

# **ComEd Energy Efficiency Potential Study, 2017–2030**

## **Final Report**

May 2016

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## Introduction

This report summarizes the ComEd energy efficiency potential analysis performed by ICF International and Opinion Dynamics Corporation. The analysis covers the 2017–2030 timeframe and the residential, commercial, and industrial sectors. The study was commissioned by ComEd to comply with Illinois law and to provide information useful for ComEd's program planning. A bottom-up approach was used to estimate economic, program achievable, and maximum achievable potential. Total economic potential equals 35 percent of load, or 32 TWh, in 2017.

In the program achievable potential scenario, net annual savings equal 1.4 percent of load in 2017; from 2018 through 2025, estimated annual savings impact average 1.1 percent of load; annual savings impact an average 0.9 percent of load in the last 5 years of the program potential forecast, during the 2026–2030 timeframe.

In the maximum achievable potential scenario, net annual MWh savings equal 2.1 percent of load in 2017; from 2018 through 2025, estimated annual savings impacts average 1.5 percent of load; annual savings impacts average 1.2 percent of load during the 2026–2030 timeframe.

Total annual program costs in the program achievable scenario equal \$215 million in 2017 and grow to \$222 million in 2019; they decline to \$163 million in 2030. In the maximum achievable scenario, total program costs equal \$459 million in 2017 and grow to \$466 million in 2018; they decline to \$304 million in 2030.

Over the 14-year timeframe of the study, net total resource cost (TRC) benefits equal \$5.3 billion in the program achievable scenario and \$10.0 billion in the maximum achievable scenario. The program achievable scenario has a TRC benefit-cost ratio of 3.8, and the maximum achievable scenario has a TRC benefit-cost ratio of 3.8, and the maximum achievable scenario has a TRC benefit-cost ratio of 4.3.

Figure 1. Net Cumulative Achievable Potential and Total Program Costs, by Rate Class						
Residential C&I Ratepayers						
	Ratepayers	<1 MW Demand >= MW Demand				
Cumulative Net GWh Savings (2030)						
Maximum Achievable	2,245	4,696	3,448			
Program Achievable	1,826	3,057 2,374				
Total Program Costs, \$ Millions (2017–2030)						
Maximum Achievable	\$1,683	\$2,360	\$1,128			
Program Achievable	\$1,064	\$879	\$681			

Savings and cost estimates by rate class are shown in Figure 1.

## **Study Objectives and Scope**

ComEd's objectives for this study were to comply with the provision of the Illinois Public Utility Act requiring a potential study and to gain insights for their program planning about additional energy efficiency savings that could be achieved in a maximum achievable potential scenario.

Estimates developed for this study cover the 2017–2030 timeframe (14 years) and the residential, commercial, and industrial sectors in ComEd's service territory. This study also includes new elements not covered in the previous ComEd potential study, which covered the 2013–2018 timeframe. The new elements covered in this study include:

- 1. Economically efficient potential: Economic potential was calculated in the previous study. Economic potential is also calculated in this study, but an economically efficient potential scenario was added to this study's scope. Economically efficient potential is the amount of savings due to installing the most cost-effective measures, whereas economic potential is the amount of savings due to installing the most technically efficient, cost-effective measures.
- 2. **Combined heat and power (CHP):** CHP potential was added to this study's scope. A separate CHP report was also developed. This report includes a summary of CHP potential.
- 3. **Sensitivity analysis:** The sensitivity analysis examines uncertainty around key forecast assumptions to help identify risks associated with future program performance.

## **Types of Potential Estimated**

Four levels of energy efficiency potential were estimated: economic potential, economically efficient potential, maximum achievable potential, and program achievable potential. Definitions for each level of potential are below:

- **Economic potential** is the amount of savings that would result from replacing all existing equipment that uses electricity with the most technically efficient, cost-effective, commercially available equipment.
- **Economically efficient potential** is the amount of savings that would result from replacing all existing equipment that uses electricity with the most cost-effective, commercially available equipment.
- Maximum achievable potential is the amount of cost-effective program potential that could be achieved absent program budget constraints. Incentives are set to 100 percent of incremental costs in this scenario.
- Program achievable potential is the amount of cost-effective program potential that could be achieved assuming ComEd is operating under its current budget cap (approximately 2 percent of annual customers' total electric costs). Incentives in this scenario are consistent with existing program budgets, and are generally between 25 and 75 percent of incremental costs.

Economic potential is a theoretical construct. Economic potential estimates do not account for customer or other market barriers to energy efficiency, and they do not reflect budget constraints. In addition, economic potential does not inform measure or program market adoption rates. For these reasons, economic potential estimates are informative at a high level but provide limited value to program planners concerning achievable levels of measure-specific potential.

## **Approach Summary**

ICF used a bottom-up approach to estimate energy efficiency potential. "Bottom-up" in the context of potential studies refers to an approach that begins with characterizing the eligible stock, screening measures for cost-effectiveness, estimating savings first at the measure-level, then summing savings at the end use, sector, and overall service territory levels. Top-down approaches usually develop sector-level estimates, which are disaggregated to end-use or measure estimates.

### **Stakeholder Review**

Draft study results were presented by ICF in person to the Illinois Stakeholder Advisory Group in February 2016. Stakeholders provided feedback, which was incorporated into the final analysis presented in this report.

### Uncertainty

Energy efficiency potential studies are forecasts, and all forecasts have forecast error, or uncertainty. This study includes thousands of assumptions, including baseline data, measure parameters, avoided costs, program assumptions, and other inputs. While it is impossible to eliminate uncertainty, it can be mitigated through certain analytical strategies. The most basic strategy is to use the best information available at the time of the analysis. This study made extensive use of primary and secondary data specific to ComEd's service territory. Where ComEd–specific data were unavailable, ICF used the most accurate proxy data available. Another basic strategy is to use a bottom-up approach. Finally, as noted above, a sensitivity analysis was included in this study to quantify key uncertainties in the analysis.

## **Organization of the Report**

The body of this report begins with a detailed discussion on the potential study approach. Next, there are sections devoted to economic potential and to achievable energy efficiency potential, including a summary of CHP potential. The section on the sensitivity analysis also reviews emerging measures covered in the analysis. The conclusion summarizes this study's findings.

The appendices include information on measure and program assumptions and include more detailed distributions of the forecasts.

## Analysis Approach

## **Overview of Approach**

ICF used a bottom-up approach to estimate energy efficiency potential. The approach is illustrated in Figure 2. "Bottom-up" in the context of potential studies refers to an approach that begins with characterizing the eligible stock, screening measures for cost-effectiveness, estimating savings first at the measure level, then summing savings at the end-use, sector, and overall service territory levels.

This study made extensive use of primary data specific to ComEd, as well as secondary data. Primary data used included the 2012 ComEd baseline study, ComEd tracking data, and ComEd evaluation

reports. Utility data, such as customer counts, retail rates, and load forecasts were acquired from Com Ed. Secondary data included a market conditions update, performed by Opinion Dynamics Corporation, the Illinois Technical Reference Manual (TRM), and information from ICF baseline, measure, and databases.

Estimating the eligible stock of efficiency options was the first step of the analysis. The eligible stock is the size of the market for efficiency measures, in measure units, such as bulbs, tons of cooling, or homes. ICF estimated the eligible stock for each measure within each end use and sector. The 2012 Com Ed baseline study, conducted by Opinion Dynamics Corporation, was the primary source of information for this stage in the analysis. For this study, high impact measure penetration and saturation estimates were researched and updated by Opinion Dynamics Corporation in a market conditions update.

