40	$31,258	25%	25%	8%	0%	30%	30%	0.10
9213	Shell	Insulated Concrete Forms - electric resistance heating	New Construction	MF	N/A	NC	13,206.7	1.5%	198.5	0.021	0.043	40	$7,366	25%	25%	8%	0%	36%	36%	0.09
9214	Shell	Phase Change Blanket - Gas/CAC baseline	Home Energy Products	SF	NLI	Retrofit	1,926.8	25.0%	481.7	0.189	0.024	25	$6,378	25%	25%	74%	83%	88%	86%	0.33
9215	Shell	Phase Change Blanket - Gas/CAC baseline	Home Energy Products	SF	LI	Retrofit	1,926.8	25.0%	481.7	0.189	0.024	25	$6,378	25%	25%	74%	83%	87%	86%	0.33
9216	Shell	Phase Change Blanket - Gas/CAC baseline	Home Energy Products	SF	N/A	NC	1,926.8	25.0%	481.7	0.189	0.024	25	$6,378	25%	25%	74%	83%	88%	86%	0.33
9217	Shell	Phase Change Blanket - Gas/CAC baseline	Home Energy Products	MF	NLI	Retrofit	1,421.9	25.0%	355.5	0.136	0.013	25	$2,617	25%	25%	74%	83%	88%	86%	0.58
9218	Shell	Phase Change Blanket - Gas/CAC baseline	Home Energy Products	MF	LI	Retrofit	1,421.9	25.0%	355.5	0.136	0.013	25	$2,617	25%	25%	74%	83%	86%	86%	0.58
9219	Shell	Phase Change Blanket - Gas/CAC baseline	Home Energy Products	MF	N/A	NC	1,421.9	25.0%	355.5	0.136	0.013	25	$2,617	25%	25%	74%	83%	88%	86%	0.58
9220	Shell	Phase Change Blanket - Heat pump baseline	Home Energy Products	SF	NLI	Retrofit	7,135.7	25.0%	1,783.9	0.321	0.320	25	$6,378	25%	25%	6%	83%	88%	86%	0.86
9221	Shell	Phase Change Blanket - Heat pump baseline	Home Energy Products	SF	LI	Retrofit	7,135.7	25.0%	1,783.9	0.321	0.320	25	$6,378	25%	25%	6%	83%	87%	86%	0.86
9222	Shell	Phase Change Blanket - Heat pump baseline	Home Energy Products	SF	N/A	NC	7,135.7	25.0%	1,783.9	0.321	0.320	25	$6,378	25%	25%	6%	83%	88%	86%	0.86
9223	Shell	Phase Change Blanket - Heat pump baseline	Home Energy Products	MF	NLI	Retrofit	5,627.3	25.0%	1,406.8	0.152	0.305	25	$2,617	25%	25%	6%	83%	88%	86%	1.43
9224	Shell	Phase Change Blanket - Heat pump baseline	Home Energy Products	MF	LI	Retrofit	5,627.3	25.0%	1,406.8	0.152	0.305	25	$2,617	50%	25%	6%	83%	87%	86%	1.43
9225	Shell	Phase Change Blanket - Heat pump baseline	Home Energy Products	MF	N/A	NC	5,627.3	25.0%	1,406.8	0.152	0.305	25	$2,617	25%	25%	6%	83%	88%	86%	1.43
9226	Shell	Phase Change Blanket - Electric furnace baseline	Home Energy Products	SF	NLI	Retrofit	16,327.9	25.0%	4,082.0	0.735	0.733	25	$6,378	25%	25%	8%	83%	88%	86%	1.97
9227	Shell	Phase Change Blanket - Electric furnace baseline	Home Energy Products	SF	LI	Retrofit	16,327.9	25.0%	4,082.0	0.735	0.733	25	$6,378	75%	25%	8%	83%	88%	86%	1.97
9228	Shell	Phase Change Blanket - Electric furnace baseline	Home Energy Products	SF	N/A	NC	16,327.9	25.0%	4,082.0	0.735	0.733	25	$6,378	25%	25%	8%	83%	88%	86%	1.97
9229	Shell	Phase Change Blanket - Electric furnace baseline	Home Energy Products	MF	NLI	Retrofit	12,981.1	25.0%	3,245.3	0.350	0.703	25	$2,617	75%	25%	8%	83%	88%	86%	3.29
9230	Shell	Phase Change Blanket - Electric furnace baseline	Home Energy Products	MF	LI	Retrofit	12,981.1	25.0%	3,245.3	0.350	0.703	25	$2,617	100%	25%	8%	83%	88%	86%	3.29
9231	Shell	Phase Change Blanket - Electric furnace baseline	Home Energy Products	MF	N/A	NC	12,981.1	25.0%	3,245.3	0.350	0.703	25	$2,617	75%	25%	8%	83%	88%	86%	3.29

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
10001	Water Heating	Water Heater Temperature Setback	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	3.7%	120.7	0.014	0.021	2	$5	100%	25%	33%	54%	69%	63%	8.11
10002	Water Heating	Water Heater Temperature Setback	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	3.7%	120.7	0.014	0.021	2	$5	100%	100%	33%	54%	68%	63%	2.03
10003	Water Heating	Water Heater Temperature Setback	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	3.7%	120.7	0.014	0.021	2	$5	100%	25%	33%	54%	69%	63%	8.11
10004	Water Heating	Water Heater Temperature Setback	Residential Multi-Family DI	MF	NLI	Retrofit	2,659.7	4.5%	120.7	0.014	0.021	2	$5	100%	70%	56%	54%	68%	63%	2.89
10005	Water Heating	Water Heater Temperature Setback	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	4.5%	120.7	0.014	0.021	2	$5	100%	100%	56%	54%	68%	63%	2.02
10006	Water Heating	Water Heater Temperature Setback	Residential Multi-Family DI	MF	N/A	NC	2,659.7	4.5%	120.7	0.014	0.021	2	$5	100%	70%	56%	54%	68%	63%	2.89
10007	Water Heating	Domestic Hot Water Pipe Insulation	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	7.6%	246.7	0.028	0.044	15	$18	100%	25%	33%	17%	69%	34%	26.43
10008	Water Heating	Domestic Hot Water Pipe Insulation	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	7.6%	246.7	0.028	0.044	15	$18	100%	100%	33%	17%	63%	63%	6.61
10009	Water Heating	Domestic Hot Water Pipe Insulation	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	7.6%	246.7	0.028	0.044	15	$18	100%	25%	33%	17%	69%	34%	26.43
10010	Water Heating	Domestic Hot Water Pipe Insulation	Residential Online Energy Check-up	MF	NLI	Retrofit	2,659.7	9.3%	246.7	0.028	0.042	15	$18	100%	25%	56%	17%	44%	34%	26.41
10011	Water Heating	Domestic Hot Water Pipe Insulation	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	9.3%	246.7	0.028	0.042	15	$18	100%	100%	56%	17%	51%	51%	6.60
10012	Water Heating	Domestic Hot Water Pipe Insulation	Residential Online Energy Check-up	MF	N/A	NC	2,659.7	9.3%	246.7	0.028	0.042	15	$18	100%	25%	56%	17%	44%	34%	26.41
10013	Water Heating	Bathroom Aerator 1.0 gpm	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	1.1%	34.7	0.048	0.006	10	$3	100%	67%	123%	49%	69%	59%	23.77
10014	Water Heating	Bathroom Aerator 1.0 gpm	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	1.1%	34.7	0.048	0.006	10	$8	100%	100%	123%	49%	64%	63%	5.94
10015	Water Heating	Bathroom Aerator 1.0 gpm	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	1.1%	34.7	0.048	0.006	10	$3	100%	67%	123%	49%	69%	59%	23.77
10016	Water Heating	Bathroom Aerator 1.0 gpm	Residential Multi-Family DI	MF	NLI	Retrofit	2,659.7	2.3%	60.0	0.055	0.010	10	$3	100%	67%	160%	38%	57%	50%	30.06
10017	Water Heating	Bathroom Aerator 1.0 gpm	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	2.3%	60.0	0.055	0.010	10	$8	100%	100%	160%	38%	57%	51%	7.51
10018	Water Heating	Bathroom Aerator 1.0 gpm	Residential Multi-Family DI	MF	N/A	NC	2,659.7	2.3%	60.0	0.055	0.010	10	$3	100%	67%	160%	38%	57%	50%	30.06
10019	Water Heating	Kitchen Flip Aerator 1.5 gpm	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	8.3%	269.0	0.053	0.048	10	$3	100%	67%	33%	49%	69%	59%	56.97
10020	Water Heating	Kitchen Flip Aerator 1.5 gpm	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	8.3%	269.0	0.053	0.048	10	$8	100%	100%	33%	49%	64%	63%	14.24
10021	Water Heating	Kitchen Flip Aerator 1.5 gpm	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	8.3%	269.0	0.053	0.048	10	$3	100%	67%	33%	49%	69%	59%	56.97
10022	Water Heating	Kitchen Flip Aerator 1.5 gpm	Residential Multi-Family DI	MF	NLI	Retrofit	2,659.7	9.3%	246.7	0.059	0.042	10	$3	100%	67%	56%	38%	57%	50%	56.44
10023	Water Heating	Kitchen Flip Aerator 1.5 gpm	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	9.3%	246.7	0.059	0.042	10	$8	100%	100%	56%	38%	57%	51%	14.11
10024	Water Heating	Kitchen Flip Aerator 1.5 gpm	Residential Multi-Family DI	MF	N/A	NC	2,659.7	9.3%	246.7	0.059	0.042	10	$3	100%	67%	56%	38%	57%	50%	56.44
10025	Water Heating	Low Flow Showerhead 1.5 gpm	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	6.9%	223.5	0.017	0.040	10	$7	100%	57%	53%	61%	73%	69%	18.30
10026	Water Heating	Low Flow Showerhead 1.5 gpm	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	6.9%	223.5	0.018	0.040	10	$12	100%	100%	53%	61%	73%	69%	6.16
10027	Water Heating	Low Flow Showerhead 1.5 gpm	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	6.9%	223.5	0.017	0.040	10	$7	100%	57%	53%	61%	73%	69%	18.30
10028	Water Heating	Low Flow Showerhead 1.5 gpm	Residential Multi-Family DI	MF	NLI	Retrofit	2,659.7	7.7%	204.9	0.019	0.035	10	$7	100%	57%	74%	51%	66%	61%	17.44
10029	Water Heating	Low Flow Showerhead 1.5 gpm	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	7.7%	204.9	0.020	0.035	10	$12	100%	100%	74%	51%	66%	61%	5.88
10030	Water Heating	Low Flow Showerhead 1.5 gpm	Residential Multi-Family DI	MF	N/A	NC	2,659.7	7.7%	204.9	0.019	0.035	10	$7	100%	57%	74%	51%	66%	61%	17.44
10031	Water Heating	Thermostatic Restrictor Shower Valve	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	2.4%	77.2	0.005	0.014	15	$50	100%	100%	53%	61%	73%	69%	0.67
10032	Water Heating	Thermostatic Restrictor Shower Valve	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	2.4%	77.2	0.005	0.014	15	$50	100%	100%	53%	61%	73%	69%	0.67
10033	Water Heating	Thermostatic Restrictor Shower Valve	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	2.4%	77.2	0.005	0.014	15	$50	100%	100%	53%	61%	73%	69%	0.67
10034	Water Heating	Thermostatic Restrictor Shower Valve	Residential Online Energy Check-up	MF	NLI	Retrofit	2,659.7	2.7%	70.8	0.006	0.012	15	$50	100%	100%	74%	51%	66%	61%	0.63
10035	Water Heating	Thermostatic Restrictor Shower Valve	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	2.7%	70.8	0.006	0.012	15	$50	100%	100%	74%	51%	66%	61%	0.64
10036	Water Heating	Thermostatic Restrictor Shower Valve	Residential Online Energy Check-up	MF	N/A	NC	2,659.7	2.7%	70.8	0.006	0.012	15	$50	100%	100%	74%	51%	66%	61%	0.63
10037	Water Heating	Heat Pump Water Heater (UEF 2.0)-electric resistance	Home Energy Products	SF	NLI	MO	3,242.3	55.0%	1,783.5	0.084	0.316	15	$1,030	50%	39%	2%	7%	58%	55%	1.83
10038	Water Heating	Heat Pump Water Heater (UEF 2.0)-electric resistance	Income Qualified HEAR	SF	LI	MO	3,242.3	55.0%	1,783.5	0.084	0.316	15	$2,062	100%	100%	2%	7%	63%	63%	0.35
10039	Water Heating	Heat Pump Water Heater (UEF 2.0)-electric resistance	Home Energy Products	SF	N/A	NC	3,242.3	55.0%	1,783.5	0.084	0.316	15	$1,030	50%	39%	2%	7%	58%	55%	1.83
10040	Water Heating	Heat Pump Water Heater (UEF 2.0)-electric resistance	Home Energy Products	MF	NLI	MO	2,659.7	61.5%	1,635.5	0.077	0.278	15	$1,030	50%	39%	4%	7%	41%	40%	1.67
10041	Water Heating	Heat Pump Water Heater (UEF 2.0)-electric resistance	Income Qualified HEAR	MF	LI	MO	2,659.7	61.5%	1,635.5	0.077	0.278	15	$2,062	100%	100%	4%	7%	51%	51%	0.32
10042	Water Heating	Heat Pump Water Heater (UEF 2.0)-electric resistance	Home Energy Products	MF	N/A	NC	2,659.7	61.5%	1,635.5	0.077	0.278	15	$1,030	50%	39%	4%	7%	41%	40%	1.67
10043	Water Heating	Heat Pump Water Heater (UEF 2.0)-heat pump heat	Home Energy Products	SF	NLI	MO	3,242.3	55.2%	1,790.9	0.085	0.318	15	$1,030	50%	39%	2%	7%	58%	55%	1.84
10044	Water Heating	Heat Pump Water Heater (UEF 2.0)-heat pump heat	Income Qualified HEAR	SF	LI	MO	3,242.3	55.2%	1,790.9	0.085	0.318	15	$2,062	100%	100%	2%	7%	63%	63%	0.36
10045	Water Heating	Heat Pump Water Heater (UEF 2.0)-heat pump heat	Home Energy Products	SF	N/A	NC	3,242.3	55.2%	1,790.9	0.085	0.318	15	$1,030	50%	39%	2%	7%	58%	55%	1.84
10046	Water Heating	Heat Pump Water Heater (UEF 2.0)-heat pump heat	Home Energy Products	MF	NLI	MO	2,659.7	61.7%	1,642.3	0.078	0.279	15	$1,030	50%	39%	3%	7%	41%	40%	1.68
10047	Water Heating	Heat Pump Water Heater (UEF 2.0)-heat pump heat	Income Qualified HEAR	MF	LI	MO	2,659.7	61.7%	1,642.3	0.078	0.279	15	$2,062	100%	100%	3%	7%	51%	51%	0.33
10048	Water Heating	Heat Pump Water Heater (UEF 2.0)-heat pump heat	Home Energy Products	MF	N/A	NC	2,659.7	61.7%	1,642.3	0.078	0.279	15	$1,030	50%	39%	3%	7%	41%	40%	1.68
10049	Water Heating	Heat Pump Water Heater (UEF 2.0)-gas heat	Home Energy Products	SF	NLI	MO	3,242.3	55.5%	1,799.7	0.085	0.319	15	$1,030	50%	39%	25%	7%	58%	55%	1.84
10050	Water Heating	Heat Pump Water Heater (UEF 2.0)-gas heat	Home Energy Products	SF	LI	MO	3,242.3	55.5%	1,799.7	0.085	0.319	15	$1,030	100%	39%	25%	7%	63%	62%	1.84
10051	Water Heating	Heat Pump Water Heater (UEF 2.0)-gas heat	Home Energy Products	SF	N/A	NC	3,242.3	55.5%	1,799.7	0.085	0.319	15	$1,030	50%	39%	25%	7%	58%	55%	1.84
10052	Water Heating	Heat Pump Water Heater (UEF 2.0)-gas heat	Home Energy Products	MF	NLI	MO	2,659.7	62.1%	1,650.3	0.078	0.280	15	$1,030	50%	39%	42%	7%	41%	40%	1.69
10053	Water Heating	Heat Pump Water Heater (UEF 2.0)-gas heat	Home Energy Products	MF	LI	MO	2,659.7	62.1%	1,650.3	0.078	0.280	15	$1,030	100%	39%	42%	7%	51%	50%	1.69
10054	Water Heating	Heat Pump Water Heater (UEF 2.0)-gas heat	Home Energy Products	MF	N/A	MO	2,659.7	62.1%	1,650.3	0.078	0.280	15	$1,030	50%	39%	42%	7%	41%	40%	1.69
10055	Water Heating	Heat Pump Water Heater (UEF 2.6)-electric resistance	Home Energy Products	SF	NLI	MO	3,242.3	65.4%	2,120.2	0.100	0.376	15	$1,199	50%	33%	2%	7%	58%	49%	2.17
10056	Water Heating	Heat Pump Water Heater (UEF 2.6)-electric resistance	Income Qualified HEAR	SF	LI	MO	3,242.3	65.4%	2,120.2	0.100	0.376	15	$2,231	100%	100%	2%	7%	63%	63%	0.39
10057	Water Heating	Heat Pump Water Heater (UEF 2.6)-electric resistance	Home Energy Products	SF	N/A	NC	3,242.3	65.4%	2,120.2	0.100	0.376	15	$1,199	50%	33%	2%	7%	58%	49%	2.17
10058	Water Heating	Heat Pump Water Heater (UEF 2.6)-electric resistance	Home Energy Products	MF	NLI	MO	2,659.7	73.1%	1,944.2	0.092	0.330	15	$1,199	50%	33%	4%	7%	41%	36%	1.99
10059	Water Heating	Heat Pump Water Heater (UEF 2.6)-electric resistance	Income Qualified HEAR	MF	LI	MO	2,659.7	73.1%	1,944.2	0.092	0.330	15	$2,231	100%	100%	4%	7%	51%	51%	0.36
10060	Water Heating	Heat Pump Water Heater (UEF 2.6)-electric resistance	Home Energy Products	MF	N/A	NC	2,659.7	73.1%	1,944.2	0.092	0.330	15	$1,199	50%	33%	4%	7%	41%	36%	1.99
10061	Water Heating	Heat Pump Water Heater (UEF 2.6)-heat pump heat	Home Energy Products	SF	NLI	MO	3,242.3	65.7%	2,129.2	0.101	0.378	15	$1,199	50%	33%	2%	7%	58%	49%	2.18
10062	Water Heating	Heat Pump Water Heater (UEF 2.6)-heat pump heat	Income Qualified HEAR	SF	LI	MO	3,242.3	65.7%	2,129.2	0.101	0.378	15	$2,231	100%	100%	2%	7%	63%	63%	0.39
10063	Water Heating	Heat Pump Water Heater (UEF 2.6)-heat pump heat	Home Energy Products	SF	N/A	NC	3,242.3	65.7%	2,129.2	0.101	0.378	15	$1,199	50%	33%	2%	7%	58%	49%	2.18
10064	Water Heating	Heat Pump Water Heater (UEF 2.6)-heat pump heat	Home Energy Products	MF	NLI	MO	2,659.7	73.4%	1,952.5	0.092	0.332	15	$1,199	50%	33%	3%	7%	41%	36%	2.00
10065	Water Heating	Heat Pump Water Heater (UEF 2.6)-heat pump heat	Income Qualified HEAR	MF	LI	MO	2,659.7	73.4%	1,952.5	0.092	0.332	15	$2,231	100%	100%	3%	7%	51%	51%	0.36
10066	Water Heating	Heat Pump Water Heater (UEF 2.6)-heat pump heat	Home Energy Products	MF	N/A	NC	2,659.7	73.4%	1,952.5	0.092	0.332	15	$1,199	50%	33%	3%	7%	41%	36%	2.00
10067	Water Heating	Heat Pump Water Heater (UEF 2.6)-gas heat	Home Energy Products	SF	NLI	MO	3,242.3	66.0%	2,140.1	0.101	0.380	15	$1,199	50%	33%	25%	7%	58%	49%	2.19

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
10068	Water Heating	Heat Pump Water Heater (UEF 2.6)-gas heat	Home Energy Products	SF	LI	MO	3,242.3	66.0%	2,140.1	0.101	0.380	15	$1,199	100%	33%	25%	7%	63%	54%	2.19
10069	Water Heating	Heat Pump Water Heater (UEF 2.6)-gas heat	Home Energy Products	SF	N/A	NC	3,242.3	66.0%	2,140.1	0.101	0.380	15	$1,199	50%	33%	25%	7%	58%	49%	2.19
10070	Water Heating	Heat Pump Water Heater (UEF 2.6)-gas heat	Home Energy Products	MF	NLI	MO	2,659.7	73.8%	1,962.5	0.093	0.333	15	$1,199	50%	33%	42%	7%	41%	36%	2.01
10071	Water Heating	Heat Pump Water Heater (UEF 2.6)-gas heat	Home Energy Products	MF	LI	MO	2,659.7	73.8%	1,962.5	0.093	0.333	15	$1,199	100%	33%	42%	7%	51%	44%	2.01
10072	Water Heating	Heat Pump Water Heater (UEF 2.6)-gas heat	Home Energy Products	MF	N/A	MO	2,659.7	73.8%	1,962.5	0.093	0.333	15	$1,199	50%	33%	42%	7%	41%	36%	2.01
10073	Water Heating	Water Heater Timer	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	5.0%	162.1	0.018	0.029	2	$60	25%	25%	33%	8%	35%	31%	0.91
10074	Water Heating	Water Heater Timer	Residential Online Energy Check-up	SF	LI	Retrofit	3,242.3	5.0%	162.1	0.018	0.029	2	$60	25%	25%	33%	8%	22%	22%	0.91
10075	Water Heating	Water Heater Timer	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	5.0%	162.1	0.018	0.029	2	$60	25%	25%	33%	8%	35%	33%	0.91
10076	Water Heating	Water Heater Timer	Residential Online Energy Check-up	MF	NLI	Retrofit	2,659.7	5.0%	133.0	0.015	0.023	2	$60	25%	25%	56%	8%	32%	27%	0.74
10077	Water Heating	Water Heater Timer	Residential Online Energy Check-up	MF	LI	Retrofit	2,659.7	5.0%	133.0	0.015	0.023	2	$60	25%	25%	56%	8%	24%	24%	0.74
10078	Water Heating	Water Heater Timer	Residential Online Energy Check-up	MF	N/A	NC	2,659.7	5.0%	133.0	0.015	0.023	2	$60	25%	25%	56%	8%	34%	29%	0.74
10079	Water Heating	Water Heater Wrap	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	7.6%	245.7	0.028	0.044	5	$64	75%	25%	33%	7%	50%	31%	3.03
10080	Water Heating	Water Heater Wrap	Income Qualified Weatherproofing	SF	LI	Retrofit	3,242.3	7.6%	245.7	0.028	0.044	5	$64	100%	100%	33%	7%	63%	63%	0.76
10081	Water Heating	Water Heater Wrap	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	7.6%	245.7	0.028	0.044	5	$64	75%	25%	33%	7%	50%	33%	3.03
10082	Water Heating	Water Heater Wrap	Residential Online Energy Check-up	MF	NLI	Retrofit	2,659.7	8.6%	227.9	0.026	0.039	5	$60	75%	25%	56%	7%	35%	27%	3.02
10083	Water Heating	Water Heater Wrap	Income Qualified Weatherproofing	MF	LI	Retrofit	2,659.7	8.6%	227.9	0.026	0.039	5	$60	100%	100%	56%	7%	51%	51%	0.76
10084	Water Heating	Water Heater Wrap	Residential Online Energy Check-up	MF	N/A	NC	2,659.7	8.6%	227.9	0.026	0.039	5	$60	75%	25%	56%	7%	35%	29%	3.02
10085	Water Heating	Drain water Heat Recovery	Home Energy Products	SF	NLI	Retrofit	3,242.3	18.3%	593.5	0.058	0.105	30	$744	50%	25%	33%	1%	44%	31%	2.22
10086	Water Heating	Drain water Heat Recovery	Home Energy Products	SF	LI	Retrofit	3,242.3	18.3%	593.5	0.058	0.105	30	$744	100%	25%	33%	1%	63%	16%	2.22
10087	Water Heating	Drain water Heat Recovery	Home Energy Products	SF	N/A	NC	3,242.3	18.3%	593.5	0.058	0.105	30	$744	50%	25%	33%	1%	44%	33%	2.22
10088	Water Heating	Drain water Heat Recovery	Home Energy Products	MF	NLI	Retrofit	2,659.7	20.5%	544.2	0.065	0.092	30	$744	50%	25%	56%	1%	33%	27%	2.14
10089	Water Heating	Drain water Heat Recovery	Home Energy Products	MF	LI	Retrofit	2,659.7	20.5%	544.2	0.065	0.092	30	$744	100%	25%	56%	1%	51%	19%	2.14
10090	Water Heating	Drain water Heat Recovery	Home Energy Products	MF	N/A	NC	2,659.7	20.5%	544.2	0.065	0.092	30	$744	50%	25%	56%	1%	33%	29%	2.14
10091	Water Heating	Shower Timer	Residential Online Energy Check-up	SF	NLI	Retrofit	3,242.3	2.5%	81.4	0.087	0.014	2	$26	75%	25%	53%	8%	50%	31%	3.19
10092	Water Heating	Shower Timer	Residential Online Energy Check-up	SF	LI	Retrofit	3,242.3	2.5%	81.4	0.087	0.014	2	$26	100%	25%	53%	8%	63%	22%	3.19
10093	Water Heating	Shower Timer	Residential Online Energy Check-up	SF	N/A	NC	3,242.3	2.5%	81.4	0.087	0.014	2	$26	75%	25%	53%	8%	50%	33%	3.19
10094	Water Heating	Shower Timer	Residential Online Energy Check-up	MF	NLI	Retrofit	2,659.7	2.8%	74.6	0.079	0.013	2	$26	50%	25%	74%	8%	35%	27%	2.93
10095	Water Heating	Shower Timer	Residential Online Energy Check-up	MF	LI	Retrofit	2,659.7	2.8%	74.6	0.079	0.013	2	$26	100%	25%	74%	8%	51%	24%	2.93
10096	Water Heating	Shower Timer	Residential Online Energy Check-up	MF	N/A	NC	2,659.7	2.8%	74.6	0.079	0.013	2	$26	50%	25%	74%	8%	35%	29%	2.93
10097	Water Heating	Recirculating Pump Controls	Home Energy Products	SF	NLI	Retrofit	3,242.3	11.1%	361.4	0.038	0.064	15	$2,210	25%	25%	33%	36%	55%	49%	0.31
10098	Water Heating	Recirculating Pump Controls	Home Energy Products	SF	LI	Retrofit	3,242.3	11.1%	361.4	0.038	0.064	15	$2,210	25%	25%	33%	36%	46%	46%	0.31
10099	Water Heating	Recirculating Pump Controls	Home Energy Products	SF	N/A	NC	3,242.3	11.1%	361.4	0.038	0.064	15	$2,210	25%	25%	33%	36%	55%	49%	0.31
10100	Water Heating	Recirculating Pump Controls	Home Energy Products	MF	NLI	Retrofit	2,659.7	12.7%	337.4	0.033	0.057	15	$2,210	25%	25%	56%	36%	53%	49%	0.28
10101	Water Heating	Recirculating Pump Controls	Home Energy Products	MF	LI	Retrofit	2,659.7	12.7%	337.4	0.033	0.057	15	$2,210	25%	25%	56%	36%	48%	48%	0.28
10102	Water Heating	Recirculating Pump Controls	Home Energy Products	MF	N/A	NC	2,659.7	12.7%	337.4	0.033	0.057	15	$2,210	25%	25%	56%	36%	55%	49%	0.28
11001	Appliances	Ultrasonic Clothes Dryer	Home Energy Products	SF	NLI	MO	768.9	10.0%	76.9	0.012	0.012	16	$150	25%	25%	73%	0%	31%	31%	1.13
11002	Appliances	Ultrasonic Clothes Dryer	Home Energy Products	SF	LI	MO	768.9	10.0%	76.9	0.012	0.012	16	$150	50%	25%	73%	0%	36%	23%	1.13
11003	Appliances	Ultrasonic Clothes Dryer	Home Energy Products	SF	N/A	NC	768.9	10.0%	76.9	0.012	0.012	16	$150	25%	25%	73%	0%	31%	31%	1.13
11004	Appliances	Ultrasonic Clothes Dryer	Home Energy Products	MF	NLI	MO	768.9	10.0%	76.9	0.012	0.012	16	$150	25%	25%	73%	0%	29%	29%	1.13
11005	Appliances	Ultrasonic Clothes Dryer	Home Energy Products	MF	LI	MO	768.9	10.0%	76.9	0.012	0.012	16	$150	50%	25%	73%	0%	31%	26%	1.13
11006	Appliances	Ultrasonic Clothes Dryer	Home Energy Products	MF	N/A	NC	768.9	10.0%	76.9	0.012	0.012	16	$150	25%	25%	73%	0%	29%	29%	1.13
11007	HVAC Equipment	Eco-Snap Air Conditioning	Midstream	SF	NLI	MO	250.0	30.0%	75.0	0.050	0.001	15	$80	100%	25%	11%	0%	65%	22%	4.06
11008	HVAC Equipment	Eco-Snap Air Conditioning	Midstream	SF	LI	MO	250.0	30.0%	75.0	0.050	0.001	15	$80	100%	25%	11%	0%	63%	14%	4.06
11009	HVAC Equipment	Eco-Snap Air Conditioning	Midstream	SF	N/A	NC	250.0	30.0%	75.0	0.050	0.001	15	$80	100%	25%	11%	0%	65%	23%	4.06
11010	HVAC Equipment	Eco-Snap Air Conditioning	Midstream	MF	NLI	MO	250.0	30.0%	75.0	0.050	0.001	15	$80	100%	25%	11%	0%	57%	21%	4.05
11011	HVAC Equipment	Eco-Snap Air Conditioning	Midstream	MF	LI	MO	250.0	30.0%	75.0	0.050	0.001	15	$80	100%	25%	11%	0%	53%	25%	4.05
11012	HVAC Equipment	Eco-Snap Air Conditioning	Midstream	MF	N/A	NC	250.0	30.0%	75.0	0.050	0.001	15	$80	100%	25%	11%	0%	57%	21%	4.05
11013	HVAC Equipment	Residential-Sized Sub-Wet Bulb Chiller	Midstream	SF	NLI	MO	1,374.3	35.0%	481.0	0.500	0.005	20	$1,950	25%	25%	79%	0%	23%	23%	1.76
11014	HVAC Equipment	Residential-Sized Sub-Wet Bulb Chiller	Midstream	SF	LI	MO	1,374.3	35.0%	481.0	0.500	0.005	20	$1,950	75%	25%	79%	0%	42%	14%	1.76
11015	HVAC Equipment	Residential-Sized Sub-Wet Bulb Chiller	Midstream	SF	N/A	NC	1,374.3	35.0%	481.0	0.500	0.005	20	$1,950	25%	25%	79%	0%	23%	23%	1.76
11016	HVAC Equipment	Residential-Sized Sub-Wet Bulb Chiller	Midstream	MF	NLI	MO	1,374.3	35.0%	481.0	0.500	0.008	20	$1,950	25%	25%	79%	0%	21%	21%	1.76
11017	HVAC Equipment	Residential-Sized Sub-Wet Bulb Chiller	Midstream	MF	LI	MO	1,374.3	35.0%	481.0	0.500	0.008	20	$1,950	75%	25%	79%	0%	33%	25%	1.76
11018	HVAC Equipment	Residential-Sized Sub-Wet Bulb Chiller	Midstream	MF	N/A	NC	1,374.3	35.0%	481.0	0.500	0.008	20	$1,950	25%	25%	79%	0%	21%	21%	1.76
11019	HVAC Equipment	Solar-Assisted Air Conditioning	Midstream	SF	NLI	MO	1,473.3	30.0%	442.0	0.500	0.005	15	$533	100%	25%	79%	0%	65%	23%	5.26
11020	HVAC Equipment	Solar-Assisted Air Conditioning	Midstream	SF	LI	MO	1,473.3	30.0%	442.0	0.500	0.005	15	$533	100%	25%	79%	0%	63%	14%	5.26
11021	HVAC Equipment	Solar-Assisted Air Conditioning	Midstream	SF	N/A	NC	1,473.3	30.0%	442.0	0.500	0.005	15	$533	100%	25%	79%	0%	65%	23%	5.26
11022	HVAC Equipment	Solar-Assisted Air Conditioning	Midstream	MF	NLI	MO	1,473.3	30.0%	442.0	0.500	0.007	15	$533	100%	25%	79%	0%	57%	21%	5.25
11023	HVAC Equipment	Solar-Assisted Air Conditioning	Midstream	MF	LI	MO	1,473.3	30.0%	442.0	0.500	0.007	15	$533	100%	25%	79%	0%	53%	25%	5.25
11024	HVAC Equipment	Solar-Assisted Air Conditioning	Midstream	MF	N/A	NC	1,473.3	30.0%	442.0	0.500	0.007	15	$533	100%	25%	79%	0%	57%	21%	5.25
11025	HVAC Equipment	Electro Caloric Heat Pump	Midstream	SF	NLI	MO	8,254.5	33.0%	2,724.0	1.200	0.489	15	$2,508	75%	25%	6%	0%	45%	23%	3.66
11026	HVAC Equipment	Electro Caloric Heat Pump	Midstream	SF	LI	MO	8,254.5	33.0%	2,724.0	1.200	0.489	15	$2,508	100%	25%	6%	0%	63%	14%	3.66
11027	HVAC Equipment	Electro Caloric Heat Pump	Midstream	SF	N/A	NC	8,254.5	33.0%	2,724.0	1.200	0.489	15	$2,508	75%	25%	6%	0%	45%	23%	3.66
11028	HVAC Equipment	Electro Caloric Heat Pump	Midstream	MF	NLI	MO	5,503.0	33.0%	1,816.0	1.200	0.394	15	$2,006	75%	25%	6%	0%	43%	21%	3.92
11029	HVAC Equipment	Electro Caloric Heat Pump	Midstream	MF	LI	MO	5,503.0	33.0%	1,816.0	1.200	0.394	15	$2,006	100%	25%	6%	0%	53%	25%	3.92
11030	HVAC Equipment	Electro Caloric Heat Pump	Midstream	MF	N/A	NC	5,503.0	33.0%	1,816.0	1.200	0.394	15	$2,006	75%	25%	6%	0%	43%	21%	3.92
11031	Lighting	Advanced Lighting	Midstream	SF	NLI	MO	2,000.0	10.0%	200.0	0.021	0.049	18	$194	50%	25%	100%	0%	41%	33%	2.20
11032	Lighting	Advanced Lighting	Midstream	SF	LI	MO	2,000.0	10.0%	200.0	0.021	0.049	18	$194	100%	25%	100%	0%	68%	23%	2.20