Next, ICF developed a comprehensive measure database. The database includes all the measures in the IL TRM,<sup>1</sup> plus additional measures included based on a gap analysis. The final database includes commercially available measures covering each relevant savings opportunity within each end use and sector. The database includes prescriptive or "deemed" type measures, whole building options (such as commercial custom projects), and behavioral measures (such as residential Home Energy Report and Wi-Fi thermostats).

ICF then used DSMore to estimate measure cost-effectiveness. Measures with an Illinois TRC test result of 1.0 or greater were included in the economic potential analysis.

With the eligible stock and measures defined, ICF then calculated economic potential.<sup>2</sup> Economically efficient potential was also calculated. Definitions of both economic and economically efficient potential are provided in the economic potential section of this report.

ICF then performed the achievable potential analysis. Program achievable potential is the level of costeffective savings achievable under ComEd's total program budget cap. Maximum achievable potential is the level of cost-effective savings absent the budget cap. ICF's approach to estimating achievable potential involved extensive review of primary and secondary measure and program data, the conduct of achievable potential workshops, development of preliminary program achievable estimates, calibration of program achievable estimate to tracking data, and for the maximum achievable scenario, additional analyses of incentive levels and market acceptance rates.

Finally, a sensitivity analysis (also referred to as a Monte Carlo simulation) of the maximum achievable scenario was performed to identify key drivers of program performance risk.

<sup>&</sup>lt;sup>1</sup> The IL TRM version 4.0 was the most recent version of the TRM available at the time the analysis was performed. However, the methodology for calculating Home Energy Report savings in the IL TRM 5.0 was adopted for this study.

<sup>&</sup>lt;sup>2</sup> ICF also ran an economic potential scenario using the Societal Cost Test, the results of which are described in the Economic Potential section of this report.



In the subsections below, we discuss each step in the analysis in further detail.

## **Data Collection**

The sources of information used in the analysis are shown in Figure 3. Every effort was made to use information that was as current as possible, to use primary data, and to use assumptions specific to ComEd's service territory.

#### Figure 3. Data Used in Analysis

Data/Information Type	Source	Type of Data	Primary Purpose in Analysis
Utility Information	•	•	
Avoided costs	ComEd	Forecast	Cost-effectiveness testing
Customer counts	ComEd	Actual	Calculating eligible stock
Load forecast	ComEd	Forecast	Calculating load impacts of energy
			efficiency potential
Retail rates	ComEd	Actual	Achievable potential analysis
Baseline Data			
ComEd Baseline Report	Opinion Dynamics	Primary	Calculating eligible stock
	Corporation		
Market Conditions Update	Opinion Dynamics	Secondary	Calculating eligible stock
	Corporation		
ICF baseline databases	ICF International	Secondary	Calculating eligible stock
Measure Assumptions			-
IL TRM 4.0; IL TRM 5.0	IL Stakeholder	Measure parameters	Measure database development
	Advisory Group		
ICF measure databases	ICF International	Measure parameters	Measure database development
Program Information			-
Program tracking data	ComEd	Actual	Estimating achievable potential
Program evaluation reports	ComEd, DCEO	Primary	Estimating achievable potential
Net-to-Gross ratios	IL Stakeholder	Primary	Estimating achievable potential
	Advisory Group		
Program expenditures	ComEd	Actual	Estimating achievable potential
PY6–PY8 Program Plan	ComEd	Plan	Estimating achievable potential
ICF program data	ICF International	Secondary	Estimating achievable potential

### **Eligible Stock**

Estimating the eligible stock of efficiency options was the first step of the analysis. The eligible stock is the size of the market for efficiency measures, in measure units, such as bulbs, tons of cooling, or homes. ICF estimated the eligible stock for each measure within each end use and sector. The ComEd baseline study was the primary source of information for this stage in the analysis. Key data from the baseline study included items such as:

- The percentage of homes with a particular type of equipment (e.g., light bulbs, central air conditioner, refrigerator)
- Equipment counts (e.g., number of bulbs per home, tons of cooling per home, refrigerators per home)
- Equipment efficiency level (e.g., bulb type, Seasonal Energy Efficiency Ratio [SEER] rating, ENERGY STAR rating)
- Equipment age

A simple example of an eligible stock calculation for residential light-emitting diode (LED) specialty bulbs is shown in Figure 4. This example shows there are 9.9 million incandescent specialty screw-in bulbs installed in gas-heated homes in ComEd's service territory (row h). This is equivalent to 88 percent of all specialty light bulbs installed in such homes (row g) and equals the total eligible stock for this particular

opportunity. That is, 88 percent of the existing stock of residential specialty screw-in bulbs could be replaced with a specialty LED.

Since this is a "replace-on-burnout" measure, the eligible stock must account for stock turnover (row i). Stock turnover is the rate at which existing equipment expires and requires replacement. It is the inverse of equipment age, or one divided by the equipment's effective useful life.<sup>3</sup> After the application of the stock turnover rate, the total number of specialty bulbs eligible to be replaced in 2017 equals 4.9 million (row j).<sup>4</sup>

	Variable	Value	Source/Calc.
	Efficient unit	13W LED Downlight	
	Basalina unit	45W Incandescent or Halogen	
		Tracklight	
	Baseline unit effective useful life	2	
а	(years)	2	
b	Residential customers	3,521,190	ComEd
С	Homes with gas heat (%)	94%	ComEd Baseline Study
d	Bulbs per home	57	ComEd Baseline Study
	Applicability (% of bulbs that are	6%	ComEd Baseline Study
е	specialty applications)		,
f	Efficient unit saturation	12%	ComEd Market Conditions Update
g	Not yet adopted rate	88%	1 – f
	Total eligible stock in 2017	9 961 531	bxcxdxexa
h	(bulbs)	5,501,551	5 A C A U A C A g
	Annual replacement eligibility	50%	1/2
i	(stock turnover rate)	50%	1/α
	Total bulbs eligible to be	4 980 766	b x i
j	replaced in 2017 (bulbs)	4,500,700	

#### Figure 4. Example Eligible Stock Calculation

For many measures, this information is broken down further in ICF's energy efficiency potential model. For example, the eligible stock for residential central air conditioners is further broken down by efficiency rating (SEER level), building type, and decision type (replace-on-burnout, retrofit, new construction).

In summary, calculating the eligible stock is the foundation of the study. It tells us how big the total market is for each efficiency opportunity in each year. What it does not tell us is the magnitude of the savings or costs associated with each opportunity. These are accounted for in estimates of economic and achievable potential.

<sup>&</sup>lt;sup>3</sup> For retrofit measures, annual replacement eligibility equals 100 percent.

<sup>&</sup>lt;sup>4</sup> ICF's potential model updates the eligible stock in every year of the analysis to account for measures installed in previous years.

### **Measure Analysis**

ICF developed a comprehensive measure database for this study. The database includes all the measures in the IL TRM version 4.0 plus additional measures included based on a gap analysis. The final database includes commercially available measures covering each relevant savings opportunity within each end use and sector. The database includes prescriptive or "deemed" type measures, whole building options (such as commercial custom projects), and behavioral measures (such as residential Home Energy Report).<sup>5</sup> Each measure has the characteristics shown in Figure 5.