Appendix B. Residential Measure Detail

Measure #	End-Use	Measure Name	Program	Building Type	Income Type	Replacement Type	Base Annual Electric kWh	% Elec Savings	Per Unit Elec kWh Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
11033	Lighting	Advanced Lighting	Midstream	SF	N/A	NC	2,000.0	10.0%	200.0	0.021	0.049	18	$194	50%	25%	100%	0%	41%	31%	2.20
11034	Lighting	Advanced Lighting	Midstream	MF	NLI	MO	1,000.0	10.0%	100.0	0.010	0.024	18	$97	50%	25%	100%	0%	34%	29%	2.20
11035	Lighting	Advanced Lighting	Midstream	MF	LI	MO	1,000.0	10.0%	100.0	0.010	0.024	18	$97	100%	25%	100%	0%	53%	26%	2.20
11036	Lighting	Advanced Lighting	Midstream	MF	N/A	NC	1,000.0	10.0%	100.0	0.010	0.024	18	$97	50%	25%	100%	0%	34%	29%	2.20
11037	New Construction	Integrated Design	New Construction	SF	N/A	NC	11,297.0	50.0%	5,648.5	0.852	0.976	25	$47,850	25%	25%	100%	0%	29%	29%	0.34
11038	New Construction	Integrated Design	New Construction	MF	N/A	NC	7,531.0	50.0%	3,765.5	0.421	0.728	25	$23,925	25%	25%	100%	0%	31%	31%	0.42
11039	Shell	Basement Wall Insulation - Nanoinsulation	Home Energy Products	SF	NLI	Retrofit	11,297.0	5.5%	621.3	0.112	0.112	25	$1,327	25%	25%	100%	0%	29%	29%	1.44
11040	Shell	Basement Wall Insulation - Nanoinsulation	Home Energy Products	SF	LI	Retrofit	11,297.0	5.5%	621.3	0.112	0.112	25	$1,327	50%	25%	100%	0%	31%	21%	1.44
11041	Shell	Basement Wall Insulation - Nanoinsulation	Home Energy Products	SF	N/A	NC	11,297.0	5.5%	621.3	0.112	0.112	25	$1,327	25%	25%	100%	0%	29%	29%	1.44
11042	Shell	Basement Wall Insulation - Nanoinsulation	Home Energy Products	MF	NLI	Retrofit	7,531.0	5.5%	414.2	0.045	0.090	25	$1,327	25%	25%	100%	0%	31%	31%	0.83
11043	Shell	Basement Wall Insulation - Nanoinsulation	Home Energy Products	MF	LI	Retrofit	7,531.0	5.5%	414.2	0.045	0.090	25	$1,327	25%	25%	100%	0%	16%	16%	0.83
11044	Shell	Basement Wall Insulation - Nanoinsulation	Home Energy Products	MF	N/A	NC	7,531.0	5.5%	414.2	0.045	0.090	25	$1,327	25%	25%	100%	0%	30%	30%	0.83
11045	Shell	Ceiling / Attic Insulation - Nanoinsulation	Home Energy Products	SF	NLI	Retrofit	11,297.0	20.0%	2,259.4	0.407	0.406	25	$6,310	25%	25%	100%	0%	29%	29%	1.10
11046	Shell	Ceiling / Attic Insulation - Nanoinsulation	Home Energy Products	SF	LI	Retrofit	11,297.0	20.0%	2,259.4	0.407	0.406	25	$6,310	50%	25%	100%	0%	31%	21%	1.10
11047	Shell	Ceiling / Attic Insulation - Nanoinsulation	Home Energy Products	SF	N/A	NC	11,297.0	20.0%	2,259.4	0.407	0.406	25	$6,310	25%	25%	100%	0%	29%	29%	1.10
11048	Shell	Ceiling / Attic Insulation - Nanoinsulation	Home Energy Products	MF	NLI	Retrofit	7,531.0	20.0%	1,506.2	0.163	0.326	25	$6,310	25%	25%	100%	0%	31%	31%	0.63
11049	Shell	Ceiling / Attic Insulation - Nanoinsulation	Home Energy Products	MF	LI	Retrofit	7,531.0	20.0%	1,506.2	0.163	0.326	25	$6,310	25%	25%	100%	0%	16%	16%	0.63
11050	Shell	Ceiling / Attic Insulation - Nanoinsulation	Home Energy Products	MF	N/A	NC	7,531.0	20.0%	1,506.2	0.163	0.326	25	$6,310	25%	25%	100%	0%	30%	30%	0.63
11051	Shell	Crawlspace Insulation - Nanoinsulation	Home Energy Products	SF	NLI	Retrofit	11,297.0	30.0%	3,389.1	0.610	0.609	25	$1,313	100%	25%	100%	0%	72%	29%	7.94
11052	Shell	Crawlspace Insulation - Nanoinsulation	Home Energy Products	SF	LI	Retrofit	11,297.0	30.0%	3,389.1	0.610	0.609	25	$1,313	100%	25%	100%	0%	62%	21%	7.94
11053	Shell	Crawlspace Insulation - Nanoinsulation	Home Energy Products	SF	N/A	NC	11,297.0	30.0%	3,389.1	0.610	0.609	25	$1,313	100%	25%	100%	0%	72%	29%	7.94
11054	Shell	Crawlspace Insulation - Nanoinsulation	Home Energy Products	MF	NLI	Retrofit	7,531.0	30.0%	2,259.3	0.244	0.490	25	$1,313	100%	25%	100%	0%	61%	31%	4.57
11055	Shell	Crawlspace Insulation - Nanoinsulation	Home Energy Products	MF	LI	Retrofit	7,531.0	30.0%	2,259.3	0.244	0.490	25	$1,313	100%	25%	100%	0%	41%	16%	4.57
11056	Shell	Crawlspace Insulation - Nanoinsulation	Home Energy Products	MF	N/A	NC	7,531.0	30.0%	2,259.3	0.244	0.490	25	$1,313	100%	25%	100%	0%	61%	30%	4.57
11057	Shell	Floor Insulation - Nanoinsulation	Home Energy Products	SF	NLI	Retrofit	11,297.0	2.0%	225.9	0.041	0.041	25	$1,269	25%	25%	100%	0%	29%	29%	0.55
11058	Shell	Floor Insulation - Nanoinsulation	Home Energy Products	SF	LI	Retrofit	11,297.0	2.0%	225.9	0.041	0.041	25	$1,269	25%	25%	100%	0%	21%	21%	0.55
11059	Shell	Floor Insulation - Nanoinsulation	Home Energy Products	SF	N/A	NC	11,297.0	2.0%	225.9	0.041	0.041	25	$1,269	25%	25%	100%	0%	29%	29%	0.55
11060	Shell	Floor Insulation - Nanoinsulation	Home Energy Products	MF	NLI	Retrofit	7,531.0	2.0%	150.6	0.016	0.033	25	$1,269	25%	25%	100%	0%	31%	31%	0.32
11061	Shell	Floor Insulation - Nanoinsulation	Home Energy Products	MF	LI	Retrofit	7,531.0	2.0%	150.6	0.016	0.033	25	$1,269	25%	25%	100%	0%	16%	16%	0.32
11062	Shell	Floor Insulation - Nanoinsulation	Home Energy Products	MF	N/A	NC	7,531.0	2.0%	150.6	0.016	0.033	25	$1,269	25%	25%	100%	0%	30%	30%	0.32
11063	Shell	Rim and Band Joist Insulation - Nanoinsulation	Home Energy Products	SF	NLI	Retrofit	11,297.0	2.0%	225.9	0.041	0.041	25	$169	100%	25%	100%	0%	72%	29%	4.11
11064	Shell	Rim and Band Joist Insulation - Nanoinsulation	Home Energy Products	SF	LI	Retrofit	11,297.0	2.0%	225.9	0.041	0.041	25	$169	100%	25%	100%	0%	62%	21%	4.11
11065	Shell	Rim and Band Joist Insulation - Nanoinsulation	Home Energy Products	SF	N/A	NC	11,297.0	2.0%	225.9	0.041	0.041	25	$169	100%	25%	100%	0%	72%	29%	4.11
11066	Shell	Rim and Band Joist Insulation - Nanoinsulation	Home Energy Products	MF	NLI	Retrofit	7,531.0	2.0%	150.6	0.016	0.033	25	$169	50%	25%	100%	0%	40%	31%	2.37
11067	Shell	Rim and Band Joist Insulation - Nanoinsulation	Home Energy Products	MF	LI	Retrofit	7,531.0	2.0%	150.6	0.016	0.033	25	$169	100%	25%	100%	0%	41%	16%	2.37
11068	Shell	Rim and Band Joist Insulation - Nanoinsulation	Home Energy Products	MF	N/A	NC	7,531.0	2.0%	150.6	0.016	0.033	25	$169	50%	25%	100%	0%	40%	30%	2.37
11069	Shell	Wall Insulation - Nanoinsulation	Home Energy Products	SF	NLI	Retrofit	11,297.0	14.0%	1,581.6	0.285	0.284	25	$3,426	25%	25%	100%	0%	29%	29%	1.42
11070	Shell	Wall Insulation - Nanoinsulation	Home Energy Products	SF	LI	Retrofit	11,297.0	14.0%	1,581.6	0.285	0.284	25	$3,426	50%	25%	100%	0%	31%	21%	1.42
11071	Shell	Wall Insulation - Nanoinsulation	Home Energy Products	SF	N/A	NC	11,297.0	14.0%	1,581.6	0.285	0.284	25	$3,426	25%	25%	100%	0%	29%	29%	1.42
11072	Shell	Wall Insulation - Nanoinsulation	Home Energy Products	MF	NLI	Retrofit	7,531.0	14.0%	1,054.3	0.114	0.228	25	$3,426	25%	25%	100%	0%	31%	31%	0.82
11073	Shell	Wall Insulation - Nanoinsulation	Home Energy Products	MF	LI	Retrofit	7,531.0	14.0%	1,054.3	0.114	0.228	25	$3,426	25%	25%	100%	0%	16%	16%	0.82
11074	Shell	Wall Insulation - Nanoinsulation	Home Energy Products	MF	N/A	NC	7,531.0	14.0%	1,054.3	0.114	0.228	25	$3,426	25%	25%	100%	0%	30%	30%	0.82

APPENDIX C: COMMERCIAL & INDUSTRIAL ENERGY EFFICIENCY DETAIL

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Education	MO	19,496.1	38.6%	7,532.5	0.081	0.288	12	$2,270.00	100%	75%	17%	53%	81%	70%	5.15
2	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Education	MO	10,863.7	19.0%	2,064.2	0.022	0.079	12	$960.00	50%	50%	17%	53%	70%	63%	5.15
3	Cooking	Commercial Electric Griddle	Work Prescriptive	Education	MO	17,056.0	15.2%	2,596.0	0.028	0.099	12	$0.00	0%	0%	17%	53%	81%	81%	0.00
4	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Education	MO	16,914.5	79.9%	13,506.7	0.145	0.517	12	$2,757.00	100%	75%	17%	53%	81%	72%	41.73
5	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Education	MO	35,655.0	44.2%	15,765.8	2.459	4.112	16	$466.50	100%	100%	17%	53%	81%	81%	18.06
6	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Education	MO	38,282.0	32.1%	12,278.8	1.915	3.202	15	$1,550.00	100%	75%	17%	53%	81%	77%	8.52
7	Cooking	Energy efficient electric fryer	Work Prescriptive	Education	MO	18,955.0	17.3%	3,274.0	0.035	0.125	12	$1,500.00	50%	50%	17%	53%	70%	61%	101.16
8	Cooking	Insulated Holding Cabinets	Work Prescriptive	Education	MO	1,478.3	36.9%	545.3	0.006	0.021	12	$1,000.00	10%	10%	17%	53%	41%	39%	1.68
9	Cooking	Advanced Cooking	Work Custom	Education	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	17%	53%	31%	23%	5.15
10	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Education	RETRO	1,248.0	39.8%	496.1	0.045	0.056	3	$8.00	100%	100%	17%	53%	81%	81%	6.95
11	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Education	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	17%	53%	78%	55%	2.99
12	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Education	MO	23,741.6	20.8%	4,935.1	0.446	0.555	13	$3,367.84	50%	50%	17%	53%	66%	55%	4.87
13	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Education	RETRO	476,153.6	0.4%	1,969.7	0.178	0.222	10	$244.00	100%	100%	17%	53%	81%	81%	2.61
14	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Education	MO	1,375.3	50.0%	687.6	0.062	0.077	15	$57.00	100%	72%	17%	53%	81%	80%	7.26
15	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Education	MO	532.7	15.9%	84.6	0.037	0.001	15	$153.28	25%	25%	17%	53%	34%	31%	3.40
16	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Education	MO	532.7	20.6%	109.5	0.048	0.001	15	$214.59	25%	25%	17%	53%	34%	30%	2.93
17	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Education	MO	532.7	31.9%	170.0	0.075	0.002	15	$398.52	25%	21%	17%	53%	34%	26%	3.03
18	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Education	MO	586.0	9.1%	53.3	0.023	0.001	15	$71.00	50%	28%	17%	53%	44%	39%	2.14
19	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Education	MO	586.0	13.3%	78.1	0.034	0.001	15	$109.23	50%	27%	14%	20%	44%	38%	2.09
20	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Education	MO	586.0	23.5%	137.9	0.061	0.002	15	$218.46	50%	31%	14%	20%	42%	35%	2.46
21	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Education	RETRO	634.8	7.0%	44.5	0.020	0.000	3	$11.42	75%	56%	14%	20%	70%	60%	3.40
22	Cooling	Air Side Economizer	Work Custom	Education	RETRO	532.7	20.0%	106.5	0.047	0.001	10	$126.67	50%	32%	14%	20%	48%	40%	9.94
23	Cooling	HVAC Occupancy Controls	Work Custom	Education	RETRO	554.2	20.0%	110.8	0.049	0.001	15	$197.50	25%	25%	14%	20%	44%	36%	13.39
24	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Education	MO	544.1	12.5%	68.0	0.030	0.001	15	$117.00	25%	25%	14%	20%	34%	32%	3.41
25	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Education	MO	544.1	22.2%	120.9	0.053	0.001	15	$516.00	6%	6%	14%	20%	34%	24%	3.24
26	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Education	MO	544.1	33.3%	181.4	0.080	0.002	15	$774.00	5%	5%	14%	20%	34%	24%	3.64
27	Cooling	Smart Thermostat	Work Prescriptive	Education	RETRO	3,122.7	14.2%	442.2	0.194	0.005	11	$175.00	100%	75%	14%	20%	74%	56%	11.35
28	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Education	MO	619.3	16.7%	103.2	0.045	0.001	8	$84.00	50%	40%	6%	45%	53%	43%	8.30
29	Cooling	Air Cooled Chiller	Work Prescriptive	Education	MO	556.0	9.0%	50.1	0.022	0.001	23	$126.00	25%	24%	6%	45%	34%	24%	17.50
30	Cooling	Water Cooled Chiller	Work Prescriptive	Education	MO	279.3	22.7%	63.5	0.028	0.001	23	$61.00	100%	64%	6%	45%	74%	40%	17.50
31	Cooling	Window Film	Work Prescriptive	Education	RETRO	6,363.6	4.4%	280.0	0.123	0.003	10	$153.81	100%	70%	6%	45%	74%	55%	3.34
32	Cooling	Triple Pane Windows	Work Custom	Education	MO	6,363.6	6.0%	381.8	0.168	0.004	25	$700.00	50%	35%	6%	45%	40%	22%	18.32
33	Cooling	Energy Recovery Ventilator	Work Custom	Education	RETRO	586.0	0.0%	0.0	0.000	0.000	15	$1,050.00	0%	0%	6%	45%	74%	56%	0.00
34	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Education	MO	2,137.5	4.8%	102.6	0.016	0.027	15	$135.00	59%	59%	6%	45%	47%	47%	0.66
35	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Education	MO	2,137.5	11.0%	235.8	0.037	0.062	15	$445.76	29%	29%	6%	45%	41%	34%	0.93
36	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Education	MO	2,137.5	15.9%	340.6	0.053	0.089	15	$520.06	35%	35%	6%	45%	41%	38%	0.97
37	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Education	MO	2,401.8	6.0%	143.2	0.022	0.037	15	$100.00	80%	80%	26%	61%	66%	66%	0.92
38	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Education	MO	2,401.8	11.1%	267.1	0.042	0.070	15	$171.08	76%	77%	26%	61%	65%	65%	1.06
39	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Education	MO	2,482.7	6.3%	156.5	0.024	0.041	15	$100.00	80%	78%	26%	61%	66%	66%	1.01
40	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Education	MO	2,482.7	11.6%	287.8	0.045	0.075	15	$158.10	82%	90%	26%	61%	68%	68%	1.14
41	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Education	MO	2,583.8	6.1%	157.1	0.025	0.041	15	$100.00	80%	78%	26%	61%	66%	66%	1.01
42	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Education	MO	2,583.8	12.0%	309.6	0.048	0.081	15	$201.80	75%	76%	26%	61%	65%	61%	1.22
43	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Education	MO	2,484.8	46.1%	1,144.5	0.179	0.298	25	$4,361.00	2%	2%	26%	61%	41%	32%	11.74
44	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Education	MO	2,484.8	49.2%	1,223.3	0.191	0.319	25	$4,361.00	2%	2%	26%	61%	41%	32%	11.74
45	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Education	MO	1,962.6	16.7%	327.1	0.051	0.085	15	$84.00	100%	75%	26%	61%	74%	63%	8.56
46	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Education	MO	50,000.0	1.0%	500.0	0.078	0.130	20	$200.70	100%	75%	26%	61%	74%	56%	10.31
47	Hot Water	Heat Pump Water Heater	Work Prescriptive	Education	MO	17,640.7	73.3%	12,936.5	1.962	2.581	15	$1,797.00	100%	75%	26%	61%	86%	81%	43.85
48	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Education	RETRO	473.9	32.4%	153.4	0.023	0.031	10	$8.00	100%	75%	26%	61%	90%	88%	57.86
49	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Education	RETRO	18,058.7	54.2%	9,788.8	1.485	1.953	5	$54.00	100%	75%	26%	61%	90%	88%	82.09
50	Hot Water	Ozone Commercial Laundry	Work Custom	Education	MO	2,984.0	25.0%	746.0	0.113	0.149	10	$20,309.70	0%	0%	26%	61%	44%	36%	6.29
51	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Education	RETRO	995.8	75.8%	754.8	0.000	0.088	10	$97.00	100%	75%	26%	61%	84%	80%	4.73
52	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Education	RETRO	1,743.6	71.0%	1,238.6	0.000	0.145	10	$123.81	100%	75%	26%	61%	84%	81%	7.77
53	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Education	RETRO	2,490.4	66.6%	1,658.5	0.000	0.194	10	$134.35	100%	75%	26%	61%	84%	82%	7.50
54	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Education	RETRO	3,984.1	64.5%	2,570.2	0.000	0.301	10	$196.16	100%	75%	26%	61%	84%	81%	9.92
55	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Education	RETRO	9,467.3	70.4%	6,665.7	0.000	0.781	10	$319.31	100%	63%	27%	24%	84%	83%	8.36
56	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Education	RETRO	488.8	75.8%	370.5	0.000	0.043	10	$97.00	75%	75%	27%	24%	81%	77%	2.32
57	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Education	RETRO	855.9	71.0%	608.0	0.000	0.071	10	$123.81	100%	75%	27%	24%	84%	78%	3.81
58	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Education	RETRO	1,222.5	66.6%	814.1	0.000	0.095	10	$134.35	100%	75%	27%	24%	84%	80%	3.68
59	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Education	RETRO	1,955.7	64.5%	1,261.6	0.000	0.148	10	$196.16	100%	75%	27%	24%	84%	79%	4.87
60	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Education	RETRO	4,647.2	70.4%	3,272.0	0.000	0.383	10	$319.31	100%	63%	27%	24%	84%	82%	4.10
61	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Education	RETRO	127.3	73.8%	93.9	0.009	0.011	15	$59.00	50%	50%	27%	24%	72%	70%	1.64
62	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Education	RETRO	91.9	51.4%	47.3	0.004	0.006	10	$15.00	100%	75%	27%	24%	84%	75%	3.40
63	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Education	RETRO	94.9	34.0%	32.3	0.003	0.004	15	$22.00	68%	68%	27%	24%	75%	75%	0.94
64	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Education	RETRO	185.8	51.4%	95.5	0.009	0.012	15	$61.00	50%	50%	3%	16%	71%	65%	2.78
65	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Education	RETRO	275.5	54.0%	148.9	0.014	0.018	15	$76.00	75%	75%	3%	16%	78%	68%	4.34
66	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Education	RETRO	367.1	54.3%	199.2	0.018	0.024	15	$104.00	75%	75%	3%	16%	78%	66%	5.81
67	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Education	RETRO	185.4	50.3%	93.2	0.009	0.011	15	$46.67	86%	99%	3%	16%	81%	81%	1.02

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
68	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Education	RETRO	489.0	53.2%	260.0	0.024	0.031	15	$152.00	50%	50%	3%	16%	72%	67%	2.84
69	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Education	RETRO	511.8	67.0%	343.0	0.031	0.041	15	$42.88	100%	93%	3%	16%	84%	83%	3.75
70	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Education	RETRO	958.5	57.0%	546.5	0.050	0.066	15	$48.07	100%	83%	3%	16%	84%	83%	5.97
71	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Education	RETRO	3,846.9	72.3%	2,781.5	0.255	0.336	15	$187.94	100%	75%	3%	16%	84%	81%	30.40
72	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Education	RETRO	81.8	100.0%	81.8	0.007	0.010	11	$18.50	100%	75%	3%	16%	84%	76%	9.52
73	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Education	RETRO	425.1	30.0%	127.5	0.012	0.015	15	$65.40	75%	75%	100%	20%	78%	70%	2.79
74	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Education	RETRO	544.4	28.0%	152.4	0.014	0.018	15	$57.50	100%	100%	100%	20%	84%	84%	1.16
75	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Education	RETRO	242.9	38.0%	92.3	0.008	0.011	15	$75.00	100%	100%	100%	20%	84%	84%	0.54
76	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Education	RETRO	338.3	61.0%	206.3	0.019	0.025	15	$56.00	100%	75%	100%	20%	84%	75%	7.29
77	Lighting_Int	Networked Lighting Control	Work Prescriptive	Education	RETRO	2.8	35.0%	1.0	0.000	0.000	15	$0.57	50%	50%	100%	20%	72%	63%	7.29
78	Lighting_Int	LED Exit Sign	Work Prescriptive	Education	RETRO	65.8	71.4%	47.0	0.004	0.006	5	$32.50	25%	25%	100%	20%	90%	88%	1.69
79	Lighting_Int	Advanced Lighting	Work Custom	Education	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	100%	20%	35%	26%	7.29
80	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Education	RETRO	385.4	61.4%	236.8	0.021	0.027	5	$233.00	6%	6%	100%	20%	52%	49%	2.99
81	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Education	MO	5.3	50.0%	2.6	0.000	0.000	20	$1.04	100%	75%	100%	20%	81%	49%	8.74
82	Misc	High Efficiency Hand Dryers	Work Prescriptive	Education	MO	2,092.6	83.0%	1,737.2	0.157	0.196	10	$483.00	100%	75%	5%	20%	81%	71%	5.39
83	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Education	RETRO	3,125.1	3.7%	114.4	0.010	0.013	15	$59.00	75%	75%	5%	20%	81%	78%	7.26
84	Misc	Miscellaneous Custom	Work Custom	Education	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	5%	20%	76%	49%	5.39
85	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Education	MO	2,296.0	27.7%	636.7	0.142	0.054	15	$198.32	100%	75%	5%	20%	81%	72%	4.59
86	Motors	Power Drive Systems	Work Custom	Education	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	5%	20%	81%	58%	9.61
87	Motors	Switch Reluctance Motors	Work Midstream	Education	MO	33,405.7	30.6%	10,222.1	2.285	0.869	15	$527.50	100%	100%	5%	20%	81%	81%	11.18
88	Motors	Advanced Motors	Work Custom	Education	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	5%	20%	81%	54%	9.61
89	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Education	MO	418.0	26.3%	110.0	0.010	0.012	6	$0.00	0%	0%	5%	20%	97%	96%	0.00
90	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Education	RETRO	188.2	57.7%	108.6	0.010	0.012	7	$10.00	100%	65%	5%	20%	81%	79%	4.01
91	Plug_Office	Smart Socket	Work Prescriptive	Education	RETRO	79.9	60.6%	48.4	0.004	0.005	7	$9.00	100%	75%	100%	5%	81%	75%	4.01
92	Plug_Office	Energy Star Server	Work Prescriptive	Education	MO	2,166.7	30.0%	650.0	0.059	0.073	9	$300.95	50%	50%	100%	5%	70%	63%	4.95
93	Plug_Office	Server Virtualization	Work Custom	Education	RETRO	2,166.7	13.9%	301.1	0.027	0.034	9	$26.97	100%	67%	100%	5%	81%	59%	4.95
94	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Education	RETRO	86,783.0	18.2%	15,778.0	1.425	1.776	15	$480.00	100%	100%	100%	5%	81%	81%	14.33
95	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Education	RETRO	764.0	46.9%	358.0	0.032	0.040	15	$82.00	100%	75%	100%	5%	81%	73%	7.26
96	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Education	MO	8,940.1	25.3%	2,264.8	0.205	0.255	20	$750.00	100%	75%	100%	5%	81%	68%	8.74
97	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Education	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	100%	5%	81%	55%	5.39
98	Plug_Office	Advanced IT	Work Custom	Education	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	100%	5%	81%	60%	2.44
99	Refrigeration	Strip Curtains	Work Prescriptive	Education	RETRO	0.0	0.0%	0.0	0.000	0.000	4	$10.22	0%	0%	100%	5%	74%	74%	0.00
100	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Education	RETRO	1,228.0	25.0%	307.0	0.045	0.035	15	$431.00	25%	25%	100%	39%	48%	40%	6.07
101	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Education	RETRO	2,883.6	55.0%	1,586.0	0.231	0.178	15	$305.00	100%	75%	100%	39%	86%	84%	22.41
102	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Education	RETRO	1,297.6	22.6%	293.0	0.043	0.033	13	$161.75	75%	75%	100%	39%	66%	49%	7.46
103	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Education	RETRO	3,157.9	47.5%	1,500.0	0.218	0.169	15	$1,170.00	50%	50%	100%	39%	54%	43%	8.24
104	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Education	RETRO	578.6	41.5%	240.1	0.035	0.027	10	$79.50	100%	75%	100%	39%	74%	62%	3.52
105	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Education	RETRO	1,259,892.8	0.2%	2,398.7	0.349	0.270	8	$502.00	100%	75%	100%	39%	74%	66%	29.34
106	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Education	RETRO	45,880.0	10.0%	4,588.0	0.667	0.516	10	$311.54	100%	88%	100%	39%	74%	74%	6.11
107	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Education	RETRO	1,558.3	50.0%	779.1	0.113	0.088	15	$390.00	75%	75%	100%	39%	67%	58%	2.57
108	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Education	RETRO	2,883.6	55.0%	1,586.0	0.231	0.178	15	$305.00	100%	75%	100%	39%	86%	84%	22.41
109	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Education	RETRO	2,090.6	24.1%	504.6	0.073	0.057	10	$96.00	100%	75%	100%	20%	74%	67%	5.29
110	Refrigeration	Night Covers for Coolers	Work Prescriptive	Education	RETRO	1,510.5	9.0%	136.0	0.020	0.015	5	$42.00	50%	50%	100%	20%	69%	64%	3.39
111	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Education	RETRO	2,016.2	32.5%	655.3	0.095	0.074	10	$90.77	100%	75%	100%	20%	74%	68%	9.61
112	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Education	RETRO	1,259,892.8	0.6%	6,948.8	1.010	0.781	8	$502.00	100%	75%	100%	20%	74%	70%	85.00
113	Refrigeration	Night Covers for Freezers	Work Prescriptive	Education	RETRO	2,349.3	9.0%	211.3	0.031	0.024	5	$42.00	100%	75%	100%	20%	74%	66%	3.39
114	Refrigeration	Refrigeration - Custom	Work Custom	Education	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	100%	20%	68%	42%	6.11
115	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Education	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	100%	20%	71%	49%	3.39
116	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Education	MO	1,277.5	12.0%	153.3	0.022	0.017	14	$500.00	2%	2%	100%	20%	52%	45%	7.86
117	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Education	RETRO	1,662.9	23.5%	390.1	0.057	0.044	5	$245.00	25%	25%	100%	20%	52%	46%	3.39
118	Refrigeration	Commercial Ice Marker	Work Prescriptive	Education	MO	5,550.9	7.9%	440.3	0.064	0.050	9	$222.00	50%	50%	0%	5%	61%	55%	3.71
119	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Education	MO	114.6	73.7%	84.5	0.012	0.010	9	$11.00	100%	75%	23%	5%	74%	68%	11.39
120	Refrigeration	Advanced Refrigeration	Work Custom	Education	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	25%	5%	31%	19%	9.92
121	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Education	RETRO	7,654.7	59.0%	4,515.7	0.933	0.719	15	$2,250.00	100%	75%	0%	5%	76%	58%	8.43
122	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Education	RETRO	17,237.2	3.1%	534.4	0.095	0.073	15	$381.00	50%	50%	0%	5%	58%	45%	8.85
123	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Education	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	22%	5%	74%	42%	9.49
124	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Education	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	6%	5%	74%	74%	0.00
125	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Education	RETRO	1,920.0	20.0%	384.0	0.083	0.038	10	$235.60	50%	50%	38%	5%	58%	46%	7.04
126	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Education	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	0%	5%	31%	19%	5.74
127	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Education	RETRO	683.6	60.6%	414.5	0.090	0.041	10	$341.21	50%	47%	0%	5%	63%	58%	7.04
128	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Education	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	23%	5%	74%	53%	9.49
129	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Education	RETRO	222.3	2.0%	4.4	0.001	0.000	10	$8.00	3%	3%	25%	5%	48%	40%	7.04
130	WholeBldg_HVAC	Advanced HVAC	Work Custom	Education	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	0%	5%	74%	39%	9.49
131	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Education	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	0%	5%	81%	66%	9.49
132	WholeBldg	COM Competitions	Work Custom	Education	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.04	0%	0%	22%	5%	75%	56%	0.00
133	WholeBldg	Business Energy Reports	Work Custom	Education	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.20	0%	0%	6%	5%	75%	56%	0.00
134	WholeBldg	Building Benchmarking	Work Custom	Education	RETRO	83.3	1.2%	1.0	0.000	0.000	2	$0.22	27%	27%	38%	5%	75%	56%	1.64