	Measure Characteristic	Value*
1.	Applicable sector	Commercial
2.	Applicable subsector	Grocery
3.	Building type*	All
4.	End use	Refrigeration
5.	Measure name	Night covers for open refrigerated display cases
c	Massura definition	Curtains or covers on top of open refrigerated or
0.	Measure definition	freezer display cases
7	Pasalina definition	Vertical open display case, remote condensing,
7.	baseline definition	medium temperature (35–55°F)
8.	Measure unit	Per display case
9.	Measure delivery type	Retrofit
10.	Incremental cost	\$126
11.	Baseline unit effective useful life	N/A
12.	Efficient unit effective useful life (years)	5
13.	Incremental (annual) kWh savings	393
14.	Incremental kW savings	0

Figure 5.	Example	Measure	Characteristics
inguic Di	Example	measure	characteristics

\* Commercial building types based on levels of annual demand (<100 kW, 100–400 kW, etc.). Residential building types are single family and multifamily.

#### **Number of Measures Evaluated**

In total, ICF analyzed 214 measure types, as shown in Figure 6. An example of a measure type is a residential central air conditioner (CAC). Many measures required permutations for different applications, such as different building types, lamp wattages, efficiency levels, and decision types. For example, there are permutations of CACs by SEER level, subsector, and building types. In total, ICF evaluated 2,857 measure permutations.

ICF tested all measures for cost-effectiveness using DSMore, the Integral Analytics software tool used by Illinois utilities for this purpose. Of the 214 measures analyzed, 71 percent or 152 measure types had a measure TRC benefit-cost ratio of 1.0 or higher and were used in the calculation of economic potential.<sup>6</sup>

<sup>&</sup>lt;sup>5</sup> Retrocommissioning includes some behavior-based measures for the commercial sector, and system measures include behavior-based options for the industrial sector.

<sup>&</sup>lt;sup>6</sup> Measure TRC benefits are avoided costs. Measure TRCs are incremental costs. The measure TRC test does not include program costs.

Sector	Measure Types Evaluated	Measure Types with TRC≥1	
Residential	67	47	
Commercial	84	71	
Industrial	63	34	
Total	214	152	

#### Figure 6. Number of Measures Evaluated and Included

In calculating achievable potential, there were a small number of cases where ICF included non–costeffective permutations of a measure when the majority of similar permutations were cost-effective. For example, if a measure was cost-effective for a majority of but not all building types, ICF included the measure for all building types in the achievable potential analysis. This is because it can be impractical in implementation to exclude participation in specific building types.

ICF also applied the converse principal in screening measures in a small number of cases. If a measure was cost-effective for a minority of but not all measure permutations, ICF excluded all permutations of the measure in the achievable potential analysis, since it can be impractical in implementation to limit participation to certain building types.

#### **Treatment of Codes and Standards**

ICF accounted for adopted codes and standards in this study. Key baseline changes are discussed below:

- Adoption of the 2015 International Energy Conservation Code (IECC):
  - The 2015 IECC Energy Savings Analysis prepared for the U.S. Department of Energy (DOE) by Pacific Northwest National Labs (PNNL-23977) indicates a minor residential impact of less than 1 percent lower energy use intensity (EUI) than IECC 2012.
  - The Energy and Cost Savings Analysis of the 2015 IECC for Commercial Buildings prepared for DOE by Pacific Northwest National Labs (PNNL-24269 Rev. 1) indicates a commercial EUI 11.1 percent lower than IECC 2012.
- Energy Independence and Security Act (EISA) of 2007–compliant incandescent lamps will remain a viable baseline technology for general service screw-in lamps, and compact fluorescent lamps (CFLs) may not be able to meet future efficacy standards based on the proposals in the current DOE notice of proposed rulemaking in Docket Number EERE-2013-BT-STD-0051 (NOPR):
  - The Appropriations Rider, Section 313 of Public Law 113-235, prohibits expenditure of funds appropriated by that law to implement or enforce (1) 10 CFR Section 430.32(x), which includes maximum wattage and minimum rated lifetime requirements for general service incandescent lamps and maximum wattage requirements for candelabra base incandescent lamps and intermediate base incandescent lamps and (2) standards set forth in section 325(i)(1)(B) of EPCA (42 U.S.C. 6295(i)(1)(B)), which sets minimum lamp efficiency ratings for incandescent reflector lamps. This effectively prevents the general service incandescent lamp backstop provisions of EISA 2007 from being implemented.

- The NOPR proposes a new category of general service lamps that would not include incandescent lamps. The proposed efficacy standards are higher than the efficacy levels that can be reached by CFLs.
- Home Energy Report savings decay and persistence:
  - Savings decay and persistence are calculated per Illinois Statewide Technical Reference Manual for Energy Efficiency, Version 5.0, Volume 4: Cross-Cutting Measures and Attachments.
- T12s and Magnetic Ballasts:
  - Baseline assumption for retrofit linear fluorescent lighting is electronic ballasts used with all lamp types:
    - TRM provides for a 70,000-hour ballast life:
      - At the TRM "Unknown" building type lighting hours value of 4,683 annual hours, this equates to a 15-year ballast life.
    - The 2000 Federal Ballast Rule banned sale of new full-wattage T12 lamp fixtures with magnetic ballasts on April 1, 2006.
    - The Energy Policy Act of 2005 banned sale of new energy-saving T12 lamp fixtures with magnetic ballasts on July 1, 2010.
    - DOE rules banned the manufacture of most replacement magnetic ballasts on July 1, 2010.
    - Exceptions are dimming, cold temperature start and residential use ballasts.
    - This means virtually all magnetic ballasts will have been in use at least 7 years in 2017, the first year of the potential study, and will have been in use at least 20 years at the end of the study period.
- Commercial and Industrial (C&I) Unitary Heating, Ventilation, and Air Conditioning (HVAC):
  - DOE, in Docket Numbers EERE-2013-BT-STD-0007 and EERE-2013-BT-STD-0021, modified 10 CFR Part 431 concerning Energy Conservation Standards for Small, Large, and Very Large Air-Cooled Commercial Package Air Conditioning and Heating Equipment:
    - DOE changed minimum energy efficiency requirements to Integrated Energy Efficiency Ratio (IEER) only instead of Energy Efficiency Ratio and IEER.
    - DOE established a two-staged implementation of new, more efficient performance standards for commercial packaged air conditioning and heating equipment taking effect in 2018 and 2023.

### **Economic Potential Approach**

Economic potential is the amount of electric energy savings that would result if the entire eligible stock in ComEd's service territory were replaced with the most technically efficient, cost-effective energy efficiency measures.

Calculating economic potential required four steps:

- 1. Estimating the eligible stock
- 2. Defining and testing measures for cost-effectiveness
- 3. Estimating savings in 2017
- 4. Estimating savings in 2017–2030

The approaches to estimating the eligible stock and defining and testing measures are discussed above. Steps 3 and 4 are discussed below.

Economic potential is calculated once the eligible stock and cost-effective measures are established. The remaining steps included:

- Applying all available opportunities to the eligible stock in 2017. In theory, this means replacing all electricity-using equipment at once with the most technically efficient, cost-effective options *except* in cases where existing equipment is equally or more efficient than such options. Retrofit, replace-on-burnout, and new construction measures were applied in 2017. Savings associated with these applications in 2017 is the "instantaneous" economic potential.
- Applying all available replace-on-burnout and new construction measures to the eligible stock for every subsequent year of the analysis (2017–2030). Replace-on-burnout measures were applied where there is stock turnover. New construction measures were applied to new buildings.<sup>7</sup>

Economically efficient potential was calculated using the same approach. The only difference is that the most cost-effective subset of measures was used, instead of the most technically efficient, cost-effective measures.