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
135	WholeBldg	Strategic Energy Management	Work SEM	Education	RETRO	33.3	3.0%	1.0	0.000	0.000	5	$0.27	75%	75%	0%	5%	75%	56%	3.90
136	WholeBldg	BEIMS	Work Prescriptive	Education	RETRO	42.6	2.4%	1.0	0.000	0.000	2	$0.44	14%	14%	0%	5%	75%	56%	1.64
137	WholeBldg	Building Operator Certification	Work SEM	Education	RETRO	17,825.5	0.2%	44.6	0.010	0.004	3	$0.29	100%	100%	23%	5%	75%	56%	22.36
138	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Education	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	75%	60%	25%	5%	68%	36%	14.21
139	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Education	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	0%	5%	81%	68%	9.49
140	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Food Sales	MO	19,496.1	38.6%	7,532.5	1.530	0.951	12	$2,270.00	100%	75%	0%	5%	81%	70%	7.90
141	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Food Sales	MO	10,863.7	19.0%	2,064.2	0.419	0.261	12	$960.00	100%	75%	22%	5%	81%	63%	7.90
142	Cooking	Commercial Electric Griddle	Work Prescriptive	Food Sales	MO	17,056.0	15.2%	2,596.0	0.527	0.328	12	$0.00	0%	0%	6%	5%	81%	81%	0.00
143	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Food Sales	MO	16,914.5	79.9%	13,506.7	2.743	1.706	12	$2,757.00	100%	75%	38%	5%	81%	72%	64.05
144	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Food Sales	MO	35,655.0	44.2%	15,765.8	3.446	4.180	16	$466.50	100%	100%	0%	5%	81%	81%	20.41
145	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Food Sales	MO	38,282.0	32.1%	12,278.8	2.684	3.255	15	$1,550.00	100%	75%	27%	5%	81%	77%	9.63
146	Cooking	Energy efficient electric fryer	Work Prescriptive	Food Sales	MO	18,955.0	17.3%	3,274.0	0.665	0.414	12	$1,500.00	100%	75%	19%	5%	81%	61%	155.25
147	Cooking	Insulated Holding Cabinets	Work Prescriptive	Food Sales	MO	1,478.3	36.9%	545.3	0.111	0.069	12	$1,000.00	25%	24%	21%	5%	42%	39%	2.59
148	Cooking	Advanced Cooking	Work Custom	Food Sales	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	28%	5%	31%	23%	7.90
149	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Food Sales	RETRO	1,248.0	39.8%	496.1	0.077	0.057	3	$8.00	100%	100%	13%	5%	81%	81%	8.01
150	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Food Sales	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	17%	5%	78%	55%	3.46
151	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Food Sales	MO	23,741.6	20.8%	4,935.1	0.762	0.566	13	$3,367.84	50%	50%	28%	5%	66%	55%	5.63
152	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Food Sales	RETRO	476,153.6	0.4%	1,969.7	0.304	0.226	10	$244.00	100%	100%	31%	5%	81%	81%	3.02
153	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Food Sales	MO	1,375.3	50.0%	687.6	0.106	0.079	15	$57.00	100%	72%	28%	5%	81%	80%	8.41
154	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Food Sales	MO	887.7	15.9%	141.0	0.092	0.000	15	$153.28	75%	46%	27%	5%	60%	39%	7.32
155	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Food Sales	MO	887.7	20.6%	182.5	0.120	0.000	15	$214.59	75%	42%	19%	5%	58%	38%	6.31
156	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Food Sales	MO	887.7	31.9%	283.2	0.186	0.000	15	$398.52	50%	35%	21%	5%	43%	35%	6.53
157	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Food Sales	MO	976.5	9.1%	88.8	0.058	0.000	15	$71.00	100%	62%	28%	5%	74%	46%	4.61
158	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Food Sales	MO	976.5	13.3%	130.2	0.085	0.000	15	$109.23	100%	59%	13%	5%	74%	45%	4.50
159	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Food Sales	MO	976.5	23.5%	229.8	0.151	0.000	15	$218.46	100%	52%	17%	5%	74%	43%	5.30
160	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Food Sales	RETRO	1,057.9	7.0%	74.1	0.049	0.000	3	$11.42	100%	75%	28%	5%	74%	60%	4.39
161	Cooling	Air Side Economizer	Work Custom	Food Sales	RETRO	887.7	20.0%	177.5	0.116	0.000	10	$126.67	100%	54%	31%	5%	74%	40%	12.83
162	Cooling	HVAC Occupancy Controls	Work Custom	Food Sales	RETRO	923.7	20.0%	184.7	0.121	0.000	15	$197.50	75%	46%	28%	5%	60%	36%	17.30
163	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Food Sales	MO	906.7	12.5%	113.3	0.074	0.000	15	$117.00	100%	48%	27%	5%	74%	40%	7.35
164	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Food Sales	MO	906.7	22.2%	201.5	0.132	0.000	15	$516.00	25%	19%	19%	5%	34%	24%	6.97
165	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Food Sales	MO	906.7	33.3%	302.2	0.198	0.000	15	$774.00	25%	19%	21%	5%	34%	24%	7.84
166	Cooling	Smart Thermostat	Work Prescriptive	Food Sales	RETRO	5,204.0	14.2%	736.9	0.483	0.000	11	$175.00	100%	75%	28%	5%	74%	63%	24.43
167	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Food Sales	MO	1,032.1	16.7%	172.0	0.113	0.000	8	$84.00	100%	67%	13%	5%	74%	52%	10.72
168	Cooling	Air Cooled Chiller	Work Prescriptive	Food Sales	MO	926.6	9.0%	83.5	0.055	0.000	23	$126.00	75%	41%	17%	5%	55%	33%	22.62
169	Cooling	Water Cooled Chiller	Work Prescriptive	Food Sales	MO	465.5	22.7%	105.8	0.069	0.000	23	$61.00	100%	75%	28%	5%	74%	48%	22.62
170	Cooling	Window Film	Work Prescriptive	Food Sales	RETRO	6,363.6	4.4%	280.0	0.184	0.000	10	$153.81	100%	70%	31%	5%	74%	55%	4.31
171	Cooling	Triple Pane Windows	Work Custom	Food Sales	MO	6,363.6	6.0%	381.8	0.250	0.000	25	$700.00	75%	35%	28%	5%	51%	22%	23.67
172	Cooling	Energy Recovery Ventilator	Work Custom	Food Sales	RETRO	976.5	0.0%	0.0	0.000	0.000	15	$1,050.00	0%	0%	27%	5%	74%	56%	0.00
173	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Food Sales	MO	2,800.4	4.9%	137.9	0.030	0.037	15	$135.00	59%	51%	19%	5%	54%	54%	1.01
174	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Food Sales	MO	2,800.4	11.5%	322.4	0.070	0.085	15	$445.76	29%	29%	21%	5%	41%	39%	1.45
175	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Food Sales	MO	2,800.4	17.0%	476.3	0.104	0.126	15	$520.06	50%	35%	28%	5%	47%	43%	1.55
176	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Food Sales	MO	3,136.1	6.1%	190.5	0.042	0.050	15	$100.00	100%	94%	13%	5%	74%	68%	1.39
177	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Food Sales	MO	3,136.1	11.3%	353.9	0.077	0.094	15	$171.08	100%	76%	17%	5%	74%	67%	1.59
178	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Food Sales	MO	3,244.7	6.5%	209.9	0.046	0.056	15	$100.00	100%	100%	28%	5%	74%	68%	1.53
179	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Food Sales	MO	3,244.7	11.8%	383.1	0.084	0.102	15	$158.10	100%	82%	31%	5%	74%	70%	1.72
180	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Food Sales	MO	3,387.7	6.3%	214.1	0.047	0.057	15	$100.00	100%	100%	28%	5%	74%	68%	1.56
181	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Food Sales	MO	3,387.7	12.3%	415.1	0.091	0.110	15	$201.80	100%	64%	27%	5%	74%	64%	1.87
182	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Food Sales	MO	3,247.3	43.8%	1,422.7	0.311	0.377	25	$4,361.00	25%	21%	19%	5%	41%	32%	13.36
183	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Food Sales	MO	3,247.3	47.1%	1,530.1	0.334	0.406	25	$4,361.00	25%	22%	21%	5%	41%	32%	13.36
184	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Food Sales	MO	6,529.6	16.7%	1,088.3	0.238	0.289	15	$84.00	100%	78%	28%	5%	74%	73%	9.74
185	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Food Sales	MO	50,000.0	1.0%	500.0	0.109	0.133	20	$200.70	100%	75%	13%	5%	74%	56%	11.73
186	Hot Water	Heat Pump Water Heater	Work Prescriptive	Food Sales	MO	16,398.4	73.3%	12,025.5	2.274	1.865	15	$1,797.00	100%	75%	17%	5%	86%	81%	43.88
187	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Food Sales	RETRO	288.3	32.4%	93.3	0.018	0.014	10	$8.00	100%	75%	28%	5%	90%	88%	37.90
188	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Food Sales	RETRO	18,058.7	54.2%	9,788.8	1.851	1.518	5	$54.00	100%	75%	31%	5%	90%	88%	88.36
189	Hot Water	Ozone Commercial Laundry	Work Custom	Food Sales	MO	2,984.0	25.0%	746.0	0.141	0.116	10	$20,309.70	0%	0%	28%	5%	44%	36%	6.77
190	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Food Sales	RETRO	995.8	75.8%	754.8	0.000	0.096	10	$97.00	100%	75%	27%	5%	84%	80%	4.75
191	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Food Sales	RETRO	1,743.6	71.0%	1,238.6	0.000	0.157	10	$123.81	100%	75%	19%	5%	84%	81%	7.79
192	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Food Sales	RETRO	2,490.4	66.6%	1,658.5	0.000	0.210	10	$134.35	100%	75%	21%	5%	84%	82%	7.52
193	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Food Sales	RETRO	3,984.1	64.5%	2,570.2	0.000	0.325	10	$196.16	100%	75%	28%	5%	84%	81%	9.95
194	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Food Sales	RETRO	9,467.3	70.4%	6,665.7	0.000	0.844	10	$319.31	100%	63%	13%	5%	84%	83%	8.38
195	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Food Sales	RETRO	488.8	75.8%	370.5	0.000	0.047	10	$97.00	75%	75%	17%	5%	81%	77%	2.33
196	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Food Sales	RETRO	855.9	71.0%	608.0	0.000	0.077	10	$123.81	100%	75%	28%	5%	84%	78%	3.82
197	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Food Sales	RETRO	1,222.5	66.6%	814.1	0.000	0.103	10	$134.35	100%	75%	31%	5%	84%	80%	3.69
198	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Food Sales	RETRO	1,955.7	64.5%	1,261.6	0.000	0.160	10	$196.16	100%	75%	28%	5%	84%	79%	4.88
199	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Food Sales	RETRO	4,647.2	70.4%	3,272.0	0.000	0.414	10	$319.31	100%	63%	0%	20%	84%	82%	4.12
200	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Food Sales	RETRO	219.7	73.8%	162.0	0.020	0.019	12	$59.00	100%	75%	38%	20%	84%	75%	2.59
201	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Food Sales	RETRO	158.7	51.4%	81.6	0.010	0.010	10	$15.00	100%	75%	33%	20%	84%	78%	6.30

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
202	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Food Sales	RETRO	163.7	34.0%	55.7	0.007	0.007	12	$22.00	100%	68%	0%	20%	84%	78%	1.49
203	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Food Sales	RETRO	320.7	51.4%	164.9	0.020	0.019	12	$61.00	100%	75%	15%	20%	84%	73%	4.40
204	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Food Sales	RETRO	475.4	54.0%	256.9	0.031	0.030	12	$76.00	100%	75%	19%	20%	84%	74%	6.85
205	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Food Sales	RETRO	633.6	54.3%	343.8	0.042	0.040	12	$104.00	100%	75%	6%	20%	84%	74%	9.17
206	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Food Sales	RETRO	320.0	50.3%	160.9	0.020	0.019	12	$46.67	100%	86%	0%	20%	84%	82%	1.61
207	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Food Sales	RETRO	844.0	53.2%	448.7	0.054	0.053	12	$152.00	100%	75%	0%	20%	84%	74%	4.49
208	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Food Sales	RETRO	883.4	67.0%	591.9	0.072	0.070	12	$42.88	100%	93%	55%	50%	84%	83%	5.92
209	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Food Sales	RETRO	1,654.2	57.0%	943.2	0.114	0.111	12	$48.07	100%	83%	38%	50%	84%	83%	9.44
210	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Food Sales	RETRO	6,639.4	72.3%	4,800.6	0.582	0.566	12	$187.94	100%	75%	42%	50%	84%	82%	48.03
211	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Food Sales	RETRO	141.2	100.0%	141.2	0.017	0.017	11	$18.50	100%	75%	57%	50%	84%	79%	17.63
212	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Food Sales	RETRO	733.7	30.0%	220.1	0.027	0.026	15	$65.40	100%	75%	27%	50%	84%	75%	5.16
213	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Food Sales	RETRO	939.6	28.0%	263.1	0.032	0.031	15	$57.50	100%	100%	33%	50%	84%	84%	2.15
214	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Food Sales	RETRO	419.2	38.0%	159.3	0.019	0.019	15	$75.00	100%	100%	55%	50%	84%	84%	1.00
215	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Food Sales	RETRO	419.2	61.0%	255.7	0.031	0.030	15	$56.00	100%	75%	62%	50%	84%	77%	7.82
216	Lighting_Int	Networked Lighting Control	Work Prescriptive	Food Sales	RETRO	3.4	35.0%	1.2	0.000	0.000	15	$0.71	75%	75%	57%	50%	78%	63%	7.82
217	Lighting_Int	LED Exit Sign	Work Prescriptive	Food Sales	RETRO	63.1	71.4%	45.1	0.005	0.005	5	$32.50	25%	25%	55%	25%	90%	88%	1.74
218	Lighting_Int	Advanced Lighting	Work Custom	Food Sales	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	38%	25%	35%	26%	7.82
219	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Food Sales	RETRO	385.4	61.4%	236.8	0.048	0.030	5	$233.00	6%	6%	42%	25%	52%	49%	3.81
220	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Food Sales	MO	5.3	50.0%	2.6	0.001	0.000	20	$1.04	100%	75%	57%	25%	81%	49%	11.14
221	Misc	High Efficiency Hand Dryers	Work Prescriptive	Food Sales	MO	3,818.9	83.0%	3,170.4	0.644	0.400	10	$483.00	100%	75%	27%	25%	81%	76%	6.87
222	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Food Sales	RETRO	3,125.1	3.7%	114.4	0.023	0.014	15	$59.00	100%	75%	33%	25%	81%	78%	9.26
223	Misc	Miscellaneous Custom	Work Custom	Food Sales	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	100%	75%	55%	25%	81%	49%	6.87
224	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Food Sales	MO	3,823.1	27.7%	1,060.3	0.000	0.241	15	$198.32	100%	75%	62%	25%	81%	75%	4.58
225	Motors	Power Drive Systems	Work Custom	Food Sales	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	57%	25%	81%	58%	5.77
226	Motors	Switch Reluctance Motors	Work Midstream	Food Sales	MO	37,734.8	30.6%	11,546.9	0.000	2.628	15	$527.50	100%	100%	41%	5%	81%	81%	7.57
227	Motors	Advanced Motors	Work Custom	Food Sales	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	0%	5%	81%	54%	5.77
228	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Food Sales	MO	418.0	26.3%	110.0	0.022	0.014	6	$0.00	0%	0%	0%	5%	97%	96%	0.00
229	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Food Sales	RETRO	188.2	57.7%	108.6	0.022	0.014	7	$10.00	100%	65%	39%	5%	81%	79%	5.12
230	Plug_Office	Smart Socket	Work Prescriptive	Food Sales	RETRO	79.9	60.6%	48.4	0.010	0.006	7	$9.00	100%	75%	42%	5%	81%	75%	5.12
231	Plug_Office	Energy Star Server	Work Prescriptive	Food Sales	MO	2,166.7	30.0%	650.0	0.132	0.082	9	$300.95	75%	75%	23%	5%	75%	63%	6.31
232	Plug_Office	Server Virtualization	Work Custom	Food Sales	RETRO	2,166.7	13.9%	301.1	0.061	0.038	9	$26.97	100%	67%	29%	5%	81%	59%	6.31
233	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Food Sales	RETRO	86,783.0	18.2%	15,778.0	3.205	1.992	15	$480.00	100%	100%	0%	5%	81%	81%	18.27
234	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Food Sales	RETRO	764.0	46.9%	358.0	0.073	0.045	15	$82.00	100%	75%	39%	5%	81%	73%	9.26
235	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Food Sales	MO	8,940.1	25.3%	2,264.8	0.460	0.286	20	$750.00	100%	75%	5%	5%	81%	68%	11.14
236	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Food Sales	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	0%	5%	81%	55%	6.87
237	Plug_Office	Advanced IT	Work Custom	Food Sales	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	0%	5%	81%	60%	3.11
238	Refrigeration	Strip Curtains	Work Prescriptive	Food Sales	RETRO	411.8	50.0%	205.9	0.025	0.024	4	$10.22	100%	100%	4%	5%	74%	74%	3.17
239	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Food Sales	RETRO	1,228.0	25.0%	307.0	0.037	0.036	15	$431.00	25%	25%	5%	5%	48%	40%	5.77
240	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Food Sales	RETRO	2,883.6	55.0%	1,586.0	0.193	0.187	15	$305.00	100%	75%	3%	5%	86%	84%	21.28
241	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Food Sales	RETRO	1,297.6	22.6%	293.0	0.036	0.035	13	$161.75	75%	75%	3%	5%	66%	49%	7.08
242	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Food Sales	RETRO	3,157.9	47.5%	1,500.0	0.182	0.177	15	$1,170.00	50%	50%	0%	5%	54%	43%	7.83
243	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Food Sales	RETRO	578.6	41.5%	240.1	0.029	0.028	10	$79.50	100%	75%	4%	5%	74%	62%	3.34
244	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Food Sales	RETRO	1,259,892.8	0.2%	2,398.7	0.292	0.283	8	$502.00	100%	75%	55%	20%	74%	63%	27.85
245	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Food Sales	RETRO	45,880.0	10.0%	4,588.0	0.558	0.542	10	$311.54	100%	88%	38%	20%	74%	74%	5.80
246	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Food Sales	RETRO	1,558.3	50.0%	779.1	0.095	0.092	15	$390.00	75%	75%	42%	20%	67%	58%	2.44
247	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Food Sales	RETRO	2,883.6	55.0%	1,586.0	0.193	0.187	15	$305.00	100%	75%	57%	20%	86%	84%	21.28
248	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Food Sales	RETRO	2,090.6	24.1%	504.6	0.061	0.060	10	$96.00	100%	75%	27%	20%	74%	67%	5.02
249	Refrigeration	Night Covers for Coolers	Work Prescriptive	Food Sales	RETRO	1,510.5	9.0%	136.0	0.017	0.016	5	$42.00	50%	50%	33%	20%	69%	64%	3.22
250	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Food Sales	RETRO	2,016.2	32.5%	655.3	0.080	0.077	10	$90.77	100%	75%	55%	20%	74%	68%	9.12
251	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Food Sales	RETRO	1,259,892.8	0.6%	6,948.8	0.845	0.821	8	$502.00	100%	75%	62%	20%	74%	70%	80.68
252	Refrigeration	Night Covers for Freezers	Work Prescriptive	Food Sales	RETRO	2,349.3	9.0%	211.3	0.026	0.025	5	$42.00	75%	75%	57%	20%	71%	66%	3.22
253	Refrigeration	Refrigeration - Custom	Work Custom	Food Sales	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	0%	20%	68%	42%	5.80
254	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Food Sales	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	23%	20%	71%	49%	3.22
255	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Food Sales	MO	1,277.5	12.0%	153.3	0.019	0.018	14	$500.00	2%	2%	25%	20%	52%	45%	7.46
256	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Food Sales	RETRO	1,662.9	23.5%	390.1	0.047	0.046	5	$245.00	25%	25%	0%	20%	52%	46%	3.22
257	Refrigeration	Commercial Ice Marker	Work Prescriptive	Food Sales	MO	5,550.9	7.9%	440.3	0.054	0.052	9	$222.00	50%	50%	0%	20%	61%	55%	3.52
258	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Food Sales	MO	114.6	73.7%	84.5	0.010	0.010	9	$11.00	100%	75%	22%	20%	74%	68%	10.81
259	Refrigeration	Advanced Refrigeration	Work Custom	Food Sales	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	6%	20%	31%	19%	9.42
260	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Food Sales	RETRO	16,265.8	59.0%	9,595.6	1.619	1.567	15	$2,250.00	100%	75%	38%	20%	76%	66%	16.65
261	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Food Sales	RETRO	19,471.0	3.1%	603.6	0.088	0.085	15	$381.00	75%	75%	0%	20%	68%	47%	8.28
262	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Food Sales	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	25%	74%	42%	8.41
263	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Food Sales	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	100%	25%	74%	74%	0.00
264	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Food Sales	RETRO	0.0	0.0%	0.0	0.000	0.000	10	$235.60	0%	0%	100%	25%	74%	74%	0.00
265	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Food Sales	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	100%	25%	31%	19%	5.73
266	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Food Sales	RETRO	1,107.8	44.4%	491.4	0.076	0.056	10	$341.21	50%	50%	100%	25%	56%	47%	6.23
267	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Food Sales	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	100%	25%	74%	53%	8.41
268	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Food Sales	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	100%	25%	48%	40%	6.23

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
269	WholeBldg_HVAC	Advanced HVAC	Work Custom	Food Sales	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	100%	25%	74%	39%	8.41
270	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Food Sales	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	25%	81%	66%	8.41
271	WholeBldg	COM Competitions	Work Custom	Food Sales	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.04	0%	0%	100%	2%	75%	56%	0.00
272	WholeBldg	Business Energy Reports	Work Custom	Food Sales	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.20	0%	0%	100%	2%	75%	56%	0.00
273	WholeBldg	Building Benchmarking	Work Custom	Food Sales	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.22	0%	0%	100%	2%	75%	56%	0.00
274	WholeBldg	Strategic Energy Management	Work SEM	Food Sales	RETRO	0.0	0.0%	0.0	0.000	0.000	5	$0.27	0%	0%	100%	2%	75%	56%	0.00
275	WholeBldg	BEIMS	Work Prescriptive	Food Sales	RETRO	20.0	5.0%	1.0	0.000	0.000	2	$0.44	14%	14%	100%	2%	75%	56%	1.46
276	WholeBldg	Building Operator Certification	Work SEM	Food Sales	RETRO	60,523.0	0.3%	151.3	0.023	0.017	3	$0.29	100%	100%	100%	2%	75%	56%	67.43
277	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Food Sales	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	100%	2%	56%	36%	12.60
278	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Food Sales	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	2%	81%	68%	8.41
279	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Food Service	MO	19,496.1	38.6%	7,532.5	1.072	1.236	12	$2,270.00	100%	75%	100%	2%	81%	70%	7.01
280	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Food Service	MO	10,863.7	19.0%	2,064.2	0.294	0.339	12	$960.00	75%	75%	100%	2%	75%	63%	7.01
281	Cooking	Commercial Electric Griddle	Work Prescriptive	Food Service	MO	17,056.0	15.2%	2,596.0	0.369	0.426	12	$0.00	0%	0%	100%	2%	81%	81%	0.00
282	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Food Service	MO	16,914.5	79.9%	13,506.7	1.922	2.216	12	$2,757.00	100%	75%	100%	2%	81%	72%	56.83
283	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Food Service	MO	35,655.0	44.2%	15,765.8	2.461	3.254	16	$466.50	100%	100%	100%	2%	81%	81%	18.12
284	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Food Service	MO	38,282.0	32.1%	12,278.8	1.917	2.534	15	$1,550.00	100%	75%	100%	2%	81%	77%	8.55
285	Cooking	Energy efficient electric fryer	Work Prescriptive	Food Service	MO	18,955.0	17.3%	3,274.0	0.466	0.537	12	$1,500.00	75%	75%	100%	2%	75%	61%	137.76
286	Cooking	Insulated Holding Cabinets	Work Prescriptive	Food Service	MO	1,478.3	36.9%	545.3	0.078	0.089	12	$1,000.00	10%	10%	100%	2%	41%	39%	2.29
287	Cooking	Advanced Cooking	Work Custom	Food Service	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	100%	2%	31%	23%	7.01
288	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Food Service	RETRO	1,248.0	39.8%	496.1	0.099	0.059	3	$8.00	100%	100%	100%	2%	81%	81%	8.80
289	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Food Service	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	100%	75%	0%	15%	81%	55%	3.80
290	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Food Service	MO	23,741.6	20.8%	4,935.1	0.986	0.587	13	$3,367.84	50%	50%	23%	15%	66%	55%	6.18
291	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Food Service	RETRO	476,153.6	0.4%	1,969.7	0.394	0.234	10	$244.00	100%	100%	24%	15%	81%	81%	3.32
292	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Food Service	MO	1,375.3	50.0%	687.6	0.137	0.082	15	$57.00	100%	72%	0%	15%	81%	80%	9.23
293	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Food Service	MO	986.0	15.9%	156.6	0.073	0.003	15	$153.28	75%	51%	0%	15%	61%	41%	6.52
294	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Food Service	MO	986.0	20.6%	202.7	0.094	0.004	15	$214.59	75%	47%	20%	15%	60%	40%	5.63
295	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Food Service	MO	986.0	31.9%	314.6	0.146	0.006	15	$398.52	50%	39%	4%	15%	45%	36%	5.82
296	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Food Service	MO	1,084.6	9.1%	98.6	0.046	0.002	15	$71.00	100%	69%	13%	15%	74%	48%	4.11
297	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Food Service	MO	1,084.6	13.3%	144.6	0.067	0.003	15	$109.23	100%	66%	0%	15%	74%	47%	4.01
298	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Food Service	MO	1,084.6	23.5%	255.2	0.119	0.005	15	$218.46	75%	58%	0%	15%	62%	44%	4.72
299	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Food Service	RETRO	1,175.0	7.0%	82.3	0.038	0.002	3	$11.42	100%	75%	23%	15%	74%	60%	3.53
300	Cooling	Air Side Economizer	Work Custom	Food Service	RETRO	986.0	20.0%	197.2	0.092	0.004	10	$126.67	75%	60%	24%	15%	65%	40%	10.30
301	Cooling	HVAC Occupancy Controls	Work Custom	Food Service	RETRO	1,025.9	20.0%	205.2	0.095	0.004	15	$197.50	75%	52%	0%	15%	61%	36%	13.88
302	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Food Service	MO	1,007.2	12.5%	125.9	0.059	0.002	15	$117.00	75%	53%	0%	15%	61%	42%	6.55
303	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Food Service	MO	1,007.2	22.2%	223.8	0.104	0.004	15	$516.00	25%	22%	20%	15%	34%	25%	6.21
304	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Food Service	MO	1,007.2	33.3%	335.7	0.156	0.006	15	$774.00	25%	22%	4%	15%	34%	25%	6.99
305	Cooling	Smart Thermostat	Work Prescriptive	Food Service	RETRO	5,780.3	14.2%	818.5	0.381	0.015	11	$175.00	100%	75%	13%	15%	74%	64%	21.78
306	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Food Service	MO	1,146.4	16.7%	191.1	0.089	0.004	8	$84.00	100%	74%	0%	15%	74%	54%	8.60
307	Cooling	Air Cooled Chiller	Work Prescriptive	Food Service	MO	1,029.2	9.0%	92.7	0.043	0.002	23	$126.00	75%	45%	0%	15%	56%	34%	18.15
308	Cooling	Water Cooled Chiller	Work Prescriptive	Food Service	MO	517.0	22.7%	117.5	0.055	0.002	23	$61.00	100%	75%	23%	15%	74%	51%	18.15
309	Cooling	Window Film	Work Prescriptive	Food Service	RETRO	6,363.6	4.4%	280.0	0.130	0.005	10	$153.81	100%	70%	24%	15%	74%	55%	3.46
310	Cooling	Triple Pane Windows	Work Custom	Food Service	MO	6,363.6	6.0%	381.8	0.178	0.007	25	$700.00	50%	35%	0%	15%	40%	22%	18.99
311	Cooling	Energy Recovery Ventilator	Work Custom	Food Service	RETRO	1,084.6	0.0%	0.0	0.000	0.000	15	$1,050.00	0%	0%	0%	15%	74%	56%	0.00
312	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Food Service	MO	2,620.1	5.0%	131.8	0.021	0.027	15	$135.00	59%	59%	20%	15%	53%	53%	0.85
313	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Food Service	MO	2,620.1	11.9%	312.6	0.049	0.065	15	$445.76	29%	29%	4%	15%	41%	38%	1.24
314	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Food Service	MO	2,620.1	17.9%	470.2	0.073	0.097	15	$520.06	35%	35%	13%	15%	43%	43%	1.34
315	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Food Service	MO	2,925.6	6.2%	180.6	0.028	0.037	15	$100.00	80%	90%	0%	15%	67%	67%	1.16
316	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Food Service	MO	2,925.6	11.4%	334.3	0.052	0.069	15	$171.08	100%	97%	22%	15%	74%	67%	1.32
317	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Food Service	MO	3,029.3	6.6%	200.3	0.031	0.041	15	$100.00	100%	99%	13%	15%	74%	68%	1.29
318	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Food Service	MO	3,029.3	12.0%	363.3	0.057	0.075	15	$158.10	100%	82%	14%	15%	74%	69%	1.44
319	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Food Service	MO	3,171.7	6.5%	207.1	0.032	0.043	15	$100.00	100%	100%	15%	15%	74%	68%	1.33
320	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Food Service	MO	3,171.7	12.5%	396.2	0.062	0.082	15	$201.80	100%	64%	8%	15%	74%	64%	1.57
321	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Food Service	MO	3,031.5	41.8%	1,268.3	0.198	0.262	25	$4,361.00	2%	2%	10%	15%	41%	32%	11.76
322	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Food Service	MO	3,031.5	45.3%	1,372.0	0.214	0.283	25	$4,361.00	2%	2%	13%	15%	41%	32%	11.76
323	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Food Service	MO	5,873.1	16.7%	978.8	0.153	0.202	15	$84.00	100%	70%	7%	15%	74%	73%	8.58
324	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Food Service	MO	50,000.0	1.0%	500.0	0.078	0.103	20	$200.70	100%	75%	11%	15%	74%	56%	10.33
325	Hot Water	Heat Pump Water Heater	Work Prescriptive	Food Service	MO	19,317.8	73.3%	14,166.4	2.679	2.197	15	$1,797.00	100%	75%	22%	15%	86%	82%	51.31
326	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Food Service	RETRO	1,001.0	32.4%	324.1	0.061	0.050	10	$8.00	100%	75%	13%	15%	90%	88%	130.62
327	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Food Service	RETRO	18,058.7	54.2%	9,788.8	1.851	1.518	5	$54.00	100%	75%	14%	15%	90%	88%	87.66
328	Hot Water	Ozone Commercial Laundry	Work Custom	Food Service	MO	2,984.0	25.0%	746.0	0.141	0.116	10	$20,309.70	0%	0%	15%	15%	44%	36%	6.72
329	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Food Service	RETRO	995.8	75.8%	754.8	0.000	0.089	10	$97.00	100%	75%	8%	15%	84%	80%	4.73
330	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Food Service	RETRO	1,743.6	71.0%	1,238.6	0.000	0.146	10	$123.81	100%	75%	10%	15%	84%	81%	7.77
331	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Food Service	RETRO	2,490.4	66.6%	1,658.5	0.000	0.195	10	$134.35	100%	75%	13%	15%	84%	82%	7.50
332	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Food Service	RETRO	3,984.1	64.5%	2,570.2	0.000	0.303	10	$196.16	100%	75%	7%	15%	84%	81%	9.92
333	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Food Service	RETRO	9,467.3	70.4%	6,665.7	0.000	0.785	10	$319.31	100%	63%	11%	15%	84%	83%	8.36
334	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Food Service	RETRO	488.8	75.8%	370.5	0.000	0.044	10	$97.00	75%	75%	22%	15%	81%	77%	2.32
335	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Food Service	RETRO	855.9	71.0%	608.0	0.000	0.072	10	$123.81	100%	75%	12%	15%	84%	78%	3.81