## **Achievable Potential Approach**

Achievable potential is the amount of savings that could be realistically achieved by utility programs. ICF estimated two levels of achievable potential in this study: program and maximum. Program achievable potential is the amount of savings that could be realistically achieved by ComEd if program spending is subject to current legislative restrictions (2 percent of customers' total electric costs per year). Maximum achievable potential is the estimated amount of savings that could be attained if there were no program spending limits. Cost-effectiveness is still a constraint in the maximum achievable scenario.

ICF developed achievable potential estimates on a measure-by-measure basis, which were then rolled up to the program, sector, and service territory levels for analysis and reporting.

The ICF approach to estimating achievable potential involved five steps:

- 1. Program data review
- 2. Achievable potential workshops

<sup>&</sup>lt;sup>7</sup> A retrofit measure can only be applied in year 1 of the analysis since the baseline changes to the efficient unit once it is installed.

- 3. Preliminary program potential forecast
- 4. Calibration of estimates to tracking data
- 5. Maximum achievable analysis:
  - a. Incentive levels
  - b. Market acceptance rates

Each step is discussed in more detail below.

#### **Program Data Review**

ICF conducted an in-depth review of all available information pertaining to ComEd's current energy efficiency programs. This information included evaluation reports, the program years 6–8 (PY6–PY8) program plan, and other information. The purpose of this step was to understand and document historical program delivery and performance and to prepare for the achievable potential workshops.

#### **Achievable Potential Workshops**

ICF conducted achievable potential workshops with ComEd program managers and planners on each current ComEd program. The workshops were structured into three segments:

- Level setting: ComEd's programs have evolved rapidly to meet legislative requirements and customer needs and have evolved through program learning. This means that some of the data gathered by ICF during the program data review were out of date. In this workshop segment, Com Ed managers discussed any recent changes to program designs or to applicable markets. Com Ed and ICF also discussed PY8 program performance (the program year underway at the time of the interviews), specifically anticipated program savings and costs relative to the PY8 plan and recent evaluations, as well as participation by measure type. This information helped ICF to develop preliminary estimates of program potential forecast for 2017.
- 2. Program achievable forecast: In this workshop segment, ICF and ComEd discussed future program performance under the status quo, that is, assuming the current budget cap would be maintained in the future. ComEd managers responded to ICF questions regarding anticipated changes to markets or program designs that would impact program performance, such as incentive levels, changes to marketing strategy, and expected changes to baselines and costs for high-impact measures. ComEd also provided specific input on likely future savings, costs, and participation for the program and for key measures for this scenario. This input was documented by ICF and used to help develop the program potential forecast.
- 3. Maximum achievable forecast: In this workshop segment, ICF and ComEd discussed possible program performance assuming there would be no budget cap—in this scenario, the primary constraint is no longer budget. The primary constraints are size of the market and cost-effectiveness. ComEd provided specific input on likely savings, costs, and participation for the program and for key measures for this scenario. This input was documented by ICF and used to help develop the maximum achievable potential forecast.

ICF conducted 16 achievable potential workshops with ComEd managers and planners.

#### **Program Costs**

Historical program expenditures were provided by ComEd to ICF. These were used to help guide program costs for the forecast. For programs not offered historically by ComEd, ICF developed program cost estimates based on ICF's program experience.

#### Net-to-Gross Ratios

ICF used the Final Evaluator net-to-gross (NTG) Recommendations for PY8<sup>8</sup> for this forecast, except where more up-to-date ratios were provided by ComEd managers during the workshops; in a limited number of cases where neither the Final Evaluator Recommendations nor ComEd managers could inform a NTG assumption (such as for a new measure or program) ICF developed the NTG assumption. NTG values were held static for the timeframe of the study in the achievable potential forecast, but were varied in the sensitivity analysis. NTG assumptions used for the achievable forecast are shown in Appendix B.

#### **Preliminary Program Potential Forecast**

The next step in the analysis was to develop preliminary program potential forecasts. Program potential was estimated at the measure level, then aggregated to the program, end use, sector, and portfolio levels. To accomplish this, we developed a market adoption curve for each measure type. First, a maximum annual market acceptance rate (S<sub>max</sub>) was estimated for each measure. S<sub>max</sub> is the highest estimated annual measure participation rate in the forecast. For most measures, a preliminary S<sub>max</sub> estimate was calculated as a function of the customer payback acceptance rate (PAR)<sup>9</sup> and the program market acceptance share (MAS). In the program potential scenario, payback acceptance levels were commensurate with existing ComEd incentive levels. MAS values account for non-financial market barriers, such as contractor participation rates. ComEd–specific MAS values were developed, where possible, based on evaluation data, input from ComEd program managers, and input from ICF program managers. In summary, preliminary S<sub>max</sub> estimates were estimated as such:

#### SmaxPreliminary = PAR<sub>Existing Incentive</sub> × MAS<sub>Preliminary</sub>

S<sub>max</sub> represents the maximum level of participation in the forecast, but participation in years prior to the S<sub>max</sub> year must also be developed. Participation in year 1 (2017) of the forecast was estimated based on information gained in the program data review and during the achievable potential workshops. The ramp-up in participation in between year 1 and the S<sub>max</sub> year was estimated based on the maturity of the program, the size of the eligible stock, information gained during the achievable potential workshops, and ICF program experience. Ramp-up rates vary greatly by program. Midstream programs such as ComEd's Business Instant Lighting Discounts (BILD) program ramped up very quickly, whereas

<sup>&</sup>lt;sup>8</sup> As published on the Net-To-Gross Framework section of the Illinois Stakeholder Advisory Group Web site in January 2016.

<sup>&</sup>lt;sup>9</sup> The fraction of customers stating they would accept the payback terms of efficiency measures. Different payback acceptance curves were used for each sector. Some payback curves were developed using Com Ed customer survey data collected by Opinion Dynamics Corporation in 2012. ICF also used payback curves from surveys conducted in other service areas.

programs such as Industrial Systems tend to take longer to gain market acceptance. In general, ICF found that many of ComEd's programs have reached maturity: there is a high level of customer awareness of programs, and many programs have waiting lists and are constrained primarily by budget or the size of the eligible stock. Therefore, the ramp-up period to S<sub>max</sub> for many current ComEd programs was very short.

Figure 7 illustrates the type of adoption curve developed for the forecast—the shape reflects the Bass market diffusion formulas in ICF's Energy Efficiency Potential Model. Bass curves are used to develop forecasts in many potential studies, particularly for long-term forecasts such as this one. Importantly, it is assumed that  $S_{max}$  participation rates are sustained beginning in the year where  $S_{max}$  is forecasted to be achieved, through the remaining years of the forecast. The downward slope of the curve is due to the size of the market shrinking as the program reaches more and more participants over time.





#### **Forecast Calibration**

ComEd provided Opinion Dynamics Corporation with historical program tracking data for all program years (PY1–PY7), as well as ComEd customer data. Opinion Dynamics used this data develop historical participation curves. ICF used this analysis to help calibrate preliminary adoption curves to historical performance. Examples of pre- and post-calibrated adoption curves are shown in Figure 8.