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
336	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Food Service	RETRO	1,222.5	66.6%	814.1	0.000	0.096	10	$134.35	100%	75%	13%	15%	84%	80%	3.68
337	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Food Service	RETRO	1,955.7	64.5%	1,261.6	0.000	0.149	10	$196.16	100%	75%	14%	15%	84%	79%	4.87
338	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Food Service	RETRO	4,647.2	70.4%	3,272.0	0.000	0.385	10	$319.31	100%	63%	8%	15%	84%	82%	4.10
339	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Direct Install	Food Service	RETRO	230.3	73.8%	169.8	0.026	0.022	12	$59.00	100%	100%	10%	15%	84%	84%	1.24
340	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Direct Install	Food Service	RETRO	166.3	51.4%	85.5	0.013	0.011	10	$15.00	100%	100%	13%	15%	84%	84%	2.14
341	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Direct Install	Food Service	RETRO	171.6	34.0%	58.4	0.009	0.008	12	$22.00	100%	100%	7%	15%	84%	84%	1.14
342	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Direct Install	Food Service	RETRO	336.1	51.4%	172.8	0.027	0.022	12	$61.00	100%	100%	11%	15%	84%	84%	1.22
343	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Direct Install	Food Service	RETRO	498.2	54.0%	269.3	0.041	0.035	12	$76.00	100%	100%	22%	15%	84%	84%	1.53
344	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Direct Install	Food Service	RETRO	663.9	54.3%	360.3	0.056	0.047	12	$104.00	100%	100%	12%	15%	84%	84%	1.49
345	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Direct Install	Food Service	RETRO	335.3	50.3%	168.6	0.026	0.022	12	$46.67	100%	100%	13%	15%	84%	84%	1.56
346	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Direct Install	Food Service	RETRO	884.5	53.2%	470.2	0.072	0.061	12	$152.00	100%	100%	14%	15%	84%	84%	1.33
347	Lighting_Int	LED Low-Bay Fixture	Work Direct Install	Food Service	RETRO	925.7	67.0%	620.3	0.096	0.081	12	$42.88	100%	100%	8%	15%	84%	84%	6.24
348	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Direct Install	Food Service	RETRO	1,733.5	57.0%	988.4	0.152	0.129	12	$48.07	100%	100%	10%	15%	84%	84%	8.86
349	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Direct Install	Food Service	RETRO	6,957.7	72.3%	5,030.8	0.775	0.655	12	$187.94	100%	100%	13%	15%	84%	84%	11.54
350	Lighting_Int	Fluorescent Delamping	Work Direct Install	Food Service	RETRO	148.0	100.0%	148.0	0.023	0.019	11	$18.50	100%	100%	7%	15%	84%	84%	3.23
351	Lighting_Int	Lighting Occupancy Sensor	Work Direct Install	Food Service	RETRO	768.9	30.0%	230.7	0.036	0.030	15	$65.40	100%	100%	11%	15%	84%	84%	1.78
352	Lighting_Int	Lighting Daylight Sensor	Work Direct Install	Food Service	RETRO	984.7	28.0%	275.7	0.042	0.036	15	$57.50	100%	100%	22%	15%	84%	84%	2.42
353	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Direct Install	Food Service	RETRO	439.3	38.0%	166.9	0.026	0.022	15	$75.00	100%	100%	12%	15%	84%	84%	1.12
354	Lighting_Int	Luminaire-Level Lighting Controls	Work Direct Install	Food Service	RETRO	439.3	61.0%	268.0	0.041	0.035	15	$56.00	100%	75%	13%	15%	84%	78%	8.42
355	Lighting_Int	Networked Lighting Control	Work Direct Install	Food Service	RETRO	3.6	35.0%	1.3	0.000	0.000	15	$0.74	75%	75%	14%	15%	78%	63%	8.42
356	Lighting_Int	LED Exit Sign	Work Direct Install	Food Service	RETRO	64.9	71.4%	46.4	0.007	0.006	5	$32.50	100%	100%	8%	15%	90%	88%	0.30
357	Lighting_Int	Advanced Lighting	Work Custom	Food Service	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	10%	15%	35%	26%	8.42
358	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Food Service	RETRO	385.4	61.4%	236.8	0.047	0.028	5	$233.00	6%	6%	13%	15%	52%	49%	3.80
359	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Food Service	MO	2.4	50.0%	1.2	0.000	0.000	20	$1.04	75%	66%	7%	15%	71%	39%	11.11
360	Misc	High Efficiency Hand Dryers	Work Prescriptive	Food Service	MO	1,909.5	83.0%	1,585.2	0.317	0.189	10	$483.00	100%	75%	11%	15%	81%	70%	6.85
361	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Food Service	RETRO	3,125.1	3.7%	114.4	0.023	0.014	15	$59.00	100%	75%	22%	15%	81%	78%	9.23
362	Misc	Miscellaneous Custom	Work Custom	Food Service	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	100%	75%	12%	15%	81%	49%	6.85
363	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Food Service	MO	1,611.0	27.7%	446.8	0.095	0.048	15	$198.32	100%	75%	13%	15%	81%	69%	3.18
364	Motors	Power Drive Systems	Work Custom	Food Service	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	14%	15%	81%	58%	9.48
365	Motors	Switch Reluctance Motors	Work Midstream	Food Service	MO	33,405.7	30.6%	10,222.1	2.177	1.107	15	$527.50	100%	100%	8%	15%	81%	81%	11.02
366	Motors	Advanced Motors	Work Custom	Food Service	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	10%	15%	81%	54%	9.48
367	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Food Service	MO	418.0	26.3%	110.0	0.022	0.013	6	$0.00	0%	0%	13%	15%	97%	96%	0.00
368	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Food Service	RETRO	188.2	57.7%	108.6	0.022	0.013	7	$10.00	100%	65%	7%	15%	81%	79%	5.10
369	Plug_Office	Smart Socket	Work Prescriptive	Food Service	RETRO	79.9	60.6%	48.4	0.010	0.006	7	$9.00	100%	75%	11%	15%	81%	75%	5.10
370	Plug_Office	Energy Star Server	Work Prescriptive	Food Service	MO	2,166.7	30.0%	650.0	0.130	0.077	9	$300.95	75%	75%	4%	15%	75%	63%	6.29
371	Plug_Office	Server Virtualization	Work Custom	Food Service	RETRO	2,166.7	13.9%	301.1	0.060	0.036	9	$26.97	100%	67%	6%	15%	81%	59%	6.29
372	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Food Service	RETRO	86,783.0	18.2%	15,778.0	3.153	1.878	15	$480.00	100%	100%	9%	15%	81%	81%	18.21
373	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Food Service	RETRO	764.0	46.9%	358.0	0.072	0.043	15	$82.00	100%	75%	0%	15%	81%	73%	9.23
374	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Food Service	MO	8,940.1	25.3%	2,264.8	0.453	0.270	20	$750.00	100%	75%	6%	15%	81%	68%	11.11
375	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Food Service	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	5%	15%	81%	55%	6.85
376	Plug_Office	Advanced IT	Work Custom	Food Service	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	3%	15%	81%	60%	3.10
377	Refrigeration	Strip Curtains	Work Prescriptive	Food Service	RETRO	87.7	50.0%	43.9	0.006	0.005	4	$10.22	50%	50%	0%	15%	67%	64%	2.74
378	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Food Service	RETRO	1,228.0	25.0%	307.0	0.043	0.033	15	$431.00	25%	25%	0%	15%	48%	40%	6.02
379	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Food Service	RETRO	2,883.6	55.0%	1,586.0	0.224	0.172	15	$305.00	100%	75%	4%	15%	86%	84%	22.22
380	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Food Service	RETRO	1,297.6	22.6%	293.0	0.041	0.032	13	$161.75	75%	75%	6%	15%	66%	49%	7.40
381	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Food Service	RETRO	3,157.9	47.5%	1,500.0	0.212	0.163	15	$1,170.00	50%	50%	9%	15%	54%	43%	8.17
382	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Food Service	RETRO	578.6	41.5%	240.1	0.034	0.026	10	$79.50	100%	75%	0%	15%	74%	62%	3.49
383	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Food Service	RETRO	1,259,892.8	0.2%	2,398.7	0.340	0.260	8	$502.00	100%	75%	6%	15%	74%	63%	29.10
384	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Food Service	RETRO	45,880.0	10.0%	4,588.0	0.649	0.498	10	$311.54	100%	88%	5%	15%	74%	74%	6.06
385	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Food Service	RETRO	1,558.3	50.0%	779.1	0.110	0.085	15	$390.00	75%	75%	3%	15%	67%	58%	2.55
386	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Food Service	RETRO	2,883.6	55.0%	1,586.0	0.224	0.172	15	$305.00	100%	75%	0%	15%	86%	84%	22.22
387	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Food Service	RETRO	2,090.6	24.1%	504.6	0.071	0.055	10	$96.00	100%	75%	0%	15%	74%	67%	5.24
388	Refrigeration	Night Covers for Coolers	Work Prescriptive	Food Service	RETRO	1,510.5	9.0%	136.0	0.019	0.015	5	$42.00	50%	50%	0%	15%	69%	64%	3.36
389	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Food Service	RETRO	2,016.2	32.5%	655.3	0.093	0.071	10	$90.77	100%	75%	10%	15%	74%	68%	9.53
390	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Food Service	RETRO	1,259,892.8	0.6%	6,948.8	0.984	0.754	8	$502.00	100%	75%	0%	15%	74%	70%	84.29
391	Refrigeration	Night Covers for Freezers	Work Prescriptive	Food Service	RETRO	2,349.3	9.0%	211.3	0.030	0.023	5	$42.00	100%	75%	0%	15%	74%	66%	3.36
392	Refrigeration	Refrigeration - Custom	Work Custom	Food Service	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	15%	15%	68%	42%	6.06
393	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Food Service	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	10%	15%	71%	49%	3.36
394	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Food Service	MO	1,277.5	12.0%	153.3	0.022	0.017	14	$500.00	2%	2%	10%	15%	52%	45%	7.79
395	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Food Service	RETRO	1,662.9	23.5%	390.1	0.055	0.042	5	$245.00	25%	25%	0%	15%	52%	46%	3.36
396	Refrigeration	Commercial Ice Marker	Work Prescriptive	Food Service	MO	5,550.9	7.9%	440.3	0.062	0.048	9	$222.00	50%	50%	0%	15%	61%	55%	3.68
397	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Food Service	MO	114.6	73.7%	84.5	0.012	0.009	9	$11.00	100%	75%	100%	2%	74%	68%	11.29
398	Refrigeration	Advanced Refrigeration	Work Custom	Food Service	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	100%	2%	31%	19%	9.84
399	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Food Service	RETRO	13,902.9	59.0%	8,201.7	1.440	1.234	15	$2,250.00	100%	75%	100%	2%	76%	64%	14.42
400	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Food Service	RETRO	17,237.2	3.1%	534.4	0.081	0.069	15	$381.00	50%	50%	100%	2%	58%	45%	8.38
401	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Food Service	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	2%	74%	42%	9.38
402	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Food Service	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	100%	2%	74%	74%	0.00

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
403	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Food Service	RETRO	2,550.0	20.0%	510.0	0.106	0.059	10	$235.60	75%	75%	100%	2%	67%	53%	6.95
404	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Food Service	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	100%	2%	31%	19%	5.77
405	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Food Service	RETRO	1,237.5	46.9%	579.9	0.121	0.068	10	$341.21	50%	50%	100%	2%	58%	48%	6.95
406	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Food Service	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	100%	9%	74%	53%	9.38
407	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Food Service	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	100%	0%	48%	40%	6.95
408	WholeBldg_HVAC	Advanced HVAC	Work Custom	Food Service	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	35%	17%	74%	39%	9.38
409	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Food Service	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	66%	25%	81%	66%	9.38
410	WholeBldg	COM Competitions	Work Custom	Food Service	RETRO	52.6	1.9%	1.0	0.000	0.000	2	$0.04	100%	100%	50%	23%	75%	56%	2.35
411	WholeBldg	Business Energy Reports	Work Custom	Food Service	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.20	0%	0%	100%	9%	75%	56%	0.00
412	WholeBldg	Building Benchmarking	Work Custom	Food Service	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.22	0%	0%	100%	9%	75%	56%	0.00
413	WholeBldg	Strategic Energy Management	Work SEM	Food Service	RETRO	0.0	0.0%	0.0	0.000	0.000	5	$0.27	0%	0%	100%	0%	75%	56%	0.00
414	WholeBldg	BEIMS	Work Prescriptive	Food Service	RETRO	20.0	5.0%	1.0	0.000	0.000	2	$0.44	14%	14%	100%	14%	75%	56%	1.62
415	WholeBldg	Building Operator Certification	Work SEM	Food Service	RETRO	49,444.0	0.3%	123.6	0.026	0.014	3	$0.29	100%	100%	20%	85%	75%	56%	61.37
416	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Food Service	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	20%	85%	56%	36%	14.05
417	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Food Service	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	7%	85%	81%	68%	9.38
418	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Health	MO	19,496.1	38.6%	7,532.5	2.273	0.760	12	$2,270.00	100%	75%	13%	85%	81%	70%	9.36
419	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Health	MO	10,863.7	19.0%	2,064.2	0.623	0.208	12	$960.00	100%	75%	10%	85%	81%	63%	9.36
420	Cooking	Commercial Electric Griddle	Work Prescriptive	Health	MO	17,056.0	15.2%	2,596.0	0.783	0.262	12	$0.00	0%	0%	20%	85%	81%	81%	0.00
421	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Health	MO	16,914.5	79.9%	13,506.7	4.076	1.363	12	$2,757.00	100%	75%	20%	85%	81%	72%	75.84
422	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Health	MO	35,655.0	44.2%	15,765.8	1.659	3.281	16	$466.50	100%	100%	20%	85%	81%	81%	16.11
423	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Health	MO	38,282.0	32.1%	12,278.8	1.292	2.555	15	$1,550.00	100%	75%	20%	85%	81%	77%	7.60
424	Cooking	Energy efficient electric fryer	Work Prescriptive	Health	MO	18,955.0	17.3%	3,274.0	0.988	0.330	12	$1,500.00	100%	75%	0%	20%	81%	61%	183.85
425	Cooking	Insulated Holding Cabinets	Work Prescriptive	Health	MO	1,478.3	36.9%	545.3	0.165	0.055	12	$1,000.00	25%	24%	0%	20%	42%	39%	3.06
426	Cooking	Advanced Cooking	Work Custom	Health	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	65%	20%	31%	23%	9.36
427	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Health	RETRO	1,248.0	39.8%	496.1	0.060	0.056	3	$8.00	100%	100%	34%	20%	81%	81%	7.48
428	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Health	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	50%	20%	78%	55%	3.23
429	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Health	MO	23,741.6	20.8%	4,935.1	0.599	0.557	13	$3,367.84	50%	50%	0%	20%	66%	55%	5.25
430	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Health	RETRO	476,153.6	0.4%	1,969.7	0.239	0.222	10	$244.00	100%	100%	0%	20%	81%	81%	2.81
431	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Health	MO	1,375.3	50.0%	687.6	0.083	0.078	15	$57.00	100%	72%	0%	20%	81%	80%	7.84
432	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Health	MO	1,201.9	15.9%	190.9	0.060	0.003	15	$153.28	75%	62%	0%	20%	63%	44%	6.39
433	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Health	MO	1,201.9	20.6%	247.1	0.077	0.004	15	$214.59	75%	57%	20%	85%	62%	43%	5.51
434	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Health	MO	1,201.9	31.9%	383.5	0.120	0.005	15	$398.52	50%	48%	20%	85%	48%	40%	5.71
435	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Health	MO	1,322.1	9.1%	120.2	0.038	0.002	15	$71.00	100%	75%	7%	85%	74%	52%	4.02
436	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Health	MO	1,322.1	13.3%	176.3	0.055	0.003	15	$109.23	100%	75%	13%	85%	74%	51%	3.93
437	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Health	MO	1,322.1	23.5%	311.1	0.097	0.004	15	$218.46	75%	71%	10%	85%	64%	46%	4.63
438	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Health	RETRO	1,432.2	7.0%	100.3	0.031	0.001	3	$11.42	100%	53%	20%	85%	74%	60%	2.84
439	Cooling	Air Side Economizer	Work Custom	Health	RETRO	1,201.9	20.0%	240.4	0.075	0.003	10	$126.67	75%	73%	20%	85%	66%	40%	8.28
440	Cooling	HVAC Occupancy Controls	Work Custom	Health	RETRO	1,250.5	20.0%	250.1	0.078	0.004	15	$197.50	75%	63%	20%	85%	63%	36%	11.16
441	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Health	MO	1,227.6	12.5%	153.5	0.048	0.002	15	$117.00	75%	65%	20%	85%	63%	44%	6.42
442	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Health	MO	1,227.6	22.2%	272.8	0.085	0.004	15	$516.00	25%	25%	13%	70%	34%	29%	6.09
443	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Health	MO	1,227.6	33.3%	409.2	0.128	0.006	15	$774.00	25%	25%	13%	70%	34%	29%	6.85
444	Cooling	Smart Thermostat	Work Prescriptive	Health	RETRO	7,045.7	14.2%	997.7	0.312	0.014	11	$175.00	100%	75%	13%	70%	74%	65%	21.35
445	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Health	MO	1,397.3	16.7%	232.9	0.073	0.003	8	$84.00	100%	75%	13%	70%	74%	58%	6.91
446	Cooling	Air Cooled Chiller	Work Prescriptive	Health	MO	1,254.5	9.0%	113.0	0.035	0.002	23	$126.00	75%	55%	13%	70%	59%	37%	14.61
447	Cooling	Water Cooled Chiller	Work Prescriptive	Health	MO	630.2	22.7%	143.2	0.045	0.002	23	$61.00	100%	75%	13%	70%	74%	55%	14.61
448	Cooling	Window Film	Work Prescriptive	Health	RETRO	6,363.6	4.4%	280.0	0.088	0.004	10	$153.81	75%	70%	13%	70%	66%	55%	2.78
449	Cooling	Triple Pane Windows	Work Custom	Health	MO	6,363.6	6.0%	381.8	0.119	0.005	25	$700.00	50%	35%	13%	70%	40%	22%	15.30
450	Cooling	Energy Recovery Ventilator	Work Custom	Health	RETRO	1,322.1	33.8%	446.3	0.139	0.006	15	$1,050.00	25%	21%	13%	70%	31%	19%	11.16
451	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Health	MO	3,137.3	5.0%	158.2	0.017	0.033	15	$135.00	59%	59%	13%	70%	56%	56%	0.91
452	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Health	MO	3,137.3	12.0%	375.7	0.040	0.078	15	$445.76	29%	29%	13%	70%	41%	41%	1.33
453	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Health	MO	3,137.3	18.1%	566.3	0.060	0.118	15	$520.06	50%	50%	13%	70%	51%	45%	1.45
454	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Health	MO	3,501.8	6.2%	216.5	0.023	0.045	15	$100.00	80%	80%	13%	70%	69%	69%	1.25
455	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Health	MO	3,501.8	11.4%	400.7	0.042	0.083	15	$171.08	100%	76%	13%	70%	74%	68%	1.42
456	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Health	MO	3,626.2	6.6%	240.3	0.025	0.050	15	$100.00	100%	80%	13%	70%	74%	69%	1.38
457	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Health	MO	3,626.2	12.0%	435.7	0.046	0.091	15	$158.10	100%	82%	13%	70%	74%	70%	1.54
458	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Health	MO	3,798.0	6.6%	248.9	0.026	0.052	15	$100.00	100%	80%	13%	70%	74%	69%	1.43
459	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Health	MO	3,798.0	12.5%	475.5	0.050	0.099	15	$201.80	100%	64%	13%	70%	74%	65%	1.69
460	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Health	MO	3,628.9	41.6%	1,510.0	0.159	0.314	25	$4,361.00	2%	2%	13%	70%	41%	32%	10.55
461	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Health	MO	3,628.9	45.0%	1,634.7	0.172	0.340	25	$4,361.00	2%	2%	13%	70%	41%	32%	10.55
462	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Health	MO	6,999.9	16.7%	1,166.7	0.123	0.243	15	$84.00	100%	83%	13%	70%	74%	74%	7.68
463	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Health	MO	50,000.0	1.0%	500.0	0.053	0.104	20	$200.70	100%	75%	13%	70%	74%	56%	9.25
464	Hot Water	Heat Pump Water Heater	Work Prescriptive	Health	MO	24,473.3	73.3%	17,947.1	3.360	1.962	15	$1,797.00	100%	75%	13%	70%	86%	83%	64.48
465	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Health	RETRO	1,297.3	34.5%	447.3	0.084	0.049	10	$14.27	100%	75%	13%	70%	90%	88%	178.82
466	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Health	RETRO	18,058.7	54.2%	9,788.8	1.832	1.070	5	$54.00	100%	75%	13%	70%	90%	88%	86.92
467	Hot Water	Ozone Commercial Laundry	Work Custom	Health	MO	2,984.0	25.0%	746.0	0.140	0.082	10	$20,309.70	0%	0%	13%	70%	44%	36%	6.66
468	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Health	RETRO	995.8	75.8%	754.8	0.000	0.089	10	$97.00	100%	75%	13%	70%	84%	80%	4.73
469	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Health	RETRO	1,743.6	71.0%	1,238.6	0.000	0.146	10	$123.81	100%	75%	13%	70%	84%	81%	7.77

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
470	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Health	RETRO	2,490.4	66.6%	1,658.5	0.000	0.196	10	$134.35	100%	75%	13%	70%	84%	82%	7.50
471	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Health	RETRO	3,984.1	64.5%	2,570.2	0.000	0.303	10	$196.16	100%	75%	13%	70%	84%	81%	9.92
472	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Health	RETRO	9,467.3	70.4%	6,665.7	0.000	0.786	10	$319.31	100%	63%	13%	70%	84%	83%	8.36
473	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Health	RETRO	488.8	75.8%	370.5	0.000	0.044	10	$97.00	75%	75%	13%	70%	81%	77%	2.32
474	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Health	RETRO	855.9	71.0%	608.0	0.000	0.072	10	$123.81	100%	75%	13%	70%	84%	78%	3.81
475	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Health	RETRO	1,222.5	66.6%	814.1	0.000	0.096	10	$134.35	100%	75%	13%	70%	84%	80%	3.68
476	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Health	RETRO	1,955.7	64.5%	1,261.6	0.000	0.149	10	$196.16	100%	75%	13%	70%	84%	79%	4.87
477	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Health	RETRO	4,647.2	70.4%	3,272.0	0.000	0.386	10	$319.31	100%	63%	13%	70%	84%	82%	4.10
478	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Health	RETRO	251.0	73.8%	185.1	0.022	0.019	12	$59.00	100%	75%	13%	70%	84%	76%	2.95
479	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Health	RETRO	181.2	51.4%	93.2	0.011	0.010	10	$15.00	100%	75%	13%	70%	84%	79%	7.16
480	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Health	RETRO	187.0	34.0%	63.6	0.007	0.007	12	$22.00	100%	68%	13%	70%	84%	79%	1.69
481	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Health	RETRO	366.4	51.4%	188.3	0.022	0.019	12	$61.00	100%	75%	13%	70%	84%	74%	4.99
482	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Health	RETRO	543.1	54.0%	293.5	0.035	0.030	12	$76.00	100%	75%	13%	70%	84%	75%	7.78
483	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Health	RETRO	723.7	54.3%	392.7	0.046	0.040	12	$104.00	100%	75%	13%	70%	84%	75%	10.42
484	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Health	RETRO	365.5	50.3%	183.8	0.022	0.019	12	$46.67	100%	86%	13%	70%	84%	82%	1.83
485	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Health	RETRO	964.1	53.2%	512.6	0.060	0.053	12	$152.00	100%	75%	13%	70%	84%	75%	5.10
486	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Health	RETRO	1,009.1	67.0%	676.1	0.080	0.069	12	$42.88	100%	93%	13%	70%	84%	83%	6.73
487	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Health	RETRO	1,889.6	57.0%	1,077.4	0.127	0.111	12	$48.07	100%	83%	7%	70%	84%	83%	10.72
488	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Health	RETRO	7,584.2	72.3%	5,483.7	0.645	0.563	12	$187.94	100%	75%	7%	70%	84%	82%	54.54
489	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Health	RETRO	161.3	100.0%	161.3	0.019	0.017	11	$18.50	100%	75%	7%	70%	84%	80%	20.03
490	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Health	RETRO	838.1	30.0%	251.4	0.030	0.026	15	$65.40	100%	75%	7%	70%	84%	76%	5.86
491	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Health	RETRO	1,073.4	28.0%	300.5	0.035	0.031	15	$57.50	100%	100%	7%	70%	84%	84%	2.44
492	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Health	RETRO	478.8	38.0%	182.0	0.021	0.019	15	$75.00	100%	100%	7%	70%	84%	84%	1.13
493	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Health	RETRO	478.8	61.0%	292.1	0.034	0.030	15	$56.00	100%	75%	7%	70%	84%	78%	7.77
494	Lighting_Int	Networked Lighting Control	Work Prescriptive	Health	RETRO	3.9	35.0%	1.4	0.000	0.000	15	$0.81	75%	75%	7%	70%	78%	63%	7.77
495	Lighting_Int	LED Exit Sign	Work Prescriptive	Health	RETRO	68.6	71.4%	49.0	0.006	0.005	5	$32.50	25%	25%	7%	70%	90%	88%	1.88
496	Lighting_Int	Advanced Lighting	Work Custom	Health	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	7%	70%	35%	26%	7.77
497	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Health	RETRO	385.4	61.4%	236.8	0.029	0.027	5	$233.00	6%	6%	7%	70%	52%	49%	3.23
498	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Health	MO	5.3	50.0%	2.6	0.000	0.000	20	$1.04	100%	75%	7%	70%	81%	49%	9.43
499	Misc	High Efficiency Hand Dryers	Work Prescriptive	Health	MO	1,909.5	83.0%	1,585.2	0.192	0.179	10	$483.00	100%	75%	7%	70%	81%	70%	5.81
500	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Health	RETRO	3,125.1	3.7%	114.4	0.014	0.013	15	$59.00	75%	75%	7%	70%	81%	78%	7.84
501	Misc	Miscellaneous Custom	Work Custom	Health	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	7%	70%	76%	49%	5.81
502	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Health	MO	4,349.4	27.7%	1,206.2	0.241	0.060	15	$198.32	100%	75%	7%	70%	81%	76%	8.29
503	Motors	Power Drive Systems	Work Custom	Health	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	7%	70%	81%	58%	9.16
504	Motors	Switch Reluctance Motors	Work Midstream	Health	MO	33,405.7	30.6%	10,222.1	2.041	0.506	15	$527.50	100%	100%	7%	70%	81%	81%	10.66
505	Motors	Advanced Motors	Work Custom	Health	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	7%	70%	81%	54%	9.16
506	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Health	MO	418.0	26.3%	110.0	0.013	0.012	6	$0.00	0%	0%	7%	70%	97%	96%	0.00
507	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Health	RETRO	188.2	57.7%	108.6	0.013	0.012	7	$10.00	100%	65%	7%	70%	81%	79%	4.33
508	Plug_Office	Smart Socket	Work Prescriptive	Health	RETRO	79.9	60.6%	48.4	0.006	0.005	7	$9.00	100%	75%	7%	70%	81%	75%	4.33
509	Plug_Office	Energy Star Server	Work Prescriptive	Health	MO	2,166.7	30.0%	650.0	0.079	0.073	9	$300.95	50%	50%	7%	70%	70%	63%	5.34
510	Plug_Office	Server Virtualization	Work Custom	Health	RETRO	2,166.7	13.9%	301.1	0.037	0.034	9	$26.97	100%	67%	7%	70%	81%	59%	5.34
511	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Health	RETRO	86,783.0	18.2%	15,778.0	1.916	1.782	15	$480.00	100%	100%	7%	70%	81%	81%	15.45
512	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Health	RETRO	764.0	46.9%	358.0	0.043	0.040	15	$82.00	100%	75%	7%	70%	81%	73%	7.84
513	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Health	MO	8,940.1	25.3%	2,264.8	0.275	0.256	20	$750.00	100%	75%	7%	70%	81%	68%	9.43
514	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Health	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	7%	70%	81%	55%	5.81
515	Plug_Office	Advanced IT	Work Custom	Health	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	7%	70%	81%	60%	2.63
516	Refrigeration	Strip Curtains	Work Prescriptive	Health	RETRO	0.0	0.0%	0.0	0.000	0.000	4	$10.22	0%	0%	7%	70%	74%	74%	0.00
517	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Health	RETRO	1,228.0	25.0%	307.0	0.047	0.035	15	$431.00	25%	25%	7%	70%	48%	40%	6.19
518	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Health	RETRO	2,883.6	55.0%	1,586.0	0.244	0.181	15	$305.00	100%	75%	7%	70%	86%	84%	22.84
519	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Health	RETRO	1,297.6	22.6%	293.0	0.045	0.034	13	$161.75	75%	75%	7%	70%	66%	49%	7.60
520	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Health	RETRO	3,157.9	47.5%	1,500.0	0.231	0.172	15	$1,170.00	50%	50%	7%	70%	54%	43%	8.40
521	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Health	RETRO	578.6	41.5%	240.1	0.037	0.027	10	$79.50	100%	75%	7%	70%	74%	62%	3.59
522	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Health	RETRO	1,259,892.8	0.2%	2,398.7	0.369	0.274	8	$502.00	100%	75%	7%	70%	74%	63%	29.90
523	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Health	RETRO	45,880.0	10.0%	4,588.0	0.706	0.525	10	$311.54	100%	88%	7%	70%	74%	74%	6.23
524	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Health	RETRO	1,558.3	50.0%	779.1	0.120	0.089	15	$390.00	100%	75%	7%	70%	74%	58%	2.62
525	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Health	RETRO	2,883.6	55.0%	1,586.0	0.244	0.181	15	$305.00	100%	75%	7%	70%	86%	84%	22.84
526	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Health	RETRO	2,090.6	24.1%	504.6	0.078	0.058	10	$96.00	100%	75%	7%	70%	74%	67%	5.39
527	Refrigeration	Night Covers for Coolers	Work Prescriptive	Health	RETRO	1,510.5	9.0%	136.0	0.021	0.016	5	$42.00	50%	50%	7%	70%	69%	64%	3.46
528	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Health	RETRO	2,016.2	32.5%	655.3	0.101	0.075	10	$90.77	100%	75%	7%	70%	74%	68%	9.79
529	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Health	RETRO	1,259,892.8	0.6%	6,948.8	1.069	0.795	8	$502.00	100%	75%	7%	70%	74%	70%	86.63
530	Refrigeration	Night Covers for Freezers	Work Prescriptive	Health	RETRO	2,349.3	9.0%	211.3	0.033	0.024	5	$42.00	100%	75%	7%	70%	74%	66%	3.46
531	Refrigeration	Refrigeration - Custom	Work Custom	Health	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	7%	70%	68%	42%	6.23
532	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Health	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	11%	60%	71%	49%	3.46
533	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Health	MO	1,277.5	12.0%	153.3	0.024	0.018	14	$500.00	2%	2%	8%	60%	52%	45%	8.01
534	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Health	RETRO	1,662.9	23.5%	390.1	0.060	0.045	5	$245.00	25%	25%	5%	60%	52%	46%	3.46
535	Refrigeration	Commercial Ice Marker	Work Prescriptive	Health	MO	5,550.9	7.9%	440.3	0.068	0.050	9	$222.00	50%	50%	16%	60%	61%	55%	3.78
536	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Health	MO	114.6	73.7%	84.5	0.013	0.010	9	$11.00	100%	75%	15%	60%	74%	68%	11.60

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
537	Refrigeration	Advanced Refrigeration	Work Custom	Health	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	4%	60%	31%	19%	10.11
538	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Health	RETRO	11,035.5	59.0%	6,510.2	0.969	0.849	15	$2,250.00	100%	75%	4%	60%	76%	72%	10.81
539	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Health	RETRO	17,237.2	3.1%	534.4	0.069	0.060	15	$381.00	50%	50%	2%	60%	58%	45%	7.95
540	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Health	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	7%	60%	74%	42%	8.41
541	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Health	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	69%	40%	74%	74%	0.00
542	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Health	RETRO	305.0	20.0%	61.0	0.009	0.006	10	$235.60	2%	2%	53%	40%	37%	28%	6.23
543	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Health	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	64%	40%	31%	19%	5.74
544	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Health	RETRO	0.0	0.0%	0.0	0.000	0.000	10	$0.00	0%	0%	43%	40%	76%	74%	0.00
545	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Health	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	44%	40%	74%	53%	8.41
546	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Health	RETRO	222.3	2.0%	4.4	0.001	0.000	10	$8.00	3%	3%	63%	40%	48%	40%	6.23
547	WholeBldg_HVAC	Advanced HVAC	Work Custom	Health	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	55%	40%	74%	39%	8.41
548	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Health	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	37%	40%	81%	66%	8.41
549	WholeBldg	COM Competitions	Work Custom	Health	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.04	0%	0%	62%	40%	75%	56%	0.00
550	WholeBldg	Business Energy Reports	Work Custom	Health	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.20	0%	0%	69%	40%	75%	56%	0.00
551	WholeBldg	Building Benchmarking	Work Custom	Health	RETRO	113.6	0.9%	1.0	0.000	0.000	2	$0.22	27%	27%	53%	40%	75%	56%	1.46
552	WholeBldg	Strategic Energy Management	Work SEM	Health	RETRO	33.3	3.0%	1.0	0.000	0.000	5	$0.27	75%	75%	64%	40%	75%	56%	3.46
553	WholeBldg	BEIMS	Work Prescriptive	Health	RETRO	50.0	2.0%	1.0	0.000	0.000	2	$0.44	14%	14%	43%	40%	75%	56%	1.46
554	WholeBldg	Building Operator Certification	Work SEM	Health	RETRO	27,632.0	0.3%	69.1	0.011	0.007	3	$0.29	100%	100%	44%	40%	75%	56%	30.78
555	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Health	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	63%	40%	56%	36%	12.61
556	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Health	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	55%	40%	81%	68%	8.41
557	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Lodging	MO	19,496.1	38.6%	7,532.5	2.383	0.739	12	$2,270.00	100%	75%	37%	40%	81%	70%	9.57
558	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Lodging	MO	10,863.7	19.0%	2,064.2	0.653	0.203	12	$960.00	100%	75%	62%	40%	81%	63%	9.57
559	Cooking	Commercial Electric Griddle	Work Prescriptive	Lodging	MO	17,056.0	15.2%	2,596.0	0.821	0.255	12	$0.00	0%	0%	69%	40%	81%	81%	0.00
560	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Lodging	MO	16,914.5	79.9%	13,506.7	4.272	1.325	12	$2,757.00	100%	75%	53%	40%	81%	72%	77.56
561	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Lodging	MO	35,655.0	44.2%	15,765.8	1.616	3.703	16	$466.50	100%	100%	64%	40%	81%	81%	15.92
562	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Lodging	MO	38,282.0	32.1%	12,278.8	1.259	2.884	15	$1,550.00	100%	75%	43%	40%	81%	77%	7.51
563	Cooking	Energy efficient electric fryer	Work Prescriptive	Lodging	MO	18,955.0	17.3%	3,274.0	1.036	0.321	12	$1,500.00	100%	75%	44%	40%	81%	61%	188.00
564	Cooking	Insulated Holding Cabinets	Work Prescriptive	Lodging	MO	1,478.3	36.9%	545.3	0.172	0.053	12	$1,000.00	25%	24%	63%	40%	42%	39%	3.13
565	Cooking	Advanced Cooking	Work Custom	Lodging	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	55%	40%	31%	23%	9.57
566	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Lodging	RETRO	1,248.0	39.8%	496.1	0.053	0.064	3	$8.00	100%	100%	37%	40%	81%	81%	7.24
567	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Lodging	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	62%	40%	78%	55%	3.12
568	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Lodging	MO	23,741.6	20.8%	4,935.1	0.531	0.637	13	$3,367.84	50%	50%	69%	40%	66%	55%	5.08
569	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Lodging	RETRO	476,153.6	0.4%	1,969.7	0.212	0.254	10	$244.00	100%	100%	53%	40%	81%	81%	2.72
570	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Lodging	MO	1,375.3	50.0%	687.6	0.074	0.089	15	$57.00	100%	72%	64%	40%	81%	80%	7.58
571	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Lodging	MO	1,118.2	15.9%	177.6	0.054	0.007	15	$153.28	75%	57%	43%	40%	62%	43%	5.88
572	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Lodging	MO	1,118.2	20.6%	229.9	0.070	0.009	15	$214.59	50%	50%	44%	40%	50%	42%	5.07
573	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Lodging	MO	1,118.2	31.9%	356.8	0.109	0.014	15	$398.52	50%	44%	63%	40%	46%	38%	5.25
574	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Lodging	MO	1,230.0	9.1%	111.8	0.034	0.004	15	$71.00	100%	75%	55%	40%	74%	51%	3.70
575	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Lodging	MO	1,230.0	13.3%	164.0	0.050	0.006	15	$109.23	75%	74%	37%	40%	65%	50%	3.62
576	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Lodging	MO	1,230.0	23.5%	289.4	0.088	0.011	15	$218.46	75%	66%	62%	40%	64%	45%	4.26
577	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Lodging	RETRO	1,332.5	7.0%	93.3	0.028	0.004	3	$11.42	100%	75%	69%	40%	74%	60%	2.81
578	Cooling	Air Side Economizer	Work Custom	Lodging	RETRO	1,118.2	20.0%	223.6	0.068	0.009	10	$126.67	75%	68%	53%	40%	66%	40%	8.19
579	Cooling	HVAC Occupancy Controls	Work Custom	Lodging	RETRO	1,163.5	20.0%	232.7	0.071	0.009	15	$197.50	75%	58%	64%	40%	62%	36%	11.03
580	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Lodging	MO	1,142.2	12.5%	142.8	0.043	0.006	15	$117.00	75%	61%	43%	40%	63%	43%	5.91
581	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Lodging	MO	1,142.2	22.2%	253.8	0.077	0.010	15	$516.00	25%	24%	44%	40%	34%	28%	5.60
582	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Lodging	MO	1,142.2	33.3%	380.7	0.116	0.015	15	$774.00	25%	24%	63%	40%	34%	27%	6.30
583	Cooling	Smart Thermostat	Work Prescriptive	Lodging	RETRO	6,555.3	14.2%	928.2	0.282	0.036	11	$175.00	100%	75%	55%	40%	74%	65%	19.64
584	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Lodging	MO	1,300.0	16.7%	216.7	0.066	0.009	8	$84.00	100%	75%	37%	40%	74%	57%	6.83
585	Cooling	Air Cooled Chiller	Work Prescriptive	Lodging	MO	1,167.2	9.0%	105.2	0.032	0.004	23	$126.00	50%	50%	62%	40%	45%	36%	14.44
586	Cooling	Water Cooled Chiller	Work Prescriptive	Lodging	MO	586.3	22.7%	133.3	0.041	0.005	23	$61.00	100%	75%	69%	40%	74%	54%	14.44
587	Cooling	Window Film	Work Prescriptive	Lodging	RETRO	6,363.6	4.4%	280.0	0.085	0.011	10	$153.81	75%	70%	53%	40%	66%	55%	2.75
588	Cooling	Triple Pane Windows	Work Custom	Lodging	MO	6,363.6	6.0%	381.8	0.116	0.015	25	$700.00	25%	25%	64%	40%	33%	22%	15.12
589	Cooling	Energy Recovery Ventilator	Work Custom	Lodging	RETRO	1,230.0	0.0%	0.0	0.000	0.000	15	$1,050.00	0%	0%	43%	40%	74%	56%	0.00
590	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Lodging	MO	3,144.2	5.0%	157.0	0.016	0.037	15	$135.00	59%	59%	44%	40%	56%	56%	0.91
591	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Lodging	MO	3,144.2	11.8%	370.5	0.038	0.087	15	$445.76	29%	29%	63%	40%	41%	41%	1.32
592	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Lodging	MO	3,144.2	17.6%	554.0	0.057	0.130	15	$520.06	35%	35%	55%	40%	45%	45%	1.42
593	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Lodging	MO	3,514.3	6.1%	215.7	0.022	0.051	15	$100.00	80%	80%	37%	40%	68%	68%	1.25
594	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Lodging	MO	3,514.3	11.4%	399.8	0.041	0.094	15	$171.08	100%	76%	62%	40%	74%	68%	1.42
595	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Lodging	MO	3,637.8	6.6%	238.7	0.024	0.056	15	$100.00	100%	80%	69%	40%	74%	69%	1.38
596	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Lodging	MO	3,637.8	11.9%	433.9	0.044	0.102	15	$158.10	100%	82%	53%	40%	74%	70%	1.54
597	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Lodging	MO	3,805.2	6.5%	245.7	0.025	0.058	15	$100.00	100%	80%	64%	40%	74%	69%	1.42
598	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Lodging	MO	3,805.2	12.4%	472.2	0.048	0.111	15	$201.80	100%	64%	43%	40%	74%	65%	1.68
599	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Lodging	MO	3,640.6	42.5%	1,548.2	0.159	0.364	25	$4,361.00	2%	2%	44%	40%	41%	32%	10.57
600	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Lodging	MO	3,640.6	45.9%	1,671.3	0.171	0.393	25	$4,361.00	2%	2%	63%	40%	41%	32%	10.57
601	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Lodging	MO	7,146.4	16.7%	1,191.1	0.122	0.280	15	$84.00	100%	85%	55%	40%	74%	74%	7.70
602	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Lodging	MO	50,000.0	1.0%	500.0	0.051	0.117	20	$200.70	100%	75%	37%	40%	74%	56%	9.28
603	Hot Water	Heat Pump Water Heater	Work Prescriptive	Lodging	MO	22,206.1	73.3%	16,284.5	1.150	3.151	15	$1,797.00	100%	75%	62%	40%	86%	82%	45.57

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
604	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Lodging	RETRO	122.5	32.4%	39.7	0.003	0.008	10	$8.00	100%	75%	8%	50%	90%	88%	12.34
605	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Lodging	RETRO	18,058.7	54.2%	9,788.8	0.691	1.894	5	$54.00	100%	75%	6%	50%	90%	88%	67.74
606	Hot Water	Ozone Commercial Laundry	Work Custom	Lodging	MO	2,984.0	25.0%	746.0	0.053	0.144	10	$20,309.70	0%	0%	7%	50%	44%	36%	5.19
607	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Lodging	RETRO	995.8	75.8%	754.8	0.000	0.088	10	$97.00	100%	75%	5%	50%	84%	80%	4.73
608	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Lodging	RETRO	1,743.6	71.0%	1,238.6	0.000	0.144	10	$123.81	100%	75%	5%	50%	84%	81%	7.77
609	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Lodging	RETRO	2,490.4	66.6%	1,658.5	0.000	0.193	10	$134.35	100%	75%	7%	50%	84%	82%	7.50
610	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Lodging	RETRO	3,984.1	64.5%	2,570.2	0.000	0.299	10	$196.16	100%	75%	6%	50%	84%	81%	9.92
611	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Lodging	RETRO	9,467.3	70.4%	6,665.7	0.000	0.777	10	$319.31	100%	63%	4%	50%	84%	83%	8.36
612	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Lodging	RETRO	488.8	75.8%	370.5	0.000	0.043	10	$97.00	75%	75%	7%	50%	81%	77%	2.32
613	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Lodging	RETRO	855.9	71.0%	608.0	0.000	0.071	10	$123.81	100%	75%	6%	40%	84%	78%	3.81
614	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Lodging	RETRO	1,222.5	66.6%	814.1	0.000	0.095	10	$134.35	100%	75%	23%	40%	84%	80%	3.68
615	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Lodging	RETRO	1,955.7	64.5%	1,261.6	0.000	0.147	10	$196.16	100%	75%	3%	40%	84%	79%	4.87
616	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Lodging	RETRO	4,647.2	70.4%	3,272.0	0.000	0.381	10	$319.31	100%	63%	7%	40%	84%	82%	4.10
617	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Lodging	RETRO	177.9	73.8%	131.2	0.011	0.015	15	$59.00	75%	75%	0%	40%	79%	73%	2.25
618	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Lodging	RETRO	128.4	51.4%	66.0	0.006	0.008	10	$15.00	100%	75%	14%	40%	84%	77%	4.67
619	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Lodging	RETRO	132.5	34.0%	45.1	0.004	0.005	15	$22.00	75%	68%	19%	40%	79%	77%	1.29
620	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Lodging	RETRO	259.6	51.4%	133.5	0.011	0.016	15	$61.00	75%	75%	38%	40%	79%	70%	3.82
621	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Lodging	RETRO	384.9	54.0%	208.0	0.017	0.024	15	$76.00	100%	75%	5%	40%	84%	72%	5.96
622	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Lodging	RETRO	512.9	54.3%	278.3	0.023	0.032	15	$104.00	100%	75%	2%	50%	84%	71%	7.97
623	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Lodging	RETRO	259.0	50.3%	130.3	0.011	0.015	15	$46.67	100%	86%	9%	50%	84%	81%	1.40
624	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Lodging	RETRO	683.2	53.2%	363.2	0.031	0.042	15	$152.00	100%	75%	1%	50%	84%	72%	3.90
625	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Lodging	RETRO	715.1	67.0%	479.2	0.040	0.056	15	$42.88	100%	93%	1%	50%	84%	83%	5.15
626	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Lodging	RETRO	1,339.1	57.0%	763.5	0.064	0.089	15	$48.07	100%	83%	1%	50%	84%	83%	8.20
627	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Lodging	RETRO	5,374.7	72.3%	3,886.2	0.326	0.452	15	$187.94	100%	75%	8%	50%	84%	82%	41.75
628	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Lodging	RETRO	114.3	100.0%	114.3	0.010	0.013	11	$18.50	100%	75%	11%	50%	84%	78%	13.08
629	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Lodging	RETRO	593.9	30.0%	178.2	0.015	0.021	15	$65.40	100%	75%	19%	50%	84%	74%	3.83
630	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Lodging	RETRO	760.7	28.0%	213.0	0.018	0.025	15	$57.50	100%	100%	4%	50%	84%	84%	1.59
631	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Lodging	RETRO	339.3	38.0%	128.9	0.011	0.015	15	$75.00	100%	100%	1%	85%	84%	84%	0.74
632	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Lodging	RETRO	339.3	61.0%	207.0	0.017	0.024	15	$56.00	100%	75%	1%	85%	84%	75%	7.16
633	Lighting_Int	Networked Lighting Control	Work Prescriptive	Lodging	RETRO	2.8	35.0%	1.0	0.000	0.000	15	$0.57	50%	50%	1%	85%	72%	63%	7.16
634	Lighting_Int	LED Exit Sign	Work Prescriptive	Lodging	RETRO	65.5	71.4%	46.8	0.004	0.005	5	$32.50	25%	25%	1%	85%	90%	88%	1.66
635	Lighting_Int	Advanced Lighting	Work Custom	Lodging	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	1%	85%	35%	26%	7.16
636	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Lodging	RETRO	385.4	61.4%	236.8	0.025	0.031	5	$233.00	6%	6%	1%	85%	52%	49%	3.12
637	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Lodging	MO	5.3	50.0%	2.6	0.000	0.000	20	$1.04	100%	75%	1%	85%	81%	49%	9.13
638	Misc	High Efficiency Hand Dryers	Work Prescriptive	Lodging	MO	261.6	83.0%	217.2	0.023	0.028	10	$483.00	3%	3%	1%	85%	65%	60%	5.62
639	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Lodging	RETRO	3,125.1	3.7%	114.4	0.012	0.015	15	$59.00	75%	75%	1%	85%	81%	78%	7.58
640	Misc	Miscellaneous Custom	Work Custom	Lodging	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	69%	0%	76%	49%	5.62
641	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Lodging	MO	3,628.1	27.7%	1,006.2	0.119	0.116	15	$198.32	100%	75%	53%	0%	81%	75%	5.86
642	Motors	Power Drive Systems	Work Custom	Lodging	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	64%	0%	81%	58%	7.77
643	Motors	Switch Reluctance Motors	Work Midstream	Lodging	MO	56,602.2	30.6%	17,320.3	2.050	1.992	15	$527.50	100%	100%	43%	0%	81%	81%	15.30
644	Motors	Advanced Motors	Work Custom	Lodging	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	44%	0%	81%	54%	7.77
645	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Lodging	MO	418.0	26.3%	110.0	0.012	0.014	6	$0.00	0%	0%	63%	0%	97%	96%	0.00
646	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Lodging	RETRO	188.2	57.7%	108.6	0.012	0.014	7	$10.00	100%	65%	55%	0%	81%	79%	4.19
647	Plug_Office	Smart Socket	Work Prescriptive	Lodging	RETRO	79.9	60.6%	48.4	0.005	0.006	7	$9.00	100%	75%	37%	0%	81%	75%	4.19
648	Plug_Office	Energy Star Server	Work Prescriptive	Lodging	MO	2,166.7	30.0%	650.0	0.070	0.084	9	$300.95	50%	50%	62%	0%	70%	63%	5.17
649	Plug_Office	Server Virtualization	Work Custom	Lodging	RETRO	2,166.7	13.9%	301.1	0.032	0.039	9	$26.97	100%	67%	99%	15%	81%	59%	5.17
650	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Lodging	RETRO	86,783.0	18.2%	15,778.0	1.698	2.037	15	$480.00	100%	100%	99%	15%	81%	81%	14.96
651	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Lodging	RETRO	764.0	46.9%	358.0	0.039	0.046	15	$82.00	100%	75%	99%	15%	81%	73%	7.58
652	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Lodging	MO	8,940.1	25.3%	2,264.8	0.244	0.292	20	$750.00	100%	75%	99%	15%	81%	68%	9.13
653	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Lodging	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	99%	15%	81%	55%	5.62
654	Plug_Office	Advanced IT	Work Custom	Lodging	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	99%	15%	81%	60%	2.54
655	Refrigeration	Strip Curtains	Work Prescriptive	Lodging	RETRO	0.0	0.0%	0.0	0.000	0.000	4	$10.22	0%	0%	99%	15%	74%	74%	0.00
656	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Lodging	RETRO	1,228.0	25.0%	307.0	0.042	0.034	15	$431.00	25%	25%	99%	15%	48%	40%	5.97
657	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Lodging	RETRO	2,883.6	55.0%	1,586.0	0.218	0.176	15	$305.00	100%	75%	99%	15%	86%	84%	22.03
658	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Lodging	RETRO	1,297.6	22.6%	293.0	0.040	0.033	13	$161.75	75%	75%	99%	15%	66%	49%	7.33
659	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Lodging	RETRO	3,157.9	47.5%	1,500.0	0.206	0.167	15	$1,170.00	50%	50%	99%	15%	54%	43%	8.10
660	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Lodging	RETRO	578.6	41.5%	240.1	0.033	0.027	10	$79.50	100%	75%	99%	15%	74%	62%	3.46
661	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Lodging	RETRO	1,259,892.8	0.2%	2,398.7	0.329	0.267	8	$502.00	100%	75%	99%	15%	74%	63%	28.83
662	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Lodging	RETRO	45,880.0	10.0%	4,588.0	0.630	0.510	10	$311.54	100%	88%	99%	15%	74%	74%	6.01
663	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Lodging	RETRO	1,558.3	50.0%	779.1	0.107	0.087	15	$390.00	75%	75%	99%	15%	67%	58%	2.52
664	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Lodging	RETRO	2,883.6	55.0%	1,586.0	0.218	0.176	15	$305.00	100%	75%	99%	15%	86%	84%	22.03
665	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Lodging	RETRO	2,090.6	24.1%	504.6	0.069	0.056	10	$96.00	100%	75%	99%	15%	74%	67%	5.19
666	Refrigeration	Night Covers for Coolers	Work Prescriptive	Lodging	RETRO	1,510.5	9.0%	136.0	0.019	0.015	5	$42.00	50%	50%	99%	15%	69%	64%	3.33
667	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Lodging	RETRO	2,016.2	32.5%	655.3	0.090	0.073	10	$90.77	100%	75%	99%	15%	74%	68%	9.45
668	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Lodging	RETRO	1,259,892.8	0.6%	6,948.8	0.954	0.772	8	$502.00	100%	75%	99%	15%	74%	70%	83.53
669	Refrigeration	Night Covers for Freezers	Work Prescriptive	Lodging	RETRO	2,349.3	9.0%	211.3	0.029	0.023	5	$42.00	100%	75%	99%	15%	74%	66%	3.33
670	Refrigeration	Refrigeration - Custom	Work Custom	Lodging	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	99%	15%	68%	42%	6.01

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
671	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Lodging	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	99%	15%	71%	49%	3.33
672	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Lodging	MO	1,277.5	12.0%	153.3	0.021	0.017	14	$500.00	2%	2%	99%	15%	52%	45%	7.72
673	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Lodging	RETRO	1,662.9	23.5%	390.1	0.054	0.043	5	$245.00	25%	25%	99%	15%	52%	46%	3.33
674	Refrigeration	Commercial Ice Marker	Work Prescriptive	Lodging	MO	5,550.9	7.9%	440.3	0.060	0.049	9	$222.00	50%	50%	99%	15%	61%	55%	3.65
675	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Lodging	MO	114.6	73.7%	84.5	0.012	0.009	9	$11.00	100%	75%	99%	15%	74%	68%	11.19
676	Refrigeration	Advanced Refrigeration	Work Custom	Lodging	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	99%	15%	31%	19%	9.75
677	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Lodging	RETRO	10,559.5	59.0%	6,229.3	1.398	0.743	15	$2,250.00	100%	75%	99%	15%	76%	60%	12.03
678	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Lodging	RETRO	29,206.5	3.1%	905.4	0.176	0.093	15	$381.00	100%	75%	99%	15%	76%	58%	9.13
679	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Lodging	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	99%	15%	74%	42%	8.21
680	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Lodging	RETRO	5,122.4	19.3%	987.8	0.140	0.124	15	$260.00	100%	75%	99%	15%	74%	63%	8.21
681	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Lodging	RETRO	2,045.0	20.0%	409.0	0.058	0.051	10	$235.60	50%	50%	99%	15%	59%	48%	6.08
682	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Lodging	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	99%	15%	31%	19%	5.76
683	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Lodging	RETRO	0.0	0.0%	0.0	0.000	0.000	10	$0.00	0%	0%	99%	15%	74%	74%	0.00
684	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Lodging	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	99%	15%	74%	53%	8.21
685	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Lodging	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	99%	15%	48%	40%	6.08
686	WholeBldg_HVAC	Advanced HVAC	Work Custom	Lodging	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	75%	75%	99%	15%	67%	39%	8.21
687	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Lodging	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	99%	15%	81%	66%	8.21
688	WholeBldg	COM Competitions	Work Custom	Lodging	RETRO	52.6	1.9%	1.0	0.000	0.000	2	$0.04	100%	100%	99%	15%	75%	56%	2.06
689	WholeBldg	Business Energy Reports	Work Custom	Lodging	RETRO	312.5	0.3%	1.0	0.000	0.000	2	$0.20	30%	30%	99%	15%	75%	56%	1.42
690	WholeBldg	Building Benchmarking	Work Custom	Lodging	RETRO	263.2	0.4%	1.0	0.000	0.000	2	$0.22	27%	27%	99%	15%	75%	56%	1.42
691	WholeBldg	Strategic Energy Management	Work SEM	Lodging	RETRO	0.0	0.0%	0.0	0.000	0.000	5	$0.27	0%	0%	99%	15%	75%	56%	0.00
692	WholeBldg	BEIMS	Work Prescriptive	Lodging	RETRO	20.0	5.0%	1.0	0.000	0.000	2	$0.44	14%	14%	99%	15%	75%	56%	1.42
693	WholeBldg	Building Operator Certification	Work SEM	Lodging	RETRO	14,600.0	0.3%	36.5	0.005	0.005	3	$0.29	100%	100%	99%	15%	75%	56%	15.89
694	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Lodging	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	0%	31%	56%	36%	12.32
695	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Lodging	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	0%	31%	81%	68%	8.21
696	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Retail	MO	19,496.1	38.6%	7,532.5	1.841	0.945	12	$2,270.00	100%	75%	0%	31%	81%	70%	8.57
697	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Retail	MO	10,863.7	19.0%	2,064.2	1.049	0.259	12	$960.00	100%	75%	1%	31%	81%	63%	12.47
698	Cooking	Commercial Electric Griddle	Work Prescriptive	Retail	MO	17,056.0	15.2%	2,596.0	1.320	0.326	12	$0.00	0%	0%	0%	31%	81%	81%	0.00
699	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Retail	MO	16,914.5	79.9%	13,506.7	6.865	1.695	12	$2,757.00	100%	75%	1%	31%	81%	72%	101.10
700	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Retail	MO	35,655.0	44.2%	15,765.8	2.587	3.483	16	$466.50	100%	100%	0%	31%	81%	81%	18.26
701	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Retail	MO	38,282.0	32.1%	12,278.8	2.015	2.712	15	$1,550.00	100%	75%	1%	31%	81%	77%	8.62
702	Cooking	Energy efficient electric fryer	Work Prescriptive	Retail	MO	18,955.0	17.3%	3,274.0	1.664	0.411	12	$1,500.00	100%	75%	0%	31%	81%	61%	245.06
703	Cooking	Insulated Holding Cabinets	Work Prescriptive	Retail	MO	1,478.3	36.9%	545.3	0.277	0.068	12	$1,000.00	25%	24%	30%	24%	42%	39%	4.08
704	Cooking	Advanced Cooking	Work Custom	Retail	RETRO	250.0	0.4%	1.0	0.001	0.000	12	$13.53	0%	0%	16%	24%	31%	23%	12.47
705	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Retail	RETRO	1,248.0	39.8%	496.1	0.080	0.057	3	$8.00	100%	100%	16%	24%	81%	81%	8.13
706	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Retail	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	28%	24%	78%	55%	3.51
707	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Retail	MO	23,741.6	20.8%	4,935.1	0.793	0.570	13	$3,367.84	50%	50%	19%	24%	66%	55%	5.71
708	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Retail	RETRO	476,153.6	0.4%	1,969.7	0.316	0.227	10	$244.00	100%	100%	22%	24%	81%	81%	3.06
709	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Retail	MO	1,375.3	50.0%	687.6	0.110	0.079	15	$57.00	100%	72%	8%	24%	81%	80%	8.52
710	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Retail	MO	608.0	15.9%	96.6	0.047	0.001	15	$153.28	50%	31%	0%	24%	42%	33%	4.16
711	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Retail	MO	608.0	20.6%	125.0	0.061	0.001	15	$214.59	50%	29%	9%	24%	41%	32%	3.59
712	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Retail	MO	608.0	31.9%	194.0	0.095	0.002	15	$398.52	25%	24%	1%	50%	34%	29%	3.71
713	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Retail	MO	668.7	9.1%	60.8	0.030	0.001	15	$71.00	50%	42%	1%	50%	46%	41%	2.62
714	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Retail	MO	668.7	13.3%	89.2	0.044	0.001	15	$109.23	50%	40%	1%	50%	45%	40%	2.56
715	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Retail	MO	668.7	23.5%	157.4	0.077	0.001	15	$218.46	50%	36%	1%	50%	44%	37%	3.01
716	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Retail	RETRO	724.5	7.0%	50.7	0.025	0.000	3	$11.42	75%	64%	1%	50%	71%	60%	3.65
717	Cooling	Air Side Economizer	Work Custom	Retail	RETRO	608.0	20.0%	121.6	0.060	0.001	10	$126.67	50%	37%	1%	50%	48%	40%	10.65
718	Cooling	HVAC Occupancy Controls	Work Custom	Retail	RETRO	632.6	20.0%	126.5	0.062	0.001	15	$197.50	50%	32%	1%	50%	44%	36%	14.35
719	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Retail	MO	621.0	12.5%	77.6	0.038	0.001	15	$117.00	50%	33%	1%	50%	43%	34%	4.18
720	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Retail	MO	621.0	22.2%	138.0	0.068	0.001	15	$516.00	6%	6%	1%	50%	34%	24%	3.96
721	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Retail	MO	621.0	33.3%	207.0	0.102	0.002	15	$774.00	5%	5%	1%	73%	34%	24%	4.45
722	Cooling	Smart Thermostat	Work Prescriptive	Retail	RETRO	3,563.9	14.2%	504.7	0.248	0.005	11	$175.00	100%	75%	0%	73%	74%	58%	13.88
723	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Retail	MO	706.8	16.7%	117.8	0.058	0.001	8	$84.00	50%	46%	0%	73%	55%	44%	8.89
724	Cooling	Air Cooled Chiller	Work Prescriptive	Retail	MO	634.6	9.0%	57.2	0.028	0.001	23	$126.00	50%	28%	1%	73%	37%	25%	18.76
725	Cooling	Water Cooled Chiller	Work Prescriptive	Retail	MO	318.8	22.7%	72.4	0.036	0.001	23	$61.00	100%	73%	0%	73%	74%	42%	18.76
726	Cooling	Window Film	Work Prescriptive	Retail	RETRO	6,363.6	4.4%	280.0	0.138	0.003	10	$153.81	100%	70%	2%	73%	74%	55%	3.58
727	Cooling	Triple Pane Windows	Work Custom	Retail	MO	6,363.6	6.0%	381.8	0.188	0.003	25	$700.00	50%	35%	0%	73%	40%	22%	19.63
728	Cooling	Energy Recovery Ventilator	Work Custom	Retail	RETRO	668.7	5.2%	34.7	0.017	0.000	15	$1,050.00	0%	0%	1%	73%	31%	19%	14.35
729	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Retail	MO	2,264.2	4.8%	109.5	0.018	0.024	15	$135.00	59%	59%	0%	73%	49%	49%	0.72
730	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Retail	MO	2,264.2	11.2%	252.9	0.042	0.056	15	$445.76	29%	29%	68%	10%	41%	35%	1.02
731	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Retail	MO	2,264.2	16.2%	367.8	0.060	0.081	15	$520.06	35%	35%	83%	10%	41%	40%	1.07
732	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Retail	MO	2,541.8	6.0%	152.3	0.025	0.034	15	$100.00	80%	80%	83%	10%	66%	66%	1.00
733	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Retail	MO	2,541.8	11.2%	283.8	0.047	0.063	15	$171.08	76%	82%	70%	10%	66%	66%	1.15
734	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Retail	MO	2,628.0	6.4%	166.9	0.027	0.037	15	$100.00	80%	83%	80%	10%	67%	67%	1.09
735	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Retail	MO	2,628.0	11.7%	306.2	0.050	0.068	15	$158.10	100%	96%	74%	10%	74%	69%	1.24
736	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Retail	MO	2,737.6	6.1%	168.3	0.028	0.037	15	$100.00	80%	83%	91%	10%	67%	67%	1.10
737	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Retail	MO	2,737.6	12.1%	330.1	0.054	0.073	15	$201.80	75%	81%	97%	10%	65%	62%	1.33