#### Figure 8. Illustrative Preliminary and Calibrated Adoption Curves

Because there is such a wide variety of measures included in this study, we could not apply just one formulaic approach to estimating program participation for all measures. Payback acceptance is not relevant for some programs, such as Commercial New Construction—such programs cannot afford to pay for the entire incremental cost of new commercial building, and the technical services provided by this program are as important, if not more important than the incentive to participants. Appliance Recycling is another example, since the incentive structure is a bounty for harvesting secondary fridges and freezers, not a fraction of the incremental cost of equipment. For such programs, annual participation rates were estimated for each year of the analysis based on information gained through the achievable potential workshops, evaluation reports, tracking data, and through ICF program experience.

Annual participation rate estimates by measure type for both the program achievable and maximum achievable scenarios are shown in Appendix C.

#### **Maximum Achievable Analysis**

The maximum achievable scenario involved increasing incentives to 100 percent of incremental costs. Increasing incentives reduces the customer financial barrier to energy efficiency by lowering their share of the cost of the efficient unit. This improved financial attractiveness was modeled as an increase in the customer payback acceptance rate (PAR), except where as noted above for programs where payback acceptance is not relevant. Recall that the maximum annual participation rate, or S<sub>max</sub>, is calculated as a function of the PAR and the market acceptance share (MAS), which represents market barriers other than customer financial barriers, such as contractor participation rates and awareness:

#### $S_{max} = PAR \times MAS$

Therefore, increasing the incentive increases the estimated share of customers accepting the payback terms of the measures, thereby also increasing S<sub>max</sub>. The MAS rate was also increased for some measures, particularly for programs that are mass-market based such as the Commercial Midstream Lighting (BILD) program. Experience shows that additional dollars spent on marketing such programs increases program awareness, and thereby the market acceptance share.

While budget is not a constraint under the maximum achievable scenario, market size is for most programs. Although increasing incentive and market dollars will increase participation in most programs, the eligible stock of efficient options does decline over time due to the cumulative effects of participation year over year. For example, ComEd's Residential Multifamily program has already reached most large multifamily buildings in their service area. In the coming years, the average size of the participating building will decline, which will result in lower savings at a higher cost (it is more cost effective to perform efficiency services in one large building than in 10 small buildings). There are examples of programs where market size is less of a concern, such as Small Business. There are over 180,000 commercial customers with less than 100 kW in annual demand in ComEd's service area. The Small Business program has thus far been very successful at reaching this sector. With 100 percent incentives and no budget cap, we forecast that cumulative savings could increase about 180 percent over program achievable levels in the maximum achievable scenario.

### **DCEO Programs**

ICF included estimates of Illinois Department of Commerce and Economic Opportunity (DCEO) achievable potential in this study. Estimates for DCEO programs were developed based upon an analysis of DCEO program evaluation reports and historical program costs. Average per-project savings were developed for each program and adjusted to reflect adopted baseline changes. Next, program costs per project were estimated based on historical participation and costs. Participation was then extrapolated for each year according to ComEd's spending cap for DCEO programs, historical program performance, and ICF's understanding of market size and market barriers for each program.

## **Economic Potential**

Economic potential is the amount of savings due to installing the most technically efficient, costeffective measures. Economically efficient potential is the amount of savings due to installing the most cost-effective measures. Figure 9 shows total cumulative economic and economically efficient potential from 2017 through 2030. Economically efficient potential is 2 percent less than economic potential. Recall that in 2017, all retrofit measures are assumed to be installed. In the following years, only replace-on-burnout and new construction measures are assumed to be installed, thus reflecting the initial growth in potential shown in the graph, and subsequent decline, followed by another period of growth as replace-on-burnout measures installed in previous years expire and are again replaced.



#### Figure 9. Cumulative Economic and Economically Efficient Potential

Total economic potential is 32 TWh in 2017, or about 35 percent of sales. Economically efficient potential is 2 percent lower than economic potential, or 31 TWh. Figure 10 shows the distribution of total economic potential and economically efficient potential by sector. The distribution of economic potential reflects three constraints: the portion of load by sector, the size of the eligible stock by sector, and the number and type of cost-effective measures by sector.

Figure 10 shows the distribution of economic potential by sector in 2017. For both the economic potential and the economically efficient potential scenarios, the distribution of potential by sector is:

- Residential: 33%
- Commercial: 48%
- Industrial: 19%

#### Figure 10. Distribution of Total Economic Potential by Sector in 2017



## **Residential Economic Potential Estimates**

Figure 11 shows the distribution of residential economic potential and economically efficient potential by end use. HVAC comprises 37 percent of economic potential—duct insulation and sealing comprises 27 percent of HVAC potential, and heat pumps (air and ground source combined) comprise 49 percent of HVAC potential. Combined, these measures represent three-fourths of HVAC potential. About half of shell potential is air sealing, and the other half is home insulation. A-line (standard) LED bulbs comprise 64 percent of lighting potential. Appliance recycling measures constitute 91 percent of appliance potential.

Economically efficient potential is 2 percent lower than economic potential. End uses with lower economically efficient potential include HVAC (2 percent lower than economic potential), Shell (2 percent lower), appliances (1 percent lower), hot water (7 percent lower), and other (55 percent lower, primarily due to pool pumps).





Figure 12 lists the 10 measure types with the highest economic potential in 2017. In total, these measures represent 82 percent of residential economic potential.

Measure Type	% Residential Economic Potential in 2017
Refrigerator Recycling	13%
Air Sealing	11%
Omnidirectional A-type LED lamps	10%
Duct Insulation and Sealing	10%
Ground Source Heat Pump	9%
Air Source Heat Pump	9%
Wall and Ceiling/Attic Insulation	5%
High Efficiency Bathroom Exhaust Fan	5%
ENERGY STAR Specialty CFL	4%
Room Air Conditioner Recycling	4%
Total	82%

Figure 12. Top 10 Measures, Residential Economic Potential

## **Commercial Economic Potential**

Figure 13 shows the distribution of commercial economic potential and economically efficient potential by end use. Lighting comprises 62 percent of economic potential—lighting upgrade packages for small business comprise 54 percent of lighting potential, controls account for 21 percent, LED bulbs and fixtures constitute 11 percent, and High Performance and Reduced Wattage T8 Fixtures and Lamps contribute 6 percent to lighting potential. Combined, these measures represent 92 percent of lighting potential. Custom non-lighting projects make up 15 percent of total economic potential. Refrigeration upgrades for small business equate to 40 percent of refrigeration potential, economizers account for 33 percent, and evaporator fan controls add 11 percent. In total, these three measure types comprise 84 percent of refrigeration potential. The HVAC measures with the biggest potential are Single-Package and Split System Unitary Air Conditioners (46 percent of HVAC potential), AC tune-ups (27 percent), and programmable thermostats (9 percent)—82 percent of HVAC potential in total.

Economically efficient potential is 2 percent lower than economic potential. Lighting is the only end use with lower economically efficient potential (4 percent lower than the economic scenario).





Figure 14 lists the 10 measure types with the highest economic potential in 2017. In total, these measures represent 90 percent of commercial economic potential. The amount of potential in small business projects is consistent with the high percentage of ComEd's commercial customers who are small business in nature, with less than 100 kW in demand. This is also reflected in the high level of small business savings in the maximum achievable potential scenario.