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
738	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Retail	MO	2,630.3	45.4%	1,194.7	0.196	0.264	25	$4,361.00	2%	2%	90%	10%	41%	32%	11.99
739	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Retail	MO	2,630.3	48.6%	1,279.1	0.210	0.283	25	$4,361.00	2%	2%	100%	25%	41%	32%	11.99
740	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Retail	MO	5,446.2	16.7%	907.7	0.149	0.201	15	$84.00	100%	65%	100%	25%	74%	72%	8.74
741	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Retail	MO	50,000.0	1.0%	500.0	0.082	0.110	20	$200.70	100%	75%	100%	25%	74%	56%	10.53
742	Hot Water	Heat Pump Water Heater	Work Prescriptive	Retail	MO	16,398.4	73.3%	12,025.5	2.333	1.046	15	$1,797.00	100%	75%	100%	25%	86%	81%	44.29
743	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Retail	RETRO	288.3	32.2%	92.9	0.018	0.008	10	$8.00	100%	75%	100%	25%	90%	88%	38.08
744	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Retail	RETRO	18,058.7	54.2%	9,788.8	1.899	0.852	5	$54.00	100%	75%	100%	25%	90%	88%	89.18
745	Hot Water	Ozone Commercial Laundry	Work Custom	Retail	MO	2,984.0	25.0%	746.0	0.145	0.065	10	$20,309.70	0%	0%	100%	25%	44%	36%	6.83
746	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Retail	RETRO	995.8	75.8%	754.8	0.000	0.089	10	$97.00	100%	75%	100%	25%	84%	80%	4.73
747	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Retail	RETRO	1,743.6	71.0%	1,238.6	0.000	0.146	10	$123.81	100%	75%	100%	25%	84%	81%	7.77
748	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Retail	RETRO	2,490.4	66.6%	1,658.5	0.000	0.195	10	$134.35	100%	75%	100%	25%	84%	82%	7.50
749	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Retail	RETRO	3,984.1	64.5%	2,570.2	0.000	0.302	10	$196.16	100%	75%	100%	25%	84%	81%	9.92
750	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Retail	RETRO	9,467.3	70.4%	6,665.7	0.000	0.784	10	$319.31	100%	63%	100%	25%	84%	83%	8.36
751	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Retail	RETRO	488.8	75.8%	370.5	0.000	0.044	10	$97.00	75%	75%	100%	25%	81%	77%	2.32
752	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Retail	RETRO	855.9	71.0%	608.0	0.000	0.072	10	$123.81	100%	75%	100%	25%	84%	78%	3.81
753	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Retail	RETRO	1,222.5	66.6%	814.1	0.000	0.096	10	$134.35	100%	75%	100%	25%	84%	80%	3.68
754	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Retail	RETRO	1,955.7	64.5%	1,261.6	0.000	0.148	10	$196.16	100%	75%	100%	25%	84%	79%	4.87
755	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Retail	RETRO	4,647.2	70.4%	3,272.0	0.000	0.385	10	$319.31	100%	63%	100%	25%	84%	82%	4.10
756	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Direct Install	Retail	RETRO	170.9	73.8%	126.0	0.021	0.018	15	$59.00	100%	100%	100%	25%	84%	84%	1.11
757	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Direct Install	Retail	RETRO	123.4	51.4%	63.4	0.011	0.009	10	$15.00	100%	100%	100%	1%	84%	84%	1.64
758	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Direct Install	Retail	RETRO	127.3	34.0%	43.3	0.007	0.006	15	$22.00	100%	98%	100%	1%	84%	84%	1.03
759	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Direct Install	Retail	RETRO	249.4	51.4%	128.2	0.022	0.018	15	$61.00	100%	100%	100%	1%	84%	84%	1.10
760	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Direct Install	Retail	RETRO	369.7	54.0%	199.8	0.034	0.029	15	$76.00	100%	100%	100%	1%	84%	84%	1.37
761	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Direct Install	Retail	RETRO	492.7	54.3%	267.3	0.045	0.038	15	$104.00	100%	100%	100%	1%	84%	84%	1.34
762	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Direct Install	Retail	RETRO	248.8	50.3%	125.1	0.021	0.018	15	$46.67	100%	100%	100%	1%	84%	84%	1.40
763	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Direct Install	Retail	RETRO	656.3	53.2%	348.9	0.059	0.050	15	$152.00	100%	100%	100%	1%	84%	84%	1.20
764	Lighting_Int	LED Low-Bay Fixture	Work Direct Install	Retail	RETRO	686.9	67.0%	460.3	0.078	0.066	15	$42.88	100%	100%	100%	1%	84%	84%	5.60
765	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Direct Install	Retail	RETRO	1,286.4	57.0%	733.5	0.124	0.105	15	$48.07	100%	100%	100%	1%	84%	84%	7.95
766	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Direct Install	Retail	RETRO	5,162.9	72.3%	3,733.0	0.631	0.535	15	$187.94	100%	100%	23%	20%	84%	84%	10.36
767	Lighting_Int	Fluorescent Delamping	Work Direct Install	Retail	RETRO	109.8	100.0%	109.8	0.019	0.016	11	$18.50	100%	100%	21%	20%	84%	84%	2.47
768	Lighting_Int	Lighting Occupancy Sensor	Work Direct Install	Retail	RETRO	570.5	30.0%	171.2	0.029	0.025	15	$65.40	100%	100%	12%	20%	84%	84%	1.36
769	Lighting_Int	Lighting Daylight Sensor	Work Direct Install	Retail	RETRO	730.7	28.0%	204.6	0.035	0.029	15	$57.50	100%	100%	16%	20%	84%	84%	1.86
770	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Direct Install	Retail	RETRO	326.0	38.0%	123.9	0.021	0.018	15	$75.00	100%	100%	5%	20%	84%	84%	0.86
771	Lighting_Int	Luminaire-Level Lighting Controls	Work Direct Install	Retail	RETRO	472.4	61.0%	288.2	0.049	0.041	15	$56.00	100%	75%	21%	20%	84%	78%	8.69
772	Lighting_Int	Networked Lighting Control	Work Direct Install	Retail	RETRO	4.5	35.0%	1.6	0.000	0.000	15	$0.93	75%	75%	26%	20%	78%	63%	8.69
773	Lighting_Int	LED Exit Sign	Work Direct Install	Retail	RETRO	65.5	71.4%	46.8	0.008	0.007	5	$32.50	100%	100%	25%	20%	90%	88%	0.31
774	Lighting_Int	Advanced Lighting	Work Custom	Retail	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	17%	20%	35%	26%	8.69
775	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Retail	RETRO	385.4	61.4%	236.8	0.038	0.027	5	$233.00	6%	6%	23%	20%	52%	49%	3.51
776	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Retail	MO	0.0	0.0%	0.0	0.000	0.000	20	$1.04	0%	0%	21%	20%	81%	61%	0.00
777	Misc	High Efficiency Hand Dryers	Work Prescriptive	Retail	MO	1,909.5	83.0%	1,585.2	0.255	0.183	10	$483.00	100%	75%	12%	20%	81%	70%	6.32
778	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Retail	RETRO	3,125.1	3.7%	114.4	0.018	0.013	15	$59.00	75%	75%	16%	20%	81%	78%	8.52
779	Misc	Miscellaneous Custom	Work Custom	Retail	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	5%	20%	76%	49%	6.32
780	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Retail	MO	1,675.3	27.7%	464.6	0.012	0.129	15	$198.32	75%	75%	21%	20%	75%	69%	2.21
781	Motors	Power Drive Systems	Work Custom	Retail	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	26%	20%	81%	58%	6.35
782	Motors	Switch Reluctance Motors	Work Midstream	Retail	MO	28,430.4	30.6%	8,699.7	0.233	2.413	15	$527.50	100%	99%	25%	20%	81%	81%	6.35
783	Motors	Advanced Motors	Work Custom	Retail	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	17%	20%	81%	54%	6.35
784	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Retail	MO	418.0	26.3%	110.0	0.018	0.013	6	$0.00	0%	0%	9%	95%	97%	96%	0.00
785	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Retail	RETRO	188.2	57.7%	108.6	0.017	0.013	7	$10.00	100%	65%	12%	95%	81%	79%	4.71
786	Plug_Office	Smart Socket	Work Prescriptive	Retail	RETRO	79.9	60.6%	48.4	0.008	0.006	7	$9.00	100%	75%	24%	95%	81%	75%	4.71
787	Plug_Office	Energy Star Server	Work Prescriptive	Retail	MO	2,166.7	30.0%	650.0	0.104	0.075	9	$300.95	75%	75%	19%	95%	75%	63%	5.81
788	Plug_Office	Server Virtualization	Work Custom	Retail	RETRO	2,166.7	13.9%	301.1	0.048	0.035	9	$26.97	100%	67%	33%	95%	81%	59%	5.81
789	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Retail	RETRO	86,783.0	18.2%	15,778.0	2.534	1.820	15	$480.00	100%	100%	12%	95%	81%	81%	16.81
790	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Retail	RETRO	764.0	46.9%	358.0	0.057	0.041	15	$82.00	100%	75%	6%	95%	81%	73%	8.52
791	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Retail	MO	8,940.1	25.3%	2,264.8	0.364	0.261	20	$750.00	100%	75%	6%	95%	81%	68%	10.25
792	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Retail	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	18%	95%	81%	55%	6.32
793	Plug_Office	Advanced IT	Work Custom	Retail	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	27%	25%	81%	60%	2.86
794	Refrigeration	Strip Curtains	Work Prescriptive	Retail	RETRO	0.0	0.0%	0.0	0.000	0.000	4	$10.22	0%	0%	24%	25%	74%	74%	0.00
795	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Retail	RETRO	1,228.0	25.0%	307.0	0.043	0.034	15	$431.00	25%	25%	14%	25%	48%	40%	6.02
796	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Retail	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	18%	25%	86%	84%	22.22
797	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Retail	RETRO	1,297.6	22.6%	293.0	0.041	0.032	13	$161.75	75%	75%	6%	25%	66%	49%	7.39
798	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Retail	RETRO	3,157.9	47.5%	1,500.0	0.212	0.166	15	$1,170.00	50%	50%	24%	25%	54%	43%	8.17
799	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Retail	RETRO	578.6	41.5%	240.1	0.034	0.027	10	$79.50	100%	75%	30%	25%	74%	62%	3.49
800	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Retail	RETRO	1,259,892.8	0.2%	2,398.7	0.339	0.266	8	$502.00	100%	75%	30%	25%	74%	63%	29.09
801	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Retail	RETRO	45,880.0	10.0%	4,588.0	0.649	0.508	10	$311.54	100%	88%	20%	25%	74%	74%	6.06
802	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Retail	RETRO	1,558.3	50.0%	779.1	0.110	0.086	15	$390.00	75%	75%	27%	25%	67%	58%	2.55
803	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Retail	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	24%	25%	86%	84%	22.22
804	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Retail	RETRO	2,090.6	24.1%	504.6	0.071	0.056	10	$96.00	100%	75%	14%	25%	74%	67%	5.24

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
805	Refrigeration	Night Covers for Coolers	Work Prescriptive	Retail	RETRO	1,510.5	9.0%	136.0	0.019	0.015	5	$42.00	50%	50%	18%	25%	69%	64%	3.36
806	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Retail	RETRO	2,016.2	32.5%	655.3	0.093	0.073	10	$90.77	100%	75%	6%	25%	74%	68%	9.53
807	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Retail	RETRO	1,259,892.8	0.6%	6,948.8	0.983	0.769	8	$502.00	100%	75%	24%	25%	74%	70%	84.28
808	Refrigeration	Night Covers for Freezers	Work Prescriptive	Retail	RETRO	2,349.3	9.0%	211.3	0.030	0.023	5	$42.00	100%	75%	30%	25%	74%	66%	3.36
809	Refrigeration	Refrigeration - Custom	Work Custom	Retail	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	30%	25%	68%	42%	6.06
810	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Retail	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	20%	25%	71%	49%	3.36
811	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Retail	MO	1,277.5	12.0%	153.3	0.022	0.017	14	$500.00	2%	2%	27%	25%	52%	45%	7.79
812	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Retail	RETRO	1,662.9	23.5%	390.1	0.055	0.043	5	$245.00	25%	25%	24%	25%	52%	46%	3.36
813	Refrigeration	Commercial Ice Marker	Work Prescriptive	Retail	MO	5,550.9	7.9%	440.3	0.062	0.049	9	$222.00	50%	50%	14%	25%	61%	55%	3.68
814	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Retail	MO	114.6	73.7%	84.5	0.012	0.009	9	$11.00	100%	75%	18%	25%	74%	68%	11.29
815	Refrigeration	Advanced Refrigeration	Work Custom	Retail	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	6%	25%	31%	19%	9.84
816	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Retail	RETRO	13,400.3	59.0%	7,905.2	1.679	1.091	15	$2,250.00	100%	75%	24%	25%	76%	63%	14.93
817	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Retail	RETRO	14,669.9	3.1%	454.8	0.083	0.054	15	$381.00	50%	50%	30%	25%	55%	41%	8.95
818	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Retail	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	30%	25%	74%	42%	9.57
819	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Retail	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	20%	25%	74%	74%	0.00
820	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Retail	RETRO	1,662.5	20.0%	332.5	0.073	0.038	10	$235.60	50%	50%	27%	25%	56%	44%	7.09
821	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Retail	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	24%	25%	31%	19%	5.77
822	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Retail	RETRO	775.7	90.8%	704.7	0.154	0.081	10	$341.21	75%	75%	14%	25%	67%	54%	7.09
823	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Retail	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	18%	25%	74%	53%	9.57
824	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Retail	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	6%	25%	48%	40%	7.09
825	WholeBldg_HVAC	Advanced HVAC	Work Custom	Retail	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	24%	25%	74%	39%	9.57
826	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Retail	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	30%	25%	81%	66%	9.57
827	WholeBldg	COM Competitions	Work Custom	Retail	RETRO	52.6	1.9%	1.0	0.000	0.000	2	$0.04	100%	100%	30%	25%	75%	56%	2.39
828	WholeBldg	Business Energy Reports	Work Custom	Retail	RETRO	312.5	0.3%	1.0	0.000	0.000	2	$0.20	30%	30%	20%	25%	75%	56%	1.65
829	WholeBldg	Building Benchmarking	Work Custom	Retail	RETRO	97.1	1.0%	1.0	0.000	0.000	2	$0.22	27%	27%	27%	25%	75%	56%	1.65
830	WholeBldg	Strategic Energy Management	Work SEM	Retail	RETRO	0.0	0.0%	0.0	0.000	0.000	5	$0.27	0%	0%	24%	25%	75%	56%	0.00
831	WholeBldg	BEIMS	Work Prescriptive	Retail	RETRO	20.0	5.0%	1.0	0.000	0.000	2	$0.44	14%	14%	14%	25%	75%	56%	1.65
832	WholeBldg	Building Operator Certification	Work SEM	Retail	RETRO	18,200.0	0.3%	45.5	0.010	0.005	3	$0.29	100%	100%	18%	25%	75%	56%	23.03
833	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Retail	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	75%	60%	6%	25%	68%	36%	14.33
834	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Retail	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	24%	25%	81%	68%	9.57
835	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Office	MO	19,496.1	38.6%	7,532.5	1.841	0.802	12	$2,270.00	100%	75%	30%	25%	81%	70%	8.55
836	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Office	MO	10,863.7	19.0%	2,064.2	0.505	0.220	12	$960.00	100%	75%	30%	25%	81%	63%	8.55
837	Cooking	Commercial Electric Griddle	Work Prescriptive	Office	MO	17,056.0	15.2%	2,596.0	0.634	0.276	12	$0.00	0%	0%	20%	25%	81%	81%	0.00
838	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Office	MO	16,914.5	79.9%	13,506.7	3.301	1.438	12	$2,757.00	100%	75%	27%	25%	81%	72%	69.31
839	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Office	MO	35,655.0	44.2%	15,765.8	1.938	3.456	16	$466.50	100%	100%	24%	25%	81%	81%	16.90
840	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Office	MO	38,282.0	32.1%	12,278.8	1.509	2.692	15	$1,550.00	100%	75%	14%	25%	81%	77%	7.97
841	Cooking	Energy efficient electric fryer	Work Prescriptive	Office	MO	18,955.0	17.3%	3,274.0	0.800	0.349	12	$1,500.00	100%	75%	18%	25%	81%	61%	168.00
842	Cooking	Insulated Holding Cabinets	Work Prescriptive	Office	MO	1,478.3	36.9%	545.3	0.133	0.058	12	$1,000.00	25%	24%	6%	25%	42%	39%	2.80
843	Cooking	Advanced Cooking	Work Custom	Office	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	24%	25%	31%	23%	8.55
844	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Office	RETRO	1,248.0	39.8%	496.1	0.054	0.057	3	$8.00	100%	100%	30%	25%	81%	81%	7.26
845	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Office	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	30%	25%	78%	55%	3.13
846	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Office	MO	23,741.6	20.8%	4,935.1	0.538	0.564	13	$3,367.84	50%	50%	20%	25%	66%	55%	5.09
847	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Office	RETRO	476,153.6	0.4%	1,969.7	0.215	0.225	10	$244.00	100%	100%	12%	58%	81%	81%	2.73
848	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Office	MO	1,375.3	50.0%	687.6	0.075	0.079	15	$57.00	100%	72%	6%	32%	81%	80%	7.60
849	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Office	MO	1,773.3	15.9%	281.6	0.104	0.007	15	$153.28	100%	75%	12%	54%	74%	50%	10.27
850	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Office	MO	1,773.3	20.6%	364.5	0.134	0.008	15	$214.59	100%	75%	11%	27%	74%	49%	8.86
851	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Office	MO	1,773.3	31.9%	565.8	0.208	0.013	15	$398.52	100%	70%	11%	27%	74%	45%	9.17
852	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Office	MO	1,950.6	9.1%	177.3	0.065	0.004	15	$71.00	100%	75%	14%	27%	74%	59%	6.46
853	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Office	MO	1,950.6	13.3%	260.1	0.096	0.006	15	$109.23	100%	75%	14%	27%	74%	58%	6.32
854	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Office	MO	1,950.6	23.5%	459.0	0.169	0.011	15	$218.46	100%	75%	10%	27%	74%	55%	7.44
855	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Office	RETRO	2,113.2	7.0%	148.0	0.055	0.003	3	$11.42	100%	78%	14%	27%	74%	60%	3.09
856	Cooling	Air Side Economizer	Work Custom	Office	RETRO	1,773.3	20.0%	354.7	0.131	0.008	10	$126.67	100%	75%	12%	58%	74%	44%	9.02
857	Cooling	HVAC Occupancy Controls	Work Custom	Office	RETRO	1,845.1	20.0%	369.0	0.136	0.009	15	$197.50	100%	75%	6%	32%	74%	38%	12.15
858	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Office	MO	1,811.3	12.5%	226.4	0.083	0.005	15	$117.00	100%	75%	12%	54%	74%	51%	10.32
859	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Office	MO	1,811.3	22.2%	402.5	0.148	0.009	15	$516.00	50%	39%	11%	27%	45%	35%	9.78
860	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Office	MO	1,811.3	33.3%	603.8	0.222	0.014	15	$774.00	50%	39%	11%	27%	45%	35%	11.01
861	Cooling	Smart Thermostat	Work Prescriptive	Office	RETRO	10,395.5	14.2%	1,472.0	0.542	0.034	11	$175.00	100%	75%	14%	27%	74%	68%	34.30
862	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Office	MO	2,061.6	16.7%	343.6	0.127	0.008	8	$84.00	100%	75%	14%	27%	74%	64%	7.53
863	Cooling	Air Cooled Chiller	Work Prescriptive	Office	MO	1,851.0	9.0%	166.8	0.061	0.004	23	$126.00	100%	75%	10%	27%	74%	44%	15.90
864	Cooling	Water Cooled Chiller	Work Prescriptive	Office	MO	929.8	22.7%	211.3	0.078	0.005	23	$61.00	100%	75%	14%	27%	74%	62%	15.90
865	Cooling	Window Film	Work Prescriptive	Office	RETRO	6,363.6	4.4%	280.0	0.103	0.006	10	$153.81	75%	70%	6%	58%	66%	55%	3.03
866	Cooling	Triple Pane Windows	Work Custom	Office	MO	6,363.6	6.0%	381.8	0.141	0.009	25	$700.00	50%	35%	3%	32%	40%	22%	16.64
867	Cooling	Energy Recovery Ventilator	Work Custom	Office	RETRO	1,950.6	16.8%	327.3	0.121	0.008	15	$1,050.00	2%	2%	6%	54%	31%	19%	12.15
868	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Office	MO	5,033.2	5.0%	251.0	0.031	0.055	15	$135.00	75%	59%	5%	27%	66%	62%	1.51
869	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Office	MO	5,033.2	11.8%	591.9	0.073	0.130	15	$445.76	50%	50%	5%	27%	55%	47%	2.19
870	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Office	MO	5,033.2	17.6%	884.1	0.109	0.194	15	$520.06	75%	75%	6%	27%	66%	54%	2.36
871	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Office	MO	5,626.7	6.1%	345.0	0.042	0.076	15	$100.00	100%	80%	6%	27%	74%	71%	2.07

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
872	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Office	MO	5,626.7	11.4%	639.7	0.079	0.140	15	$171.08	100%	76%	4%	27%	74%	70%	2.37
873	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Office	MO	5,824.2	6.6%	381.6	0.047	0.084	15	$100.00	100%	80%	6%	27%	74%	71%	2.29
874	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Office	MO	5,824.2	11.9%	694.1	0.085	0.152	15	$158.10	100%	82%	3%	31%	74%	72%	2.57
875	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Office	MO	6,091.1	6.4%	392.6	0.048	0.086	15	$100.00	100%	80%	0%	31%	74%	71%	2.36
876	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Office	MO	6,091.1	12.4%	755.1	0.093	0.166	15	$201.80	100%	64%	0%	31%	74%	68%	2.79
877	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Office	MO	5,828.7	42.6%	2,485.2	0.305	0.545	25	$4,361.00	25%	25%	3%	31%	41%	32%	11.00
878	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Office	MO	5,828.7	46.0%	2,681.9	0.330	0.588	25	$4,361.00	25%	25%	5%	31%	41%	32%	11.00
879	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Office	MO	11,465.5	16.7%	1,910.9	0.235	0.419	15	$84.00	100%	100%	4%	31%	74%	74%	10.94
880	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Office	MO	50,000.0	1.0%	500.0	0.061	0.110	20	$200.70	100%	75%	10%	31%	74%	56%	9.65
881	Hot Water	Heat Pump Water Heater	Work Prescriptive	Office	MO	15,870.4	73.3%	11,638.3	2.201	1.805	15	$1,797.00	100%	75%	9%	31%	86%	81%	42.47
882	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Office	RETRO	427.8	32.4%	138.5	0.026	0.021	10	$8.00	100%	75%	5%	31%	90%	88%	56.24
883	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Office	RETRO	18,058.7	54.2%	9,788.8	1.851	1.518	5	$54.00	100%	75%	3%	31%	90%	88%	88.36
884	Hot Water	Ozone Commercial Laundry	Work Custom	Office	MO	2,984.0	25.0%	746.0	0.141	0.116	10	$20,309.70	0%	0%	0%	31%	44%	36%	6.77
885	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Office	RETRO	995.8	75.8%	754.8	0.000	0.089	10	$97.00	100%	75%	0%	31%	84%	80%	4.73
886	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Office	RETRO	1,743.6	71.0%	1,238.6	0.000	0.145	10	$123.81	100%	75%	3%	31%	84%	81%	7.77
887	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Office	RETRO	2,490.4	66.6%	1,658.5	0.000	0.195	10	$134.35	100%	75%	5%	31%	84%	82%	7.50
888	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Office	RETRO	3,984.1	64.5%	2,570.2	0.000	0.301	10	$196.16	100%	75%	4%	31%	84%	81%	9.92
889	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Office	RETRO	9,467.3	70.4%	6,665.7	0.000	0.782	10	$319.31	100%	63%	10%	31%	84%	83%	8.36
890	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Office	RETRO	488.8	75.8%	370.5	0.000	0.043	10	$97.00	75%	75%	9%	31%	81%	77%	2.32
891	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Office	RETRO	855.9	71.0%	608.0	0.000	0.071	10	$123.81	100%	75%	5%	31%	84%	78%	3.81
892	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Office	RETRO	1,222.5	66.6%	814.1	0.000	0.095	10	$134.35	100%	75%	17%	25%	84%	80%	3.68
893	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Office	RETRO	1,955.7	64.5%	1,261.6	0.000	0.148	10	$196.16	100%	75%	8%	25%	84%	79%	4.87
894	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Office	RETRO	4,647.2	70.4%	3,272.0	0.000	0.384	10	$319.31	100%	63%	17%	25%	84%	82%	4.10
895	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Office	RETRO	125.6	73.8%	92.6	0.009	0.010	15	$59.00	50%	50%	16%	25%	72%	69%	1.66
896	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Office	RETRO	90.7	51.4%	46.6	0.005	0.005	10	$15.00	100%	75%	15%	25%	84%	75%	3.45
897	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Office	RETRO	93.6	34.0%	31.8	0.003	0.003	15	$22.00	68%	68%	19%	25%	75%	75%	0.95
898	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Office	RETRO	183.3	51.4%	94.2	0.010	0.010	15	$61.00	50%	50%	18%	25%	71%	64%	2.82
899	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Office	RETRO	271.8	54.0%	146.9	0.015	0.015	15	$76.00	75%	75%	12%	25%	78%	67%	4.39
900	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Office	RETRO	362.1	54.3%	196.5	0.020	0.021	15	$104.00	75%	75%	19%	25%	78%	66%	5.88
901	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Office	RETRO	182.9	50.3%	92.0	0.009	0.010	15	$46.67	86%	98%	6%	25%	81%	81%	1.03
902	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Office	RETRO	482.4	53.2%	256.5	0.026	0.027	15	$152.00	75%	75%	3%	25%	78%	67%	2.88
903	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Office	RETRO	504.9	67.0%	338.3	0.034	0.036	15	$42.88	100%	93%	6%	25%	84%	83%	3.80
904	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Office	RETRO	945.6	57.0%	539.1	0.055	0.057	15	$48.07	100%	83%	5%	25%	84%	83%	6.05
905	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Office	RETRO	3,795.1	72.3%	2,744.0	0.279	0.288	15	$187.94	100%	75%	5%	25%	84%	81%	30.79
906	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Office	RETRO	80.7	100.0%	80.7	0.008	0.008	11	$18.50	100%	75%	6%	25%	84%	76%	9.64
907	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Office	RETRO	419.4	30.0%	125.8	0.013	0.013	15	$65.40	75%	75%	6%	25%	78%	70%	2.82
908	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Office	RETRO	537.1	28.0%	150.4	0.015	0.016	15	$57.50	100%	100%	4%	25%	84%	84%	1.17
909	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Office	RETRO	239.6	38.0%	91.1	0.009	0.010	15	$75.00	100%	100%	6%	25%	84%	84%	0.54
910	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Office	RETRO	362.5	61.0%	221.1	0.022	0.023	15	$56.00	100%	75%	4%	80%	84%	76%	7.48
911	Lighting_Int	Networked Lighting Control	Work Prescriptive	Office	RETRO	3.0	35.0%	1.0	0.000	0.000	15	$0.61	75%	75%	10%	80%	78%	63%	7.48
912	Lighting_Int	LED Exit Sign	Work Prescriptive	Office	RETRO	67.1	71.4%	47.9	0.005	0.005	5	$32.50	25%	25%	5%	80%	90%	88%	1.77
913	Lighting_Int	Advanced Lighting	Work Custom	Office	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	5%	80%	35%	26%	7.48
914	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Office	RETRO	385.4	61.4%	236.8	0.026	0.027	5	$233.00	6%	6%	4%	80%	52%	49%	3.13
915	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Office	MO	0.0	0.0%	0.0	0.000	0.000	20	$1.04	0%	0%	3%	80%	81%	61%	0.00
916	Misc	High Efficiency Hand Dryers	Work Prescriptive	Office	MO	261.6	83.0%	217.2	0.024	0.025	10	$483.00	3%	3%	2%	80%	65%	60%	5.64
917	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Office	RETRO	3,125.1	3.7%	114.4	0.012	0.013	15	$59.00	75%	75%	3%	80%	81%	78%	7.60
918	Misc	Miscellaneous Custom	Work Custom	Office	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	3%	80%	76%	49%	5.64
919	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Office	MO	3,090.2	27.7%	857.0	0.146	0.065	15	$198.32	100%	75%	3%	80%	81%	74%	5.56
920	Motors	Power Drive Systems	Work Custom	Office	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	1%	80%	81%	58%	8.65
921	Motors	Switch Reluctance Motors	Work Midstream	Office	MO	17,620.4	30.6%	5,391.8	0.918	0.406	15	$527.50	100%	61%	2%	80%	81%	79%	8.65
922	Motors	Advanced Motors	Work Custom	Office	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	2%	80%	81%	54%	8.65
923	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Office	MO	418.0	26.3%	110.0	0.012	0.013	6	$0.00	0%	0%	2%	80%	97%	96%	0.00
924	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Office	RETRO	188.2	57.7%	108.6	0.012	0.012	7	$10.00	100%	65%	3%	80%	81%	79%	4.20
925	Plug_Office	Smart Socket	Work Prescriptive	Office	RETRO	79.9	60.6%	48.4	0.005	0.006	7	$9.00	100%	75%	3%	80%	81%	75%	4.20
926	Plug_Office	Energy Star Server	Work Prescriptive	Office	MO	2,166.7	30.0%	650.0	0.071	0.074	9	$300.95	50%	50%	2%	80%	70%	63%	5.18
927	Plug_Office	Server Virtualization	Work Custom	Office	RETRO	2,166.7	13.9%	301.1	0.033	0.034	9	$26.97	100%	67%	3%	80%	81%	59%	5.18
928	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Office	RETRO	86,783.0	18.2%	15,778.0	1.720	1.803	15	$480.00	100%	100%	4%	25%	81%	81%	14.99
929	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Office	RETRO	764.0	46.9%	358.0	0.039	0.041	15	$82.00	100%	75%	10%	25%	81%	73%	7.60
930	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Office	MO	8,940.1	25.3%	2,264.8	0.247	0.259	20	$750.00	100%	75%	5%	25%	81%	68%	9.15
931	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Office	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	5%	25%	81%	55%	5.64
932	Plug_Office	Advanced IT	Work Custom	Office	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	4%	25%	81%	60%	2.55
933	Refrigeration	Strip Curtains	Work Prescriptive	Office	RETRO	0.0	0.0%	0.0	0.000	0.000	4	$10.22	0%	0%	3%	25%	74%	74%	0.00
934	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Office	RETRO	1,228.0	25.0%	307.0	0.043	0.034	15	$431.00	25%	25%	2%	25%	48%	40%	6.02
935	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Office	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	3%	25%	86%	84%	22.22
936	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Office	RETRO	1,297.6	22.6%	293.0	0.041	0.032	13	$161.75	75%	75%	3%	25%	66%	49%	7.39
937	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Office	RETRO	3,157.9	47.5%	1,500.0	0.212	0.166	15	$1,170.00	50%	50%	7%	26%	54%	43%	8.17
938	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Office	RETRO	578.6	41.5%	240.1	0.034	0.027	10	$79.50	100%	75%	16%	26%	74%	62%	3.49