Measure Type	% Commercial Economic Potential in 2017
Small Business Program Lighting Upgrades	30%
Commercial Custom Non-lighting Projects	19%
LED Bulbs and Fixtures	17%
Lighting Controls	6%
Retrocommissioning	4%
High Performance and Reduced Wattage T8 Fixtures and Lamps	4%
Small Business Program Refrigeration Upgrades	3%
Refrigeration Economizers	3%
Single-Package and Split System Unitary Air Conditioners	3%
Air Conditioner Tune-Up	2%
Total	90%

#### Figure 14. Top 10 Measures, Commercial Economic Potential

### **Industrial Economic Potential**

Figure 15 shows the distribution of industrial economic potential by end use. For this sector, economically efficient potential is exactly the same as economic potential. Pumps account for 22 percent of industrial economic potential, and compressors for 15 percent. Process cooling and process heating constitute 14 and 12 percent, respectively, while ventilation measures comprise 11 percent, and lighting measures comprise 10 percent. Combined, these six end uses account for threefourths of industrial economic potential.



Figure 15. Distribution of Industrial Economic Potential by End Use

Figure 16 lists the 10 measure types with the highest economic potential in 2017. In total, these measures represent 73 percent of industrial economic potential.

Figure 16. Top 10 Measures, Industrial Economic Potentia	Figure	16.	Тор	10	Measures,	Industrial	Economic	Potentia
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Measure	% Industrial Economic Potential in 2017
Premium Efficiency Control with ASDs (Pumps)	14%
Premium Efficiency Ventilation Control with VSD (Ventilation)	11%
VSD on Chiller Compressor (Process Cooling and Refrigeration	11%
Optimized Distribution System (Compressors)	8%
Replace Compressed Air Use with Mechanical or Electrical (Compressors)	7%
High Efficiency Unitary AC (Facility HVAC)	6%
High Efficiency Ballasts for Lighting (Lighting)	6%
Optimized Motor Control (Other Motors)	5%
Efficient Lighting Design (Lighting)	4%
Process Heat Recovery to Preheat Makeup Water (Process Heating)	3%
Total	73%

## **Economic Potential Scenario Analysis**

The goal of this analysis was to examine the impact of using a version of the Societal Test on economic potential. The economic potential results shown above were generated based on the TRC test—that is, only measures that passed the IL TRC using DSMore were included in economic potential. The Societal Test assumptions ICF used were:

- A discount rate of 2.5 percent, consistent 20-year U.S. Treasury bond yields.
- A 15 percent non-energy benefits (NEBs) adder to all measure benefits—this is consistent with the upper end of NEBs adders used in states such as Vermont.<sup>10</sup>

If all measures passing the Societal Test are included, economic potential is 7 percent, or 2,271 GWh higher in 2017 than if the TRC test is used. Fifty percent of the additional potential is in the residential sector, 48 percent in industrial, and 2 percent in commercial.

## Achievable Potential

Total achievable potential is the sum of achievable potential estimated for each program in the analysis. Total incremental achievable potential estimates are shown in Figure 17. ICF estimates that, in the program potential scenario, ComEd can achieve net annual savings equal to 1.4 percent of load in 2017. From 2018 through 2025, estimated annual savings impacts average 1.1 percent of load. Annual savings impacts average 0.9 percent of load in the last 5 years of the program potential forecast, during the 2026–2030 timeframe. The decline in savings between 2017 and 2021 is due in part to baseline changes for historically significant measures such as general service lighting and T8s, but the biggest impact to annual savings levels is caused by the new savings calculation methodology in the IL TRM 5.0 for the Home Energy Report (HER). This method allows for savings persistence (i.e., cumulative savings) for the purpose of benefit-cost testing. However, incremental savings degrade each year, and are "reset" every

<sup>&</sup>lt;sup>10</sup> Malmgren, I., & Skumatz, L. A. (2014). *Lessons from the field: Practical applications for incorporating non-energy benefits into cost-effectiveness screening*. ACEEE Summer Study.

6 years.<sup>11</sup> The effect of these resets is reflected in the spikes in orange and blue lines in Figure 17. The dotted grey line in the graph shows what the maximum achievable potential forecast would be if the previous method for calculating HER savings<sup>12</sup> is used, all else equal.



Figure 17. Achievable Net Incremental (Annual) MWh Savings Forecast

In the maximum achievable potential scenario, net annual MWh savings equal 2.1 percent of load in 2017. From 2018 through 2025, estimated annual savings impacts average 1.5 percent of load. Annual savings impacts average 1.2 percent of load in the last 5 years of the maximum achievable potential forecast, during the 2026–2030 timeframe.

The additional savings in the maximum achievable scenario is due to both the increased incentive levels and to additional programs that were only included in this scenario. In the program achievable scenario, all of ComEd's current programs were modeled, along with DCEO programs. Descriptions of the current ComEd programs modeled are provided below.

#### Smart Ideas for Your Home (Residential Programs)

1. **Fridge and Freezer Recycling:** The Fridge and Freezer Recycling Program promotes the retirement and recycling of inefficient, working refrigerators and freezers, as well as room air conditioners, from households by offering incentives and free pick up of the equipment.

<sup>&</sup>lt;sup>11</sup> See the IL TRM Version 5.0, Volume 4: Cross-Cutting Measures and Attachments.

<sup>&</sup>lt;sup>12</sup> Prior to the IL TRM Version 5.0, approved methods for calculating HER savings did not account for savings decay or persistence.

- 2. **Appliance Rebates:** The Appliances Rebates Program provides rebates for qualifying ENERGY STAR appliances sold through retail channels, as well as information to increase customer awareness of energy efficiency appliances.
- 3. Home Energy Assessment: The Home Energy Assessment is a free walkthrough assessment with an energy advisor that determines the ways energy is used in the home. Customers receive personalized energy efficiency recommendations, and the following energy-saving products are installed for free: ENERGY STAR certified light bulbs, smart power strips, programmable thermostats, efficient showerheads, faucet aerators, and hot water pipe insulation. Smart thermostats and ENERGY STAR LEDs are also available for purchase at a discount and include free installation.
- 4. Heating & Cooling and Weatherization: The Heating & Cooling and Weatherization Program promotes investment in long-term savings by providing rebates for the purchase and installation of high-efficiency central air conditioners and air source heat pumps, electronically commutated motors, heat pump water heaters, and smart thermostats. Weatherization measures, including air sealing, duct sealing, and attic and wall insulation, are also incented.
- 5. **Multifamily:** The Multifamily Program provides multifamily properties with free energy assessments and installation of energy-saving products in tenant spaces. Installed measures include efficient light bulbs, faucet aerators, showerheads, programmable thermostats, and pipe insulation. Smart thermostats were also included in the program modeled for this forecast.
- 6. **New Construction:** The Residential New Construction Program increases awareness and understanding among Home Energy Rating System (HERS) rating companies and home builders of the benefits of energy-efficient building practices with a focus on capturing energy efficiency opportunities available during the design and construction of new single-family homes. Incentives are provided to HERS-certified consultants that certify homes and builders who construct homes that are at least 20 percent more energy efficient than what currently is required by the State of Illinois Energy Code.
- 7. Elementary Education: The Super Savers Elementary Energy Education Program offer schools the opportunity to teach fifth-grade students and their families how to use less energy at home. Students learn about valuable ways to save energy and money through in-class education. They also receive free take-home kits containing efficient light bulbs, faucet aerators, and other energy-saving products to install at home with their families.
- 8. Lighting Discounts: The Lighting Discounts Program provides instant in-store discounts to ComEd customers at participating retail stores on select ENERGY STAR certified lighting including CFLs and LEDs.
- 9. Home Energy Report: The Home Energy Report, an opt-out only behavioral program, provides select residential customers with information on how they use energy within their households. Reports and the online portal include usage comparison to that of similar, nearby household, personalized energy efficiency advice, program promotions, and application of behavioral principles and social norm to drive adoption of energy efficient behaviors.