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
939	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Office	RETRO	1,259,892.8	0.2%	2,398.7	0.339	0.266	8	$502.00	100%	75%	7%	26%	74%	63%	29.09
940	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Office	RETRO	45,880.0	10.0%	4,588.0	0.649	0.508	10	$311.54	100%	88%	8%	26%	74%	74%	6.06
941	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Office	RETRO	1,558.3	50.0%	779.1	0.110	0.086	15	$390.00	75%	75%	7%	26%	67%	58%	2.55
942	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Office	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	5%	26%	86%	84%	22.22
943	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Office	RETRO	2,090.6	24.1%	504.6	0.071	0.056	10	$96.00	100%	75%	3%	26%	74%	67%	5.24
944	Refrigeration	Night Covers for Coolers	Work Prescriptive	Office	RETRO	1,510.5	9.0%	136.0	0.019	0.015	5	$42.00	50%	50%	4%	26%	69%	64%	3.36
945	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Office	RETRO	2,016.2	32.5%	655.3	0.093	0.073	10	$90.77	100%	75%	4%	26%	74%	68%	9.53
946	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Office	RETRO	1,259,892.8	0.6%	6,948.8	0.983	0.769	8	$502.00	100%	75%	16%	55%	74%	70%	84.28
947	Refrigeration	Night Covers for Freezers	Work Prescriptive	Office	RETRO	2,349.3	9.0%	211.3	0.030	0.023	5	$42.00	100%	75%	8%	55%	74%	66%	3.36
948	Refrigeration	Refrigeration - Custom	Work Custom	Office	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	16%	55%	68%	42%	6.06
949	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Office	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	15%	55%	71%	49%	3.36
950	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Office	MO	1,277.5	12.0%	153.3	0.022	0.017	14	$500.00	2%	2%	15%	55%	52%	45%	7.79
951	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Office	RETRO	1,662.9	23.5%	390.1	0.055	0.043	5	$245.00	25%	25%	18%	55%	52%	46%	3.36
952	Refrigeration	Commercial Ice Marker	Work Prescriptive	Office	MO	5,550.9	7.9%	440.3	0.062	0.049	9	$222.00	50%	50%	18%	55%	61%	55%	3.68
953	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Office	MO	114.6	73.7%	84.5	0.012	0.009	9	$11.00	100%	75%	11%	55%	74%	68%	11.29
954	Refrigeration	Advanced Refrigeration	Work Custom	Office	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	18%	55%	31%	19%	9.84
955	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Office	RETRO	6,785.8	59.0%	4,003.1	0.705	0.516	15	$2,250.00	75%	75%	5%	55%	77%	74%	7.04
956	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Office	RETRO	9,092.0	3.1%	281.9	0.043	0.031	15	$381.00	25%	25%	3%	55%	37%	29%	8.37
957	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Office	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	5%	55%	74%	42%	8.34
958	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Office	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	5%	55%	74%	74%	0.00
959	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Office	RETRO	1,313.3	20.0%	262.7	0.039	0.030	10	$235.60	25%	25%	5%	55%	44%	41%	6.18
960	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Office	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	6%	55%	31%	19%	5.74
961	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Office	RETRO	2,169.5	49.6%	1,076.5	0.161	0.123	10	$341.21	100%	75%	6%	55%	77%	74%	6.18
962	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Office	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	4%	55%	74%	53%	8.34
963	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Office	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	6%	55%	48%	40%	6.18
964	WholeBldg_HVAC	Advanced HVAC	Work Custom	Office	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	3%	2%	74%	39%	8.34
965	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Office	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	1%	2%	81%	66%	8.34
966	WholeBldg	COM Competitions	Work Custom	Office	RETRO	52.6	1.9%	1.0	0.000	0.000	2	$0.04	100%	100%	2%	2%	75%	56%	2.09
967	WholeBldg	Business Energy Reports	Work Custom	Office	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.20	0%	0%	2%	2%	75%	56%	0.00
968	WholeBldg	Building Benchmarking	Work Custom	Office	RETRO	113.6	0.9%	1.0	0.000	0.000	2	$0.22	27%	27%	2%	2%	75%	56%	1.44
969	WholeBldg	Strategic Energy Management	Work SEM	Office	RETRO	33.3	3.0%	1.0	0.000	0.000	5	$0.27	75%	75%	3%	2%	75%	56%	3.43
970	WholeBldg	BEIMS	Work Prescriptive	Office	RETRO	28.6	3.5%	1.0	0.000	0.000	2	$0.44	14%	14%	3%	2%	75%	56%	1.44
971	WholeBldg	Building Operator Certification	Work SEM	Office	RETRO	20,140.0	0.2%	50.3	0.008	0.006	3	$0.29	100%	100%	2%	2%	75%	56%	22.25
972	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Office	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	3%	2%	56%	36%	12.50
973	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Office	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	6%	25%	81%	68%	8.34
974	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Warehouse	MO	19,496.1	38.6%	7,532.5	1.841	0.802	12	$2,270.00	100%	75%	14%	25%	81%	70%	8.55
975	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Warehouse	MO	10,863.7	19.0%	2,064.2	0.505	0.220	12	$960.00	100%	75%	6%	25%	81%	63%	8.55
976	Cooking	Commercial Electric Griddle	Work Prescriptive	Warehouse	MO	17,056.0	15.2%	2,596.0	0.634	0.276	12	$0.00	0%	0%	6%	25%	81%	81%	0.00
977	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Warehouse	MO	16,914.5	79.9%	13,506.7	3.301	1.438	12	$2,757.00	100%	75%	6%	25%	81%	72%	69.31
978	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Warehouse	MO	35,655.0	44.2%	15,765.8	2.393	3.812	16	$466.50	100%	100%	4%	25%	81%	81%	17.96
979	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Warehouse	MO	38,282.0	32.1%	12,278.8	1.864	2.969	15	$1,550.00	100%	75%	3%	25%	81%	77%	8.48
980	Cooking	Energy efficient electric fryer	Work Prescriptive	Warehouse	MO	18,955.0	17.3%	3,274.0	0.800	0.349	12	$1,500.00	100%	75%	3%	25%	81%	61%	168.00
981	Cooking	Insulated Holding Cabinets	Work Prescriptive	Warehouse	MO	1,478.3	36.9%	545.3	0.133	0.058	12	$1,000.00	25%	24%	3%	25%	42%	39%	2.80
982	Cooking	Advanced Cooking	Work Custom	Warehouse	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	5%	25%	31%	23%	8.55
983	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Warehouse	RETRO	1,248.0	39.8%	496.1	0.068	0.054	3	$8.00	100%	100%	2%	25%	81%	81%	7.72
984	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Warehouse	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	5%	25%	78%	55%	3.33
985	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Warehouse	MO	23,741.6	20.8%	4,935.1	0.672	0.536	13	$3,367.84	50%	50%	5%	25%	66%	55%	5.42
986	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Warehouse	RETRO	476,153.6	0.4%	1,969.7	0.268	0.214	10	$244.00	100%	100%	4%	25%	81%	81%	2.90
987	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Warehouse	MO	1,375.3	50.0%	687.6	0.094	0.075	15	$57.00	100%	72%	5%	25%	81%	80%	8.09
988	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Warehouse	MO	270.3	15.9%	42.9	0.020	0.000	15	$153.28	13%	13%	5%	25%	34%	24%	1.76
989	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Warehouse	MO	270.3	20.6%	55.6	0.025	0.000	15	$214.59	14%	13%	3%	25%	34%	24%	1.52
990	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Warehouse	MO	270.3	31.9%	86.2	0.039	0.000	15	$398.52	11%	11%	5%	25%	34%	24%	1.57
991	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Warehouse	MO	297.3	9.1%	27.0	0.012	0.000	15	$71.00	28%	19%	5%	25%	34%	28%	1.11
992	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Warehouse	MO	297.3	13.3%	39.6	0.018	0.000	15	$109.23	27%	18%	11%	25%	34%	27%	1.09
993	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Warehouse	MO	297.3	23.5%	70.0	0.032	0.000	15	$218.46	25%	21%	5%	25%	34%	24%	1.28
994	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Warehouse	RETRO	322.1	7.0%	22.6	0.010	0.000	3	$11.42	25%	25%	5%	25%	65%	60%	3.48
995	Cooling	Air Side Economizer	Work Custom	Warehouse	RETRO	270.3	20.0%	54.1	0.025	0.000	10	$126.67	25%	16%	5%	25%	48%	38%	10.16
996	Cooling	HVAC Occupancy Controls	Work Custom	Warehouse	RETRO	281.2	20.0%	56.2	0.026	0.000	15	$197.50	2%	2%	3%	25%	44%	34%	13.69
997	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Warehouse	MO	276.1	12.5%	34.5	0.016	0.000	15	$117.00	14%	14%	2%	25%	34%	24%	1.77
998	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Warehouse	MO	276.1	22.2%	61.4	0.028	0.000	15	$516.00	6%	6%	3%	25%	34%	24%	1.68
999	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Warehouse	MO	276.1	33.3%	92.0	0.042	0.000	15	$774.00	5%	5%	3%	25%	34%	24%	1.89
1000	Cooling	Smart Thermostat	Work Prescriptive	Warehouse	RETRO	1,584.5	14.2%	224.4	0.102	0.001	11	$175.00	75%	52%	3%	44%	63%	44%	5.89
1001	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Warehouse	MO	314.2	16.7%	52.4	0.024	0.000	8	$84.00	25%	20%	0%	44%	44%	36%	8.48
1002	Cooling	Air Cooled Chiller	Work Prescriptive	Warehouse	MO	282.1	9.0%	25.4	0.012	0.000	23	$126.00	1%	1%	3%	44%	34%	24%	17.91
1003	Cooling	Water Cooled Chiller	Work Prescriptive	Warehouse	MO	141.7	22.7%	32.2	0.015	0.000	23	$61.00	50%	32%	3%	44%	39%	28%	17.91
1004	Cooling	Window Film	Work Prescriptive	Warehouse	RETRO	6,363.6	4.4%	280.0	0.128	0.001	10	$153.81	100%	70%	5%	44%	74%	55%	3.41
1005	Cooling	Triple Pane Windows	Work Custom	Warehouse	MO	6,363.6	6.0%	381.8	0.174	0.002	25	$700.00	50%	35%	1%	44%	40%	22%	18.74

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1006	Cooling	Energy Recovery Ventilator	Work Custom	Warehouse	RETRO	297.3	0.0%	0.0	0.000	0.000	15	$1,050.00	0%	0%	5%	44%	74%	56%	0.00
1007	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Warehouse	MO	1,908.6	4.6%	87.9	0.013	0.021	15	$135.00	59%	59%	28%	44%	45%	45%	0.57
1008	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Warehouse	MO	1,908.6	10.3%	196.1	0.030	0.047	15	$445.76	29%	29%	4%	44%	41%	32%	0.79
1009	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Warehouse	MO	1,908.6	14.2%	271.7	0.041	0.066	15	$520.06	35%	35%	10%	35%	41%	35%	0.79
1010	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Warehouse	MO	2,156.1	5.8%	124.7	0.019	0.030	15	$100.00	80%	80%	5%	35%	65%	65%	0.81
1011	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Warehouse	MO	2,156.1	10.9%	234.2	0.036	0.057	15	$171.08	76%	76%	10%	35%	64%	64%	0.94
1012	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Warehouse	MO	2,225.5	6.0%	134.6	0.020	0.033	15	$100.00	80%	80%	9%	35%	65%	65%	0.88
1013	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Warehouse	MO	2,225.5	11.3%	250.4	0.038	0.061	15	$158.10	82%	79%	9%	35%	67%	67%	1.00
1014	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Warehouse	MO	2,304.4	5.7%	131.3	0.020	0.032	15	$100.00	80%	80%	11%	35%	65%	65%	0.85
1015	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Warehouse	MO	2,304.4	11.5%	266.1	0.040	0.064	15	$201.80	64%	65%	11%	35%	60%	60%	1.07
1016	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Warehouse	MO	2,227.7	49.6%	1,105.0	0.168	0.267	25	$4,361.00	2%	2%	7%	35%	41%	32%	11.94
1017	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Warehouse	MO	2,227.7	52.6%	1,171.0	0.178	0.283	25	$4,361.00	2%	2%	11%	35%	41%	32%	11.94
1018	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Warehouse	MO	4,958.9	16.7%	826.5	0.125	0.200	15	$84.00	100%	59%	94%	25%	74%	72%	8.68
1019	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Warehouse	MO	50,000.0	1.0%	500.0	0.076	0.121	20	$200.70	100%	75%	100%	25%	74%	56%	10.47
1020	Hot Water	Heat Pump Water Heater	Work Prescriptive	Warehouse	MO	10,590.6	73.3%	7,766.4	1.469	1.205	15	$1,797.00	100%	75%	96%	25%	86%	78%	28.34
1021	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Warehouse	RETRO	197.5	32.4%	63.9	0.012	0.010	10	$8.00	100%	75%	94%	25%	90%	88%	25.96
1022	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Warehouse	RETRO	18,058.7	54.2%	9,788.8	1.851	1.518	5	$54.00	100%	75%	90%	25%	90%	88%	88.36
1023	Hot Water	Ozone Commercial Laundry	Work Custom	Warehouse	MO	2,984.0	25.0%	746.0	0.141	0.116	10	$20,309.70	0%	0%	95%	25%	44%	36%	6.77
1024	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Warehouse	RETRO	995.8	75.8%	754.8	0.000	0.089	10	$97.00	100%	75%	85%	25%	84%	80%	4.73
1025	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Warehouse	RETRO	1,743.6	71.0%	1,238.6	0.000	0.146	10	$123.81	100%	75%	63%	25%	84%	81%	7.77
1026	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Warehouse	RETRO	2,490.4	66.6%	1,658.5	0.000	0.195	10	$134.35	100%	75%	90%	25%	84%	82%	7.50
1027	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Warehouse	RETRO	3,984.1	64.5%	2,570.2	0.000	0.303	10	$196.16	100%	75%	94%	25%	84%	81%	9.92
1028	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Warehouse	RETRO	9,467.3	70.4%	6,665.7	0.000	0.785	10	$319.31	100%	63%	100%	25%	84%	83%	8.36
1029	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Warehouse	RETRO	488.8	75.8%	370.5	0.000	0.044	10	$97.00	75%	75%	96%	25%	81%	77%	2.32
1030	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Warehouse	RETRO	855.9	71.0%	608.0	0.000	0.072	10	$123.81	100%	75%	94%	25%	84%	78%	3.81
1031	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Warehouse	RETRO	1,222.5	66.6%	814.1	0.000	0.096	10	$134.35	100%	75%	90%	25%	84%	80%	3.68
1032	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Warehouse	RETRO	1,955.7	64.5%	1,261.6	0.000	0.148	10	$196.16	100%	75%	95%	25%	84%	79%	4.87
1033	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Warehouse	RETRO	4,647.2	70.4%	3,272.0	0.000	0.385	10	$319.31	100%	63%	85%	25%	84%	82%	4.10
1034	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Warehouse	RETRO	122.4	73.8%	90.3	0.013	0.010	15	$59.00	75%	75%	63%	25%	77%	69%	1.78
1035	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Warehouse	RETRO	88.4	51.4%	45.4	0.007	0.005	10	$15.00	100%	75%	90%	25%	84%	75%	3.69
1036	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Warehouse	RETRO	91.2	34.0%	31.0	0.004	0.003	15	$22.00	68%	70%	40%	48%	75%	75%	1.02
1037	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Warehouse	RETRO	178.6	51.4%	91.8	0.013	0.010	15	$61.00	50%	50%	30%	33%	71%	64%	3.02
1038	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Warehouse	RETRO	264.8	54.0%	143.1	0.021	0.016	15	$76.00	75%	75%	26%	31%	78%	67%	4.71
1039	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Warehouse	RETRO	352.9	54.3%	191.5	0.028	0.021	15	$104.00	75%	75%	22%	65%	78%	65%	6.30
1040	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Warehouse	RETRO	178.2	50.3%	89.6	0.013	0.010	15	$46.67	86%	95%	35%	43%	80%	80%	1.11
1041	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Warehouse	RETRO	470.1	53.2%	249.9	0.036	0.027	15	$152.00	75%	75%	15%	42%	77%	66%	3.08
1042	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Warehouse	RETRO	492.0	67.0%	329.7	0.047	0.036	15	$42.88	100%	93%	32%	67%	84%	83%	4.07
1043	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Warehouse	RETRO	921.3	57.0%	525.3	0.076	0.058	15	$48.07	100%	83%	40%	26%	84%	83%	6.48
1044	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Warehouse	RETRO	3,697.8	72.3%	2,673.7	0.385	0.293	15	$187.94	100%	75%	40%	33%	84%	81%	32.99
1045	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Warehouse	RETRO	78.7	100.0%	78.7	0.011	0.009	11	$18.50	100%	75%	40%	10%	84%	76%	10.33
1046	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Warehouse	RETRO	408.6	30.0%	122.6	0.018	0.013	15	$65.40	75%	75%	30%	10%	78%	69%	3.02
1047	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Warehouse	RETRO	523.3	28.0%	146.5	0.021	0.016	15	$57.50	100%	100%	26%	10%	84%	84%	1.26
1048	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Warehouse	RETRO	233.5	38.0%	88.7	0.013	0.010	15	$75.00	100%	100%	22%	10%	84%	84%	0.58
1049	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Warehouse	RETRO	381.0	61.0%	232.4	0.033	0.025	15	$56.00	100%	75%	35%	10%	84%	76%	8.23
1050	Lighting_Int	Networked Lighting Control	Work Prescriptive	Warehouse	RETRO	3.1	35.0%	1.1	0.000	0.000	15	$0.64	75%	75%	15%	10%	78%	63%	8.23
1051	Lighting_Int	LED Exit Sign	Work Prescriptive	Warehouse	RETRO	61.3	71.4%	43.8	0.006	0.005	5	$32.50	25%	25%	32%	10%	90%	88%	1.78
1052	Lighting_Int	Advanced Lighting	Work Custom	Warehouse	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	40%	10%	35%	26%	8.23
1053	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Warehouse	RETRO	385.4	61.4%	236.8	0.032	0.026	5	$233.00	6%	6%	40%	10%	52%	49%	3.33
1054	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Warehouse	MO	0.0	0.0%	0.0	0.000	0.000	20	$1.04	0%	0%	55%	48%	81%	61%	0.00
1055	Misc	High Efficiency Hand Dryers	Work Prescriptive	Warehouse	MO	261.6	83.0%	217.2	0.030	0.024	10	$483.00	3%	3%	38%	33%	65%	60%	5.99
1056	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Warehouse	RETRO	3,125.1	3.7%	114.4	0.016	0.012	15	$59.00	75%	75%	42%	31%	81%	78%	8.09
1057	Misc	Miscellaneous Custom	Work Custom	Warehouse	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	57%	65%	76%	49%	5.99
1058	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Warehouse	MO	538.2	27.7%	149.3	0.026	0.014	15	$198.32	40%	40%	27%	43%	52%	52%	0.99
1059	Motors	Power Drive Systems	Work Custom	Warehouse	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	33%	42%	81%	58%	8.81
1060	Motors	Switch Reluctance Motors	Work Midstream	Warehouse	MO	40,629.6	30.6%	12,432.6	2.188	1.181	15	$527.50	100%	100%	55%	67%	81%	81%	12.46
1061	Motors	Advanced Motors	Work Custom	Warehouse	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	62%	26%	81%	54%	8.81
1062	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Warehouse	MO	418.0	26.3%	110.0	0.015	0.012	6	$0.00	0%	0%	57%	33%	97%	96%	0.00
1063	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Warehouse	RETRO	188.2	57.7%	108.6	0.015	0.012	7	$10.00	100%	65%	100%	10%	81%	79%	4.47
1064	Plug_Office	Smart Socket	Work Prescriptive	Warehouse	RETRO	79.9	60.6%	48.4	0.007	0.005	7	$9.00	100%	75%	100%	10%	81%	75%	4.47
1065	Plug_Office	Energy Star Server	Work Prescriptive	Warehouse	MO	2,166.7	30.0%	650.0	0.089	0.071	9	$300.95	50%	50%	100%	10%	70%	63%	5.51
1066	Plug_Office	Server Virtualization	Work Custom	Warehouse	RETRO	2,166.7	13.9%	301.1	0.041	0.033	9	$26.97	100%	67%	100%	10%	81%	59%	5.51
1067	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Warehouse	RETRO	86,783.0	18.2%	15,778.0	2.148	1.714	15	$480.00	100%	100%	100%	10%	81%	81%	15.95
1068	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Warehouse	RETRO	764.0	46.9%	358.0	0.049	0.039	15	$82.00	100%	75%	100%	10%	81%	73%	8.09
1069	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Warehouse	MO	8,940.1	25.3%	2,264.8	0.308	0.246	20	$750.00	100%	75%	100%	10%	81%	68%	9.73
1070	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Warehouse	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	100%	10%	81%	55%	5.99
1071	Plug_Office	Advanced IT	Work Custom	Warehouse	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	100%	10%	81%	60%	2.71
1072	Refrigeration	Strip Curtains	Work Prescriptive	Warehouse	RETRO	206.8	50.0%	103.4	0.015	0.011	4	$10.22	100%	61%	100%	1%	74%	72%	2.74

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1073	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Warehouse	RETRO	1,228.0	25.0%	307.0	0.043	0.034	15	$431.00	25%	25%	100%	1%	48%	40%	6.02
1074	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Warehouse	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	100%	1%	86%	84%	22.22
1075	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Warehouse	RETRO	1,297.6	22.6%	293.0	0.041	0.032	13	$161.75	75%	75%	100%	1%	66%	49%	7.39
1076	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Warehouse	RETRO	3,157.9	47.5%	1,500.0	0.212	0.166	15	$1,170.00	50%	50%	100%	1%	54%	43%	8.17
1077	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Warehouse	RETRO	578.6	41.5%	240.1	0.034	0.027	10	$79.50	100%	75%	100%	1%	74%	62%	3.49
1078	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Warehouse	RETRO	1,259,892.8	0.2%	2,398.7	0.339	0.266	8	$502.00	100%	75%	100%	1%	74%	63%	29.09
1079	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Warehouse	RETRO	45,880.0	10.0%	4,588.0	0.649	0.508	10	$311.54	100%	88%	100%	1%	74%	74%	6.06
1080	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Warehouse	RETRO	1,558.3	50.0%	779.1	0.110	0.086	15	$390.00	75%	75%	100%	1%	67%	58%	2.55
1081	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Warehouse	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	100%	20%	86%	84%	22.22
1082	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Warehouse	RETRO	2,090.6	24.1%	504.6	0.071	0.056	10	$96.00	100%	75%	100%	20%	74%	67%	5.24
1083	Refrigeration	Night Covers for Coolers	Work Prescriptive	Warehouse	RETRO	1,510.5	9.0%	136.0	0.019	0.015	5	$42.00	50%	50%	100%	20%	69%	64%	3.36
1084	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Warehouse	RETRO	2,016.2	32.5%	655.3	0.093	0.073	10	$90.77	100%	75%	100%	20%	74%	68%	9.53
1085	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Warehouse	RETRO	1,259,892.8	0.6%	6,948.8	0.983	0.769	8	$502.00	100%	75%	15%	20%	74%	70%	84.28
1086	Refrigeration	Night Covers for Freezers	Work Prescriptive	Warehouse	RETRO	2,349.3	9.0%	211.3	0.030	0.023	5	$42.00	100%	75%	100%	20%	74%	66%	3.36
1087	Refrigeration	Refrigeration - Custom	Work Custom	Warehouse	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	100%	20%	68%	42%	6.06
1088	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Warehouse	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	100%	20%	71%	49%	3.36
1089	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Warehouse	MO	1,277.5	12.0%	153.3	0.022	0.017	14	$500.00	2%	2%	100%	20%	52%	45%	7.79
1090	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Warehouse	RETRO	1,662.9	23.5%	390.1	0.055	0.043	5	$245.00	25%	25%	0%	20%	52%	46%	3.36
1091	Refrigeration	Commercial Ice Marker	Work Prescriptive	Warehouse	MO	5,550.9	7.9%	440.3	0.062	0.049	9	$222.00	50%	50%	0%	20%	61%	55%	3.68
1092	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Warehouse	MO	114.6	73.7%	84.5	0.012	0.009	9	$11.00	100%	75%	0%	20%	74%	68%	11.29
1093	Refrigeration	Advanced Refrigeration	Work Custom	Warehouse	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	0%	20%	31%	19%	9.84
1094	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Warehouse	RETRO	13,008.0	59.0%	7,673.8	1.389	1.059	15	$2,250.00	100%	75%	85%	20%	76%	63%	13.65
1095	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Warehouse	RETRO	20,964.7	3.1%	649.9	0.102	0.078	15	$381.00	75%	75%	0%	20%	68%	49%	8.47
1096	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Warehouse	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	0%	20%	74%	42%	8.36
1097	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	0%	20%	74%	74%	0.00
1098	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	10	$235.60	0%	0%	0%	20%	74%	74%	0.00
1099	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Warehouse	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	100%	0%	31%	19%	5.76
1100	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	10	$0.00	0%	0%	100%	0%	74%	74%	0.00
1101	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Warehouse	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	100%	0%	74%	53%	8.36
1102	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Warehouse	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	100%	0%	48%	40%	6.20
1103	WholeBldg_HVAC	Advanced HVAC	Work Custom	Warehouse	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	100%	0%	74%	39%	8.36
1104	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Warehouse	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	0%	81%	66%	8.36
1105	WholeBldg	COM Competitions	Work Custom	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.04	0%	0%	100%	0%	75%	56%	0.00
1106	WholeBldg	Business Energy Reports	Work Custom	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.20	0%	0%	100%	0%	75%	56%	0.00
1107	WholeBldg	Building Benchmarking	Work Custom	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.22	0%	0%	100%	0%	75%	56%	0.00
1108	WholeBldg	Strategic Energy Management	Work SEM	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	5	$0.27	0%	0%	100%	25%	75%	56%	0.00
1109	WholeBldg	BEIMS	Work Prescriptive	Warehouse	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.44	0%	0%	100%	25%	75%	56%	0.00
1110	WholeBldg	Building Operator Certification	Work SEM	Warehouse	RETRO	7,272.0	0.3%	18.2	0.003	0.002	3	$0.29	100%	100%	100%	25%	75%	56%	8.06
1111	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Warehouse	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	100%	25%	56%	36%	12.54
1112	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Warehouse	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	25%	81%	68%	8.36
1113	Cooking	Commercial Combination Oven (Electric)	Work Prescriptive	Other	MO	19,496.1	38.6%	7,532.5	1.406	0.859	12	$2,270.00	100%	75%	100%	25%	81%	70%	7.67
1114	Cooking	Commercial Electric Convection Oven	Work Prescriptive	Other	MO	10,863.7	19.0%	2,064.2	0.385	0.235	12	$960.00	75%	75%	100%	25%	75%	63%	7.67
1115	Cooking	Commercial Electric Griddle	Work Prescriptive	Other	MO	17,056.0	15.2%	2,596.0	0.485	0.296	12	$0.00	0%	0%	100%	25%	81%	81%	0.00
1116	Cooking	Commercial Electric Steam Cooker	Work Prescriptive	Other	MO	16,914.5	79.9%	13,506.7	2.522	1.540	12	$2,757.00	100%	75%	100%	25%	81%	72%	62.18
1117	Cooking	Dishwasher Low Temp Door (Energy Star)	Work Prescriptive	Other	MO	35,655.0	44.2%	15,765.8	2.212	3.601	16	$466.50	100%	100%	100%	20%	81%	81%	17.54
1118	Cooking	Dishwasher High Temp Door (Energy Star)	Work Prescriptive	Other	MO	38,282.0	32.1%	12,278.8	1.723	2.804	15	$1,550.00	100%	75%	100%	20%	81%	77%	8.28
1119	Cooking	Energy efficient electric fryer	Work Prescriptive	Other	MO	18,955.0	17.3%	3,274.0	0.611	0.373	12	$1,500.00	100%	75%	100%	20%	81%	61%	150.72
1120	Cooking	Insulated Holding Cabinets	Work Prescriptive	Other	MO	1,478.3	36.9%	545.3	0.102	0.062	12	$1,000.00	25%	24%	100%	20%	42%	39%	2.51
1121	Cooking	Advanced Cooking	Work Custom	Other	RETRO	250.0	0.4%	1.0	0.000	0.000	12	$13.53	0%	0%	100%	20%	31%	23%	7.67
1122	Compressed Air	Compressed Air Leak Repair	Work Prescriptive	Other	RETRO	1,248.0	39.8%	496.1	0.066	0.059	3	$8.00	100%	100%	100%	20%	81%	81%	7.68
1123	Compressed Air	Retro-commissioning_Compressed Air Optimization	Work Custom	Other	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	100%	20%	78%	55%	3.31
1124	Compressed Air	Efficient Air Compressors (VSD)	Work Prescriptive	Other	MO	23,741.6	20.8%	4,935.1	0.659	0.583	13	$3,367.84	50%	50%	100%	20%	66%	55%	5.39
1125	Compressed Air	No Loss Condensate Drain	Work Prescriptive	Other	RETRO	476,153.6	0.4%	1,969.7	0.263	0.233	10	$244.00	100%	100%	100%	20%	81%	81%	2.89
1126	Compressed Air	Efficient Air Nozzles	Work Prescriptive	Other	MO	1,375.3	50.0%	687.6	0.092	0.081	15	$57.00	100%	72%	80%	0%	81%	80%	8.04
1127	Cooling	Air Conditioner - 17 IEER (5-20 Tons)	Work Midstream	Other	MO	966.2	15.9%	153.5	0.064	0.003	15	$153.28	75%	50%	80%	0%	61%	41%	5.97
1128	Cooling	Air Conditioner - 18 IEER (5-20 Tons)	Work Midstream	Other	MO	966.2	20.6%	198.6	0.082	0.004	15	$214.59	50%	46%	80%	0%	47%	40%	5.15
1129	Cooling	Air Conditioner - 21 IEER (5-20 Tons)	Work Midstream	Other	MO	966.2	31.9%	308.3	0.128	0.006	15	$398.52	50%	38%	80%	0%	44%	36%	5.33
1130	Cooling	Air Conditioner - 14.3 IEER (20+ Tons)	Work Midstream	Other	MO	1,062.9	9.1%	96.6	0.040	0.002	15	$71.00	100%	68%	80%	0%	74%	48%	3.76
1131	Cooling	Air Conditioner - 15 IEER (20+ Tons)	Work Midstream	Other	MO	1,062.9	13.3%	141.7	0.059	0.003	15	$109.23	100%	64%	80%	0%	74%	46%	3.67
1132	Cooling	Air Conditioner - 17 IEER (20+ Tons)	Work Midstream	Other	MO	1,062.9	23.5%	250.1	0.103	0.005	15	$218.46	75%	57%	80%	0%	62%	44%	4.32
1133	Cooling	Comprehensive Rooftop Unit Quality Maintenance (AC Tune	Work Custom	Other	RETRO	1,151.4	7.0%	80.6	0.033	0.002	3	$11.42	100%	75%	80%	0%	74%	60%	3.30
1134	Cooling	Air Side Economizer	Work Custom	Other	RETRO	966.2	20.0%	193.2	0.080	0.004	10	$126.67	75%	58%	80%	0%	65%	40%	9.62
1135	Cooling	HVAC Occupancy Controls	Work Custom	Other	RETRO	1,005.3	20.0%	201.1	0.083	0.004	15	$197.50	75%	51%	100%	60%	61%	36%	12.96
1136	Cooling	Air Conditioner - 16 SEER (<5 Tons)	Work Midstream	Other	MO	986.9	12.5%	123.4	0.051	0.002	15	$117.00	75%	52%	100%	60%	61%	41%	6.00
1137	Cooling	Air Conditioner - 18 SEER(<5 Tons)	Work Midstream	Other	MO	986.9	22.2%	219.3	0.091	0.004	15	$516.00	25%	21%	100%	60%	34%	24%	5.68
1138	Cooling	Air Conditioner - 21 SEER (<5 Tons)	Work Midstream	Other	MO	986.9	33.3%	329.0	0.136	0.007	15	$774.00	25%	21%	100%	60%	34%	24%	6.40
1139	Cooling	Smart Thermostat	Work Prescriptive	Other	RETRO	5,664.3	14.2%	802.1	0.332	0.016	11	$175.00	100%	75%	100%	60%	74%	64%	19.93

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1140	Cooling	PTAC - 7,000 to 15,000 Btuh	Work Midstream	Other	MO	1,123.3	16.7%	187.2	0.077	0.004	8	$84.00	100%	73%	100%	60%	74%	54%	8.03
1141	Cooling	Air Cooled Chiller	Work Prescriptive	Other	MO	1,008.5	9.0%	90.9	0.038	0.002	23	$126.00	50%	44%	100%	60%	44%	34%	16.95
1142	Cooling	Water Cooled Chiller	Work Prescriptive	Other	MO	506.6	22.7%	115.1	0.048	0.002	23	$61.00	100%	75%	100%	60%	74%	50%	16.95
1143	Cooling	Window Film	Work Prescriptive	Other	RETRO	6,363.6	4.4%	280.0	0.116	0.006	10	$153.81	100%	70%	100%	60%	74%	55%	3.23
1144	Cooling	Triple Pane Windows	Work Custom	Other	MO	6,363.6	6.0%	381.8	0.158	0.008	25	$700.00	50%	35%	100%	0%	40%	22%	17.74
1145	Cooling	Energy Recovery Ventilator	Work Custom	Other	RETRO	1,062.9	0.0%	0.0	0.000	0.000	15	$1,050.00	0%	0%	100%	0%	74%	56%	0.00
1146	Heating	Heat Pump - 16 SEER (<5 Tons)	Work Midstream	Other	MO	3,055.5	4.9%	150.4	0.021	0.034	15	$135.00	59%	59%	100%	0%	55%	55%	0.94
1147	Heating	Heat Pump - 18 SEER(<5 Tons)	Work Midstream	Other	MO	3,055.5	11.5%	351.6	0.049	0.080	15	$445.76	29%	29%	100%	0%	41%	40%	1.35
1148	Heating	Heat Pump - 21 SEER(<5 Tons)	Work Midstream	Other	MO	3,055.5	17.0%	519.3	0.073	0.119	15	$520.06	35%	35%	100%	0%	44%	44%	1.44
1149	Heating	Heat Pump - 15.0 IEER COP 3.6 (65,000-134,000 Btu/hr)	Work Midstream	Other	MO	3,421.9	6.1%	207.8	0.029	0.047	15	$100.00	100%	100%	100%	0%	74%	68%	1.30
1150	Heating	Heat Pump - 16.0 IEER COP 3.8 (65,000-134,000 Btu/hr)	Work Midstream	Other	MO	3,421.9	11.3%	386.0	0.054	0.088	15	$171.08	100%	76%	100%	0%	74%	68%	1.48
1151	Heating	Heat Pump - 14.5 IEER COP 3.5 (135,000-239,000 Btu/hr)	Work Midstream	Other	MO	3,540.3	6.5%	228.9	0.032	0.052	15	$100.00	100%	80%	100%	0%	74%	69%	1.43
1152	Heating	Heat Pump - 15.5 IEER COP 3.7 (135,000-239,000 Btu/hr)	Work Midstream	Other	MO	3,540.3	11.8%	417.9	0.059	0.095	15	$158.10	100%	82%	100%	0%	74%	70%	1.60
1153	Heating	Heat Pump - 12 IEER 3.4 COP (>239,000 Btu/hr)	Work Midstream	Other	MO	3,696.3	6.3%	233.5	0.033	0.053	15	$100.00	100%	80%	100%	0%	74%	69%	1.46
1154	Heating	Heat Pump - 13 IEER 3.6 COP (>239,000 Btu/hr)	Work Midstream	Other	MO	3,696.3	12.3%	452.8	0.064	0.103	15	$201.80	100%	64%	100%	0%	74%	65%	1.74
1155	Heating	Geothermal HP - 22.3 EER < 135kbtu	Work Midstream	Other	MO	3,543.2	43.8%	1,553.3	0.218	0.355	25	$4,361.00	2%	2%	100%	0%	41%	32%	11.41
1156	Heating	Geothermal HP - 48.1 EER < 135kbtu	Work Midstream	Other	MO	3,543.2	47.1%	1,670.3	0.234	0.382	25	$4,361.00	25%	24%	100%	0%	41%	32%	11.41
1157	Heating	PTHP - 7,000 to 15,000 Btuh	Work Midstream	Other	MO	7,128.0	16.7%	1,188.0	0.167	0.271	15	$84.00	100%	85%	100%	0%	74%	74%	8.32
1158	Heating	Spring Loaded Garage Door Hinge	Work Prescriptive	Other	MO	50,000.0	1.0%	500.0	0.070	0.114	20	$200.70	100%	75%	100%	0%	74%	56%	10.02
1159	Hot Water	Heat Pump Water Heater	Work Prescriptive	Other	MO	17,236.9	73.3%	12,640.4	2.390	1.961	15	$1,797.00	100%	75%	100%	0%	86%	81%	46.12
1160	Hot Water	Low Flow Faucet Aerator	Work Prescriptive	Other	RETRO	394.9	32.4%	127.8	0.024	0.020	10	$8.00	100%	75%	100%	0%	90%	88%	51.91
1161	Hot Water	Pre-Rinse Spray Valves - DI	Work Prescriptive	Other	RETRO	18,058.7	54.2%	9,788.8	1.851	1.518	5	$54.00	100%	75%	100%	0%	90%	88%	88.36
1162	Hot Water	Ozone Commercial Laundry	Work Custom	Other	MO	2,984.0	25.0%	746.0	0.141	0.116	10	$20,309.70	0%	0%	100%	0%	44%	36%	6.77
1163	Lighting_Ext	Ext LED Replacing 100W MH (24/7)	Work Prescriptive	Other	RETRO	995.8	75.8%	754.8	0.000	0.089	10	$97.00	100%	75%	100%	0%	84%	80%	4.73
1164	Lighting_Ext	Ext LED Replacing 175W MH (24/7)	Work Prescriptive	Other	RETRO	1,743.6	71.0%	1,238.6	0.000	0.145	10	$123.81	100%	75%	100%	0%	84%	81%	7.77
1165	Lighting_Ext	Ext LED Replacing 250W MH (24/7)	Work Prescriptive	Other	RETRO	2,490.4	66.6%	1,658.5	0.000	0.195	10	$134.35	100%	75%	100%	0%	84%	82%	7.50
1166	Lighting_Ext	Ext LED Replacing 400W MH (24/7)	Work Prescriptive	Other	RETRO	3,984.1	64.5%	2,570.2	0.000	0.301	10	$196.16	100%	75%	100%	0%	84%	81%	9.92
1167	Lighting_Ext	Ext LED Replacing 1000W MH (24/7)	Work Prescriptive	Other	RETRO	9,467.3	70.4%	6,665.7	0.000	0.782	10	$319.31	100%	63%	100%	0%	84%	83%	8.36
1168	Lighting_Ext	Ext LED Replacing 100W MH (D2D)	Work Prescriptive	Other	RETRO	488.8	75.8%	370.5	0.000	0.043	10	$97.00	75%	75%	100%	0%	81%	77%	2.32
1169	Lighting_Ext	Ext LED Replacing 175W MH (D2D)	Work Prescriptive	Other	RETRO	855.9	71.0%	608.0	0.000	0.071	10	$123.81	100%	75%	100%	0%	84%	78%	3.81
1170	Lighting_Ext	Ext LED Replacing 250W MH (D2D)	Work Prescriptive	Other	RETRO	1,222.5	66.6%	814.1	0.000	0.095	10	$134.35	100%	75%	100%	0%	84%	80%	3.68
1171	Lighting_Ext	Ext LED Replacing 400W MH (D2D)	Work Prescriptive	Other	RETRO	1,955.7	64.5%	1,261.6	0.000	0.148	10	$196.16	100%	75%	100%	0%	84%	79%	4.87
1172	Lighting_Ext	Ext LED Replacing 1000W MH (D2D)	Work Prescriptive	Other	RETRO	4,647.2	70.4%	3,272.0	0.000	0.384	10	$319.31	100%	63%	100%	0%	84%	82%	4.10
1173	Lighting_Int	LED Interior Direction (Track lighting / Wall-Wash Fixture)	Work Prescriptive	Other	RETRO	139.7	73.8%	103.0	0.012	0.013	15	$59.00	75%	75%	100%	0%	78%	71%	1.93
1174	Lighting_Int	LED Linear Replacement Lamps (Replacing T8)	Work Prescriptive	Other	RETRO	100.9	51.4%	51.9	0.006	0.006	10	$15.00	100%	75%	100%	0%	84%	76%	4.00
1175	Lighting_Int	LED Troffers (Replacing 1-Lamp T8)	Work Prescriptive	Other	RETRO	104.1	34.0%	35.4	0.004	0.004	15	$22.00	75%	80%	100%	0%	77%	76%	1.11
1176	Lighting_Int	LED Troffers (Replacing 2-Lamp T8)	Work Prescriptive	Other	RETRO	203.9	51.4%	104.8	0.013	0.013	15	$61.00	75%	75%	100%	0%	78%	66%	3.27
1177	Lighting_Int	LED Troffers (Replacing 3-Lamp T8)	Work Prescriptive	Other	RETRO	302.2	54.0%	163.3	0.020	0.020	15	$76.00	100%	75%	100%	0%	84%	69%	5.10
1178	Lighting_Int	LED Troffers (Replacing 4-Lamp T8)	Work Prescriptive	Other	RETRO	402.7	54.3%	218.5	0.026	0.027	15	$104.00	75%	75%	100%	0%	79%	68%	6.82
1179	Lighting_Int	LED Linear Ambient Fixture (<6000 lumens, replacing T8)	Work Prescriptive	Other	RETRO	203.4	50.3%	102.3	0.012	0.013	15	$46.67	100%	100%	100%	0%	84%	81%	1.20
1180	Lighting_Int	LED Linear Ambient Fixture (>6000 lumens, replacing T5HO)	Work Prescriptive	Other	RETRO	536.5	53.2%	285.2	0.034	0.035	15	$152.00	75%	75%	100%	2%	78%	68%	3.34
1181	Lighting_Int	LED Low-Bay Fixture	Work Prescriptive	Other	RETRO	561.5	67.0%	376.2	0.045	0.046	15	$42.88	100%	93%	100%	2%	84%	83%	4.41
1182	Lighting_Int	LED High-Bay Fixture (Replacing T8 High Bay)	Work Prescriptive	Other	RETRO	1,051.4	57.0%	599.5	0.072	0.074	15	$48.07	100%	83%	100%	2%	84%	83%	7.02
1183	Lighting_Int	LED High-Bay Fixture (Replacing Metal Halide)	Work Prescriptive	Other	RETRO	4,220.1	72.3%	3,051.3	0.366	0.376	15	$187.94	100%	75%	100%	2%	84%	82%	35.74
1184	Lighting_Int	Fluorescent Delamping	Work Prescriptive	Other	RETRO	89.8	100.0%	89.8	0.011	0.011	11	$18.50	100%	75%	100%	2%	84%	77%	11.19
1185	Lighting_Int	Lighting Occupancy Sensor	Work Prescriptive	Other	RETRO	466.4	30.0%	139.9	0.017	0.017	15	$65.40	100%	75%	100%	2%	84%	71%	3.28
1186	Lighting_Int	Lighting Daylight Sensor	Work Prescriptive	Other	RETRO	597.2	28.0%	167.2	0.020	0.021	15	$57.50	100%	100%	100%	2%	84%	84%	1.36
1187	Lighting_Int	Dual Occupancy / Daylight Sensor	Work Prescriptive	Other	RETRO	266.4	38.0%	101.2	0.012	0.012	15	$75.00	100%	100%	100%	2%	84%	84%	0.63
1188	Lighting_Int	Luminaire-Level Lighting Controls	Work Prescriptive	Other	RETRO	266.4	61.0%	162.5	0.020	0.020	15	$56.00	100%	75%	100%	2%	84%	73%	7.81
1189	Lighting_Int	Networked Lighting Control	Work Prescriptive	Other	RETRO	2.2	35.0%	0.8	0.000	0.000	15	$0.45	75%	75%	100%	2%	78%	63%	7.81
1190	Lighting_Int	LED Exit Sign	Work Prescriptive	Other	RETRO	64.9	71.4%	46.4	0.006	0.006	5	$32.50	25%	25%	100%	2%	90%	88%	1.79
1191	Lighting_Int	Advanced Lighting	Work Custom	Other	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	3%	3%	100%	2%	35%	26%	7.81
1192	Misc	Non-Refrigerated Vending Machine Controls	Work Prescriptive	Other	RETRO	385.4	61.4%	236.8	0.032	0.028	5	$233.00	6%	6%	100%	2%	52%	49%	3.31
1193	Misc	Kitchen Exhaust Hood Demand Ventilation Control System	Work Custom	Other	MO	0.0	0.0%	0.0	0.000	0.000	20	$1.04	0%	0%	100%	2%	81%	61%	0.00
1194	Misc	High Efficiency Hand Dryers	Work Prescriptive	Other	MO	261.6	83.0%	217.2	0.029	0.026	10	$483.00	3%	3%	100%	2%	65%	60%	5.96
1195	Misc	ENERGY STAR Uninterrupted Power Supply	Work Prescriptive	Other	RETRO	3,125.1	3.7%	114.4	0.015	0.014	15	$59.00	75%	75%	100%	2%	81%	78%	8.04
1196	Misc	Miscellaneous Custom	Work Custom	Other	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	100%	2%	76%	49%	5.96
1197	Motors	Pump and Fan Variable Frequency Drive Controls (Pumps)	Work Midstream	Other	MO	2,087.7	27.7%	579.0	0.087	0.077	15	$198.32	100%	75%	100%	2%	81%	71%	3.64
1198	Motors	Power Drive Systems	Work Custom	Other	RETRO	4.3	23.0%	1.0	0.000	0.000	15	$0.13	100%	75%	100%	2%	81%	58%	8.37
1199	Motors	Switch Reluctance Motors	Work Midstream	Other	MO	33,405.7	30.6%	10,222.1	1.537	1.351	15	$527.50	100%	100%	100%	2%	81%	81%	9.74
1200	Motors	Advanced Motors	Work Custom	Other	RETRO	8.5	11.8%	1.0	0.000	0.000	15	$0.25	100%	75%	100%	2%	81%	54%	8.37
1201	Plug_Office	Energy Star Printer/Copier/Fax	Work Prescriptive	Other	MO	418.0	26.3%	110.0	0.015	0.013	6	$0.00	0%	0%	100%	2%	97%	96%	0.00
1202	Plug_Office	Advanced Power Strip – Teri 1 Commercial Use	Work Prescriptive	Other	RETRO	188.2	57.7%	108.6	0.014	0.013	7	$10.00	100%	65%	100%	2%	81%	79%	4.44
1203	Plug_Office	Smart Socket	Work Prescriptive	Other	RETRO	79.9	60.6%	48.4	0.006	0.006	7	$9.00	100%	75%	100%	2%	81%	75%	4.44
1204	Plug_Office	Energy Star Server	Work Prescriptive	Other	MO	2,166.7	30.0%	650.0	0.087	0.077	9	$300.95	50%	50%	100%	2%	70%	63%	5.48
1205	Plug_Office	Server Virtualization	Work Custom	Other	RETRO	2,166.7	13.9%	301.1	0.040	0.036	9	$26.97	100%	67%	100%	2%	81%	59%	5.48
1206	Plug_Office	Electrically Commutated Plug Fans in data centers	Work Prescriptive	Other	RETRO	86,783.0	18.2%	15,778.0	2.106	1.863	15	$480.00	100%	100%	100%	2%	81%	81%	15.86

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1207	Plug_Office	Computer Room Air Conditioner Economizer	Work Prescriptive	Other	RETRO	764.0	46.9%	358.0	0.048	0.042	15	$82.00	100%	75%	100%	2%	81%	73%	8.04
1208	Plug_Office	High Efficiency CRAC unit	Work Prescriptive	Other	MO	8,940.1	25.3%	2,264.8	0.302	0.267	20	$750.00	100%	75%	100%	2%	81%	68%	9.68
1209	Plug_Office	Data Center Hot/Cold Aisle Configuration	Work Custom	Other	RETRO	13.3	7.5%	1.0	0.000	0.000	10	$0.23	100%	75%	100%	2%	81%	55%	5.96
1210	Plug_Office	Advanced IT	Work Custom	Other	RETRO	5.0	20.0%	1.0	0.000	0.000	4	$0.08	100%	80%	100%	2%	81%	60%	2.70
1211	Refrigeration	Strip Curtains	Work Prescriptive	Other	RETRO	36.6	50.0%	18.3	0.003	0.002	4	$10.22	25%	25%	100%	2%	53%	49%	2.74
1212	Refrigeration	Floating Head Pressure Controls	Work Prescriptive	Other	RETRO	1,228.0	25.0%	307.0	0.043	0.034	15	$431.00	25%	25%	100%	2%	48%	40%	6.02
1213	Refrigeration	Electronically Commutated (EC) Walk-In Evaporator Fan Mot	Work Prescriptive	Other	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	100%	2%	86%	84%	22.22
1214	Refrigeration	Evaporator Fan Motor Controls	Work Prescriptive	Other	RETRO	1,297.6	22.6%	293.0	0.041	0.032	13	$161.75	75%	75%	100%	2%	66%	49%	7.39
1215	Refrigeration	Variable Speed Condenser Fan	Work Prescriptive	Other	RETRO	3,157.9	47.5%	1,500.0	0.212	0.166	15	$1,170.00	50%	50%	100%	2%	54%	43%	8.17
1216	Refrigeration	Door Heater Controls for Cooler	Work Prescriptive	Other	RETRO	578.6	41.5%	240.1	0.034	0.027	10	$79.50	100%	75%	39%	2%	74%	62%	3.49
1217	Refrigeration	Automated Door Closer for Refrigerator	Work Prescriptive	Other	RETRO	1,259,892.8	0.2%	2,398.7	0.339	0.266	8	$502.00	100%	75%	35%	2%	74%	63%	29.09
1218	Refrigeration	Aerofoils for Open Display Cases	Work Prescriptive	Other	RETRO	45,880.0	10.0%	4,588.0	0.649	0.508	10	$311.54	100%	88%	20%	2%	74%	74%	6.06
1219	Refrigeration	Display Case Door Retrofit, Medium Temp	Work Prescriptive	Other	RETRO	1,558.3	50.0%	779.1	0.110	0.086	15	$390.00	75%	75%	26%	2%	67%	58%	2.55
1220	Refrigeration	Electronically Commutated (EC) Reach-In Evaporator Fan Mc	Work Prescriptive	Other	RETRO	2,883.6	55.0%	1,586.0	0.224	0.176	15	$305.00	100%	75%	9%	2%	86%	84%	22.22
1221	Refrigeration	Q-Sync Motor for Walk-In and Reach-in Evaporator Fan Mot	Work Prescriptive	Other	RETRO	2,090.6	24.1%	504.6	0.071	0.056	10	$96.00	100%	75%	34%	2%	74%	67%	5.24
1222	Refrigeration	Night Covers for Coolers	Work Prescriptive	Other	RETRO	1,510.5	9.0%	136.0	0.019	0.015	5	$42.00	50%	50%	43%	2%	69%	64%	3.36
1223	Refrigeration	Door Heater Controls for Freezer	Work Prescriptive	Other	RETRO	2,016.2	32.5%	655.3	0.093	0.073	10	$90.77	100%	75%	42%	2%	74%	68%	9.53
1224	Refrigeration	Automated Door Closer for Freezer	Work Prescriptive	Other	RETRO	1,259,892.8	0.6%	6,948.8	0.983	0.769	8	$502.00	100%	75%	28%	2%	74%	70%	84.28
1225	Refrigeration	Night Covers for Freezers	Work Prescriptive	Other	RETRO	2,349.3	9.0%	211.3	0.030	0.023	5	$42.00	100%	75%	100%	2%	74%	66%	3.36
1226	Refrigeration	Refrigeration - Custom	Work Custom	Other	RETRO	6.7	15.0%	1.0	0.000	0.000	10	$0.40	75%	75%	100%	2%	68%	42%	6.06
1227	Refrigeration	Retro-commissioning_Refrigerator Optimization	Work Custom	Other	RETRO	4.8	21.0%	1.0	0.000	0.000	5	$0.22	75%	75%	100%	2%	71%	49%	3.36
1228	Refrigeration	ESTAR Refrigerated Vending Machine	Work Prescriptive	Other	MO	1,277.5	12.0%	153.3	0.022	0.017	14	$500.00	2%	2%	100%	2%	52%	45%	7.79
1229	Refrigeration	Refrigerated Vending Machine Controls	Work Prescriptive	Other	RETRO	1,662.9	23.5%	390.1	0.055	0.043	5	$245.00	25%	25%	100%	2%	52%	46%	3.36
1230	Refrigeration	Commercial Ice Marker	Work Prescriptive	Other	MO	5,550.9	7.9%	440.3	0.062	0.049	9	$222.00	50%	50%	100%	2%	61%	55%	3.68
1231	Refrigeration	LED Refrigerated Display Case Lighting Average 6W/LF	Work Prescriptive	Other	MO	114.6	73.7%	84.5	0.012	0.009	9	$11.00	100%	75%	100%	2%	74%	68%	11.29
1232	Refrigeration	Advanced Refrigeration	Work Custom	Other	RETRO	8.0	12.5%	1.0	0.000	0.000	20	$33.70	0%	0%	100%	2%	31%	19%	9.84
1233	Ventilation	Pump and Fan Variable Frequency Drive Controls (Fans)	Work Midstream	Other	RETRO	11,882.8	59.0%	7,010.0	1.395	0.976	15	$2,250.00	100%	75%	100%	2%	76%	62%	12.90
1234	Ventilation	Cogged V-Belt (Synchronous)	Work Prescriptive	Other	RETRO	17,237.2	3.1%	534.4	0.092	0.064	15	$381.00	50%	50%	100%	2%	58%	45%	8.74
1235	WholeBldg_HVAC	HVAC - Energy Management System	Work Custom	Other	RETRO	12.5	8.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	2%	74%	42%	8.49
1236	WholeBldg_HVAC	GREM Controls	Work Prescriptive	Other	RETRO	0.0	0.0%	0.0	0.000	0.000	15	$0.00	0%	0%	100%	2%	74%	74%	0.00
1237	WholeBldg_HVAC	Demand Control Ventilation	Work Prescriptive	Other	RETRO	1,925.0	20.0%	385.0	0.061	0.048	10	$235.60	50%	50%	100%	2%	58%	47%	6.29
1238	WholeBldg_HVAC	High Efficiency DOAS	Work Custom	Other	RETRO	5.2	35.7%	1.9	0.000	0.000	15	$15.22	1%	1%	100%	2%	31%	19%	5.76
1239	WholeBldg_HVAC	Advanced Rooftop Controls	Work Prescriptive	Other	RETRO	0.0	0.0%	0.0	0.000	0.000	10	$0.00	0%	0%	100%	2%	74%	74%	0.00
1240	WholeBldg_HVAC	Retro-commissioning_Bld Optimization	Work Custom	Other	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.12	100%	75%	100%	2%	74%	53%	8.49
1241	WholeBldg_HVAC	Commercial Weatherstripping	Work Prescriptive	Other	RETRO	222.3	2.0%	4.4	0.001	0.001	10	$8.00	3%	3%	100%	2%	48%	40%	6.29
1242	WholeBldg_HVAC	Advanced HVAC	Work Custom	Other	RETRO	8.3	12.0%	1.0	0.000	0.000	15	$0.50	100%	75%	100%	2%	74%	39%	8.49
1243	WholeBldg	WholeBlg - Com RET	Work Prescriptive	Other	RETRO	6.7	15.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	2%	81%	66%	8.49
1244	WholeBldg	COM Competitions	Work Custom	Other	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.04	0%	0%	100%	2%	75%	56%	0.00
1245	WholeBldg	Business Energy Reports	Work Custom	Other	RETRO	312.5	0.3%	1.0	0.000	0.000	2	$0.20	30%	30%	100%	2%	75%	56%	1.47
1246	WholeBldg	Building Benchmarking	Work Custom	Other	RETRO	0.0	0.0%	0.0	0.000	0.000	2	$0.22	0%	0%	100%	2%	75%	56%	0.00
1247	WholeBldg	Strategic Energy Management	Work SEM	Other	RETRO	0.0	0.0%	0.0	0.000	0.000	5	$0.27	0%	0%	100%	2%	75%	56%	0.00
1248	WholeBldg	BEIMS	Work Prescriptive	Other	RETRO	49.8	2.0%	1.0	0.000	0.000	2	$0.44	14%	14%	100%	2%	75%	56%	1.47
1249	WholeBldg	Building Operator Certification	Work SEM	Other	RETRO	13,644.0	0.3%	34.1	0.005	0.004	3	$0.29	100%	100%	100%	2%	75%	56%	15.35
1250	WholeBldg	Power Distribution Equipment Upgrades (Transformers)	Work Custom	Other	RETRO	990.2	0.6%	5.5	0.001	0.001	30	$6.27	50%	50%	100%	2%	56%	36%	12.73
1251	WholeBldg_NC	WholeBlg - Com NC	Work Prescriptive	Other	NC	4.0	25.0%	1.0	0.000	0.000	15	$0.40	100%	75%	100%	2%	81%	68%	8.49
1252	Compressed Air	Efficient Air Compressor Equipment	Work Custom	Industrial	MO	8.8	11.3%	1.0	0.000	0.000	13	$0.41	100%	75%	100%	25%	81%	44%	7.71
1253	Compressed Air	Efficient Air Compressor Controls	Work Custom	Industrial	RETRO	15.2	6.6%	1.0	0.000	0.000	3	$0.12	100%	75%	100%	25%	81%	57%	2.18
1254	Compressed Air	Process Improvement - Air Compressor	Work Custom	Industrial	RETRO	20.0	5.0%	1.0	0.003	0.000	15	$0.51	100%	75%	100%	25%	81%	41%	58.94
1255	HVAC	Efficient HVAC Equipment	Work Custom	Industrial	MO	7.7	13.0%	1.0	0.000	0.000	15	$0.19	100%	75%	100%	25%	74%	47%	7.75
1256	HVAC	Efficient HVAC O&M	Work Custom	Industrial	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.09	100%	63%	100%	50%	74%	53%	1.99
1257	Lighting_Int	Efficient Lighting Equipment	Work Prescriptive	Industrial	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$0.17	100%	75%	100%	25%	84%	76%	10.10
1258	Lighting_Int	Efficient Lighting O&M	Work Custom	Industrial	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.07	100%	72%	100%	25%	84%	62%	2.59
1259	Lighting_Int	Advanced Lighting Controls	Work Custom	Industrial	RETRO	2.4	42.0%	1.0	0.000	0.000	15	$2.25	25%	22%	100%	25%	48%	40%	12.08
1260	Motors	Efficient MachDr Equipment	Work Custom	Industrial	MO	8.3	12.0%	1.0	0.000	0.000	15	$0.17	100%	75%	100%	25%	81%	55%	5.77
1261	Motors	Efficient MachDr O&M	Work Custom	Industrial	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.10	75%	63%	100%	25%	79%	59%	1.49
1262	Process Heat	Efficient ProcHeat Equipment	Work Custom	Industrial	MO	33.3	3.0%	1.0	0.000	0.000	15	$0.17	100%	75%	100%	25%	81%	55%	8.52
1263	Process Heat	Efficient ProcHeat O&M	Work Custom	Industrial	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.08	100%	77%	100%	25%	81%	60%	2.18
1264	Process Heat	Process Improvement - Heat	Work Custom	Industrial	RETRO	20.0	5.0%	1.0	0.003	0.000	15	$0.09	100%	66%	100%	25%	81%	59%	58.94
1265	Process Refrig	Efficient ProcRefrig Equipment	Work Custom	Industrial	MO	6.4	15.7%	1.0	0.000	0.000	15	$0.18	100%	75%	100%	25%	81%	54%	7.89
1266	Process Refrig	Efficient ProcRefrig O&M	Work Custom	Industrial	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.11	100%	57%	100%	25%	81%	58%	2.02
1267	Process Refrig	Process Improvement - Refrigeration and Cooling	Work Custom	Industrial	RETRO	7.7	13.0%	1.0	0.001	0.000	10	$0.27	100%	75%	100%	25%	81%	50%	19.44
1268	Process Other	Other Process Equip	Work Custom	Industrial	MO	3.9	25.6%	1.0	0.000	0.000	11	$0.35	100%	75%	100%	25%	81%	47%	7.17
1269	Process Other	Other Process O&M	Work Custom	Industrial	RETRO	14.3	7.0%	1.0	0.000	0.000	11	$0.30	100%	75%	100%	25%	81%	49%	7.17
1270	Process Other	Process Improvement - Other	Work Custom	Industrial	RETRO	10.0	10.0%	1.0	0.002	0.000	10	$0.22	100%	75%	100%	25%	81%	53%	24.03
1271	WholeBldg	Power Distribution (Transformers)	Work Custom	Industrial	RETRO	178.6	0.6%	1.0	0.000	0.000	30	$1.17	50%	50%	100%	25%	51%	40%	13.46
1272	WholeBldg	Strategic Energy Management	Work SEM	Industrial	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.09	100%	68%	100%	25%	75%	56%	2.30
1273	Water_WW	Water Supply & Wastewater treatment pumps and process e	Work Custom	Industrial	RETRO	5.4	18.5%	1.0	0.000	0.000	11	$0.45	50%	50%	100%	25%	66%	42%	4.60

Appendix C. Nonresidential Measure Assumptions

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base (Standard) Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer NCP kW	Per Unit Winter NCP kW	EE EUL	Measure Cost	MAP Incentive	RAP Incentive	Base Saturation	EE Saturation	MAP Adoption Rate	RAP Adoption Rate	UCT Score
1274	Motors	Efficient Motor Pmp Equipment - Q1 Cost	Work Prescriptive	Agriculture	MO	7.6	13.1%	1.0	0.000	0.000	15	$0.01	100%	100%	100%	25%	81%	81%	57.65
1275	Motors	Efficient Motor Pmp Equipment - Q2 Cost	Work Prescriptive	Agriculture	MO	7.6	13.1%	1.0	0.000	0.000	15	$0.02	100%	100%	100%	25%	81%	81%	19.22
1276	Motors	Efficient Motor Pmp Equipment - Q3 Cost	Work Prescriptive	Agriculture	MO	7.6	13.1%	1.0	0.000	0.000	15	$0.05	100%	100%	100%	25%	81%	81%	6.92
1277	Motors	Efficient Motor Pmp O&M	Work Custom	Agriculture	RETRO	33.3	3.0%	1.0	0.000	0.000	15	$0.10	100%	63%	100%	25%	81%	59%	5.77
1278	Refrigeration	Efficient Refrigeration Equipment	Work Custom	Agriculture	MO	6.6	15.1%	1.0	0.000	0.000	15	$0.18	100%	75%	100%	25%	74%	48%	7.89
1279	Refrigeration	Refrigeration Equipment O&M	Work Custom	Agriculture	RETRO	33.3	3.0%	1.0	0.000	0.000	3	$0.11	100%	57%	100%	25%	74%	53%	2.02
1280	Lighting_Int	Efficient Lighting	Work Prescriptive	Agriculture	MO	2.4	42.0%	1.0	0.000	0.000	15	$0.17	100%	75%	100%	25%	84%	76%	10.10
1281	Lighting_Int	Grow Lighting	Work Prescriptive	Agriculture	RETRO	2.6	39.0%	1.0	0.000	0.000	15	$0.27	100%	75%	100%	50%	84%	71%	10.10
1282	Ventilation	Efficient Ventilation	Work Custom	Agriculture	MO	1.9	54.0%	1.0	0.000	0.000	10	$0.32	100%	75%	100%	25%	76%	43%	5.74
1283	WholeBldg	Efficient Dehumidification	Work Custom	Agriculture	MO	3.7	27.0%	1.0	0.000	0.000	10	$0.19	100%	75%	100%	25%	81%	54%	5.74
1284	WholeBldg	Efficient HVAC	Work Custom	Agriculture	MO	7.7	13.0%	1.0	0.000	0.000	15	$0.19	100%	75%	100%	25%	81%	54%	7.75
1285	WholeBldg	Mid-Tier IT Improvements - Improved Practice	Work Custom	Data Center	RETRO	114.2	2.5%	2.9	0.000	0.000	3	$0.10	100%	63%	11%	22%	81%	60%	5.11
1286	WholeBldg	Mid-Tier IT Improvements - Best Practice	Work Custom	Data Center	RETRO	114.2	19.0%	22.0	0.003	0.003	3	$0.10	100%	63%	10%	22%	81%	60%	44.44
1287	WholeBldg	Mid-Tier IT Infrastructure Improvements - Improved Practice	Work Custom	Data Center	RETRO	91.5	24.2%	25.2	0.002	0.002	15	$0.19	100%	75%	11%	22%	81%	60%	172.85
1288	WholeBldg	Mid-Tier IT Infrastructure Improvements - Best Practice	Work Custom	Data Center	RETRO	91.5	64.0%	66.6	0.007	0.007	15	$0.19	100%	75%	10%	22%	81%	60%	506.04
1289	WholeBldg	High End IT Improvements- Improved Practice	Work Custom	Data Center	RETRO	114.2	2.5%	2.9	0.000	0.000	3	$0.10	100%	63%	23%	25%	81%	60%	5.11
1290	WholeBldg	High End IT Improvements- Best Practice	Work Custom	Data Center	RETRO	114.2	19.0%	22.0	0.003	0.003	3	$0.10	100%	63%	16%	25%	81%	60%	44.44
1291	WholeBldg	High End IT Infrastructure Improvements - Improved Practice	Work Custom	Data Center	RETRO	69.2	29.0%	23.4	0.002	0.002	15	$0.19	100%	75%	23%	25%	81%	60%	161.13
1292	WholeBldg	High End IT Infrastructure Improvements - Best Practice	Work Custom	Data Center	RETRO	69.2	65.3%	52.9	0.006	0.006	15	$0.19	100%	75%	16%	25%	81%	60%	397.43
1293	WholeBldg	Hyperscale IT Improvements - Improved Practice	Work Custom	Data Center	RETRO	379.5	2.5%	9.6	0.001	0.001	3	$0.10	100%	63%	34%	70%	81%	76%	16.98
1294	WholeBldg	Hyperscale IT Improvements - Best Practice	Work Custom	Data Center	RETRO	379.5	19.0%	73.0	0.009	0.009	3	$0.10	100%	63%	7%	70%	81%	76%	147.67
1295	WholeBldg	Hyperscale IT Infrastructure Improvements - Improved Practi	Work Custom	Data Center	RETRO	62.8	36.6%	28.2	0.002	0.002	15	$0.19	100%	75%	34%	70%	81%	76%	193.45
1296	WholeBldg	Hyperscale IT Infrastructure Improvements - Best Practice	Work Custom	Data Center	RETRO	62.8	59.5%	45.7	0.004	0.004	15	$0.19	100%	75%	7%	70%	81%	76%	334.74

GDS Associates, Inc.
ENGINEERS & CONSULTANTS

INDIANA MICHIGAN POWER℠

An AEP Company

2024 POTENTIAL STUDY

FINAL REPORT

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prepared by
GDS ASSOCIATES INC
BRIGHTLINE GROUP