#### Smart Ideas for Your Business (C&I Programs)

- 1. C&I Prescriptive and Custom: The Standard or Prescriptive element of the C&I Incentives Program provides monetary incentives to customers on a "Standard" per-unit or per-fixture basis. A wide variety of deemed measures are offered, such as LEDs, T8 and T5 lighting and controls, building automation systems, air- and water-cooled chillers and variable speed drives, as well as equipment with niche or targeted market applications, such as laboratory, farm and commercial food service equipment, and grocery refrigeration measures. The Custom element of the C&I Incentives Program identifies and implements site-specific and unique cost-effective energy efficiency opportunities that are not available via the Standard element. Customized incentives based on calculated savings for specific customer projects are offered. Measures include process efficiency improvements, system upgrades, and those measures not covered by the Standard element of the program. Measurement and verification of Custom projects is required; Custom projects are also required to have a simple payback of 7 years based on total project costs.
  - a. Separate commercial and industrial Prescriptive and Custom programs were modeled for this study.
- 2. Data Centers: The Data Center element of the C&I Incentives Program follows the basic tenets of the Custom Program, such that all energy-saving measures that can be measured and verified via industry accepted measurement and verification techniques are eligible for incentives. Incentives are based on actual energy saved from pre-project conditions to post-project conditions. Measurement and verification of Data Center projects is required. The targeted segment for this program includes data centers as a business, data centers that support businesses, and subsequent systems that support those data centers.
- 3. **Midstream Incentives/BILD:** The BILD Program provides instant incentives to C&I customers interested in purchasing efficient lighting technologies including prequalified lighting products.
  - a. Unitary ACs were added to this program in the maximum achievable scenario.
- 4. **Retrocommissioning:** The Retrocommissioning Optimization Program provides detailed engineering analysis of building operations designed to identify energy-saving operational improvements with a bundled simple payback of 18 months or less. Incentives are provided to customers who commit to implementing agreed-upon energy-saving improvements. Common measures include equipment scheduling, optimization of economizer operations, and adjustment of HVAC set points.
- 5. **AirCare Plus:** The AirCare Plus Program is an enhanced HVAC maintenance service program designed to optimize the performance of all major energy-using components of packaged HVAC rooftop units and split systems. The program integrates a package of energy-saving hardware retrofits and mechanical adjustments into the standard commercial HVAC service and maintenance model to provide a cost-effective energy saving solution for 3- to 60-ton units.
- 6. **Industrial Systems Optimization Program:** The Industrial Systems Optimization Program performs studies of various industrial energy end uses, or systems, including compressed air, industrial refrigeration, and/or process cooling systems to locate energy efficiency opportunities. Cost of

assessments is covered by the program if customer obligations are met, and financial incentives are offered for implementing measures recommended by the study.

- 7. **Strategic Energy Management:** The Strategic Energy Management offering can help businesses reduce their energy costs and greenhouse gas emissions. It provides tools, coaching, and technical resources to support your energy goals through a year-long series of workshops and one-on-one coaching. It draws on principles of continuous improvement and organizational change and integrates Lean Six Sigma and other cost savings and operational excellence initiatives. The offering helps implement organizational structures, behavior changes, and systematic practices that can lead to reducing energy costs by 5 to 25 percent.
- 8. **C&I New Construction:** The New Construction Program provides technical assistance and incentives for efficient designs and measure implementation in order to influence building design practices during the design and construction of new buildings, major renovations of existing buildings, and tenant build-outs in the C&I market.
- 9. **Multifamily Common Area:** The Multifamily Common Area Program was initiated in the residential Multifamily Program but implemented via this C&I Program. The program provides multifamily properties with free energy assessments and installation of energy-saving products in common area spaces. Installed measures may include LEDS, HVAC optimization, and programmable thermostats.
- 10. **Small Business:** The Small Business Program implements energy efficiency projects for customers under 100 kW peak demand. These customers include convenience stores, offices, garages, warehouses, restaurants, and other smaller businesses. Popular measures include linear fluorescent lamps and screw-in LEDs. New fixtures, refrigeration, HVAC, and other non-lighting measures are also available for incentives.

In the maximum achievable scenario, all of the above programs were modeled, plus the following residential programs:

- 1. ENERGY STAR Retail Products Platform: The ENERGY STAR Retail Products Platform applies a consistent national program design—including product categories, specifications, data requirements, and general approach (i.e., midstream incentives)—with the goal of creating critical scale that lowers per-unit incentive and administrative costs for both program administrators and retailers. Through the platform, retailers agree to provide access to sales and market share data to program administrators in exchange for targeted product categories and consistent and streamlined data and reporting requirements from program administrators. Retailers and program administrators work together to tailor local go-to-market strategies built on the national framework allowing for some flexibility in local markets.
- 2. Online Marketplace: Online Marketplace creates a new market for energy efficiency measures by providing instant discounts on efficient lighting, appliances, and consumer electronic purchased through a program website. Customers who shop via this method can access products and discounts across vendors and gain specific insights optimized to their circumstances. For example, customers can customize based on what is most important to them (size, brand, energy savings, lifecycle cost). As with any online shopping portal, Online Marketplace can also save customers time. The program works with retailers to develop instant discounts on qualifying products.

- 3. **Connected Home:** Connected Home is a platform designed to help customers better understand and manage their energy use. It requires an advanced metering infrastructure (AMI) meter, a web portal that explains household energy use to the customer, connectivity to household devices, along with the ability to control the devices. The most commonly controlled devices to date are thermostats, but the number of controllable devices is expected to grow as Smart Grid technology matures. This could be a standalone program and/or promoted in conjunction with other energy efficiency programs. It can also be paired with demand response.
  - a. Because the technologies and policies required for a fully operational Connected Home are still in development, the performance of this program is highly uncertain. As such, we discuss Connected Home further in the Sensitivity Analysis section of this report.

Combined, these three additional programs account for 10 percent of cumulative residential savings in 2030 in the maximum achievable scenario.

Cumulative achievable potential is shown in Figure 18. Cumulative MWh savings equals 7 percent of load in 2030 in the program scenario and 10 percent of load in the maximum scenario. Maximum achievable savings grows from 6 percent of economic potential in 2017 to 35 percent in 2030. Program achievable savings grows from 4 percent of economic potential in 2017 to 24 percent in 2030.





Figure 19 shows the distribution of cumulative MWh savings forecasted for 2030 in each scenario.

2000, by Sector		
Sector	Program Potential	Max Achievable
Residential	25%	22%
Commercial	66%	72%
Industrial	8%	6%

## Figure 19. Distribution of Net Cumulative MWh Savings in 2030, by Sector

Additional cumulative savings of 3,128,361 MWh are achievable in the maximum achievable scenario. Ninety-six percent of additional savings are achievable through the 10 programs shown in Figure 20. Each of these programs contributes 1 percent or more to additional savings in this scenario.

Sector	Program	Additional Cumulative MWh in 2030 in Max Achievable Scenario	% Total Additional MWh in Max Achievable Scenario
Commercial	Small Business	1,073,222	34%
Commercial	Commercial Prescriptive & Custom	967,341	31%
Commercial	Midstream Incentives	384,897	12%
Commercial	Retrocommissioning	142,908	5%
Residential	Connected Home	110,500	4%
Residential	Lighting	92,829	3%
Commercial	C&I New Construction	81,768	3%
Residential	Retail Products Platform	72,332	2%
Residential	HVAC and Weatherization	47,811	2%
Residential	Home Energy Assessment	36,874	1%
	Total		96%

Figure 20. Programs Contributing 1 Percent or More Additional Achievable MWh Savings in the Maximum Achievable Scenario

Total program costs are shown in Figure 21. Total annual program costs in the program achievable scenario equal \$215 million in 2017 and grow to \$222 million in 2019; they decline to \$163 million in 2030. In the maximum achievable scenario, total program costs equal \$459 million in 2017 and grow to \$466 million in 2018; they decline to \$304 million in 2030.



Figure 21. Total Program Costs, 2017–2030

Recall that in the maximum achievable scenario, incentives are set to 100 percent of incremental costs. Exceptions were made for measures such as Appliance Recycling where there are no measure incremental costs—for this program, the incentive is a bounty fee for secondary appliance harvesting. In this case, the average incentive was increased from \$35 per fridge/freezer to \$50 in the maximum achievable scenario. Another exception is Commercial New Construction—in this case, the program cannot pay for 100 percent of the incremental cost of an entire efficient commercial building. For this program, incentives were increased about 30 percent over the program potential level. Non-incentive program costs were also increased, where appropriate. For example, additional marketing costs for midstream were added, and additional incentive processing costs were estimated for programs such as Commercial Prescriptive and Custom, where incentive applications must be submitted (since there is more participation in the maximum achievable scenario, more incentives would need to be processed).

Total program costs over 2017–2030 are 95 percent higher in the maximum achievable scenario, while cumulative MWh savings are 48 percent higher. Over the 14-year timeframe of the forecast, the total incremental (annual) cost per kWh is \$0.26 in the maximum achievable scenario, and \$0.19 in the program achievable potential scenario.

#### **Energy Efficiency Supply Curves**

Figure 22 shows the energy efficiency supply curves for both achievable scenarios. Net cumulative MWh in 2030 are on the x-axis. The program levelized cost per kWh is on the y-axis. Each point on the graph represents a program. In the program achievable scenario, 10 programs account for 80 percent of the savings at a cost of \$0.03 per kWh or less; 13 percent more savings are achievable through five programs at cost of \$0.04 to \$0.06 per kWh; 4 percent more savings are achievable through four programs at cost of \$0.08 to \$0.09 per kWh; the final 3 percent of savings is achieved through four additional programs at a cost of \$0.13 to \$0.18 per kWh.





In the maximum achievable scenario, seven programs account for 52 percent of the savings at a cost of \$0.03 per kWh or less; 40 percent more savings is achievable through 10 programs at a cost of \$0.04 to \$0.06 per kWh; 4 percent more savings is achievable through four programs at a cost of \$0.07 to \$0.09 per kWh; 2 percent more savings is achievable through two programs at a cost of \$0.11 to \$0.13 per kWh; the final 2 percent of savings is achieved through three additional programs at a cost of \$0.18 to \$0.28 per kWh.

Data for the supply curves is shown in Figure 23 and Figure 24.

Sector	Program	Levelized \$ per kWh	Net Cumulative MWh 2030	Sum Net Cumulative MWh 2030
Commercial	Midstream Incentives	\$0.01	643,256	643,256
Commercial	Data Center	\$0.01	187,504	830,760
Commercial	Small Business	\$0.02	1,369,869	2,200,629
Commercial	C&I New Construction	\$0.02	397,107	2,597,736
Industrial	Strategic Energy Management	\$0.02	50,754	2,648,490
Residential	Lighting	\$0.03	1,090,640	3,739,130
Commercial	<b>Commercial Prescriptive &amp; Custom</b>	\$0.03	1,456,440	5,195,570
Industrial	Industrial Prescriptive & Custom	\$0.03	293,794	5,489,364
Industrial	Industrial Systems	\$0.03	261,809	5,751,174
Residential	Multifamily	\$0.03	24,036	5,775,209
Commercial	Retrocommissioning	\$0.04	156,748	5,931,957
Commercial	Multifamily Common Area	\$0.04	37,027	5,968,984
Commercial	Street Lighting	\$0.04	103,405	6,072,389
Commercial	DCEO	\$0.05	457,047	6,529,436
Residential	Fridge & Freezer Recycling	\$0.06	150,320	6,679,756
Residential	Appliance Rebates	\$0.08	155,146	6,834,902
Residential	Home Energy Report	\$0.08	116,242	6,951,143
Residential	Elementary Education	\$0.09	3,685	6,954,828
Commercial	AirCare+	\$0.09	16,286	6,971,115
Residential	DCEO	\$ 0.13	84,104	7,055,219
Residential	HVAC and Weatherization	\$0.13	94,678	7,149,897
Residential	Home Energy Assessment	\$0.15	67,693	7,217,590
Residential	New Construction	\$0.18	2,005	7,219,595

Figure 23. Program Potential Supply Curve Data

Sector	Program	Levelized \$ per kWh	Net Cumulative MWh 2030	Sum Net Cumulative MWh 2030
Commercial	Midstream Incentives	\$0.01	1,028,153	1,028,153
Residential	Online Marketplace	\$0.02	33,105	1,061,258
Commercial	Small Business	\$0.02	2,443,091	3,504,349
Commercial	C&I New Construction	\$0.03	478,875	3,983,224
Residential	Lighting	\$0.03	1,183,469	5,166,693
Commercial	Data Center	\$0.03	200,036	5,366,729
Residential	Multifamily	\$0.03	24,697	5,391,426
Commercial	Retrocommissioning	\$0.04	299,655	5,691,081
Residential	Retail Products Platform	\$0.04	72,332	5,763,413
Industrial	Strategic Energy Management	\$0.04	55,111	5,818,525
Industrial	Industrial Systems	\$0.05	292,141	6,110,666
Industrial	Industrial Prescriptive & Custom	\$0.05	286,844	6,397,510
Commercial	Multifamily Common Area	\$0.05	41,828	6,439,338
Commercial	DCEO	\$0.05	457,047	6,896,385
Commercial	AirCare+	\$0.06	25,290	6,921,675
Commercial	<b>Commercial Prescriptive &amp; Custom</b>	\$0.06	2,423,781	9,345,456
Residential	Fridge & Freezer Recycling	\$0.06	159,600	9,505,055
Commercial	Street Lighting	\$0.07	112,603	9,617,658
Residential	Home Energy Report	\$0.08	116,242	9,733,899
Residential	Appliance Rebates	\$0.09	166,725	9,900,624
Residential	Elementary Education	\$0.09	3,685	9,904,309
Residential	HVAC and Weatherization	\$0.11	142,489	10,046,798
Residential	DCEO	\$0.13	84,104	10,130,902
Residential	Home Energy Assessment	\$0.18	104,567	10,235,469
Residential	Connected Home	\$0.25	110,500	10,345,969
Residential	New Construction	\$0.28	1,987	10,347,956

Figure 24. Maximum	Achievable P	otential Supply	Curve Data

### **Benefit-Cost Results**

Figure 25 shows total TRC benefits, costs, net benefits, and cost-effectiveness estimated under both achievable potential scenarios. Net TRC benefits in the maximum achievable scenario are 187 percent of benefits in the program achievable scenario. Additional benefits accrued in the maximum achievable scenario equal \$4.6 billion.

Figure 25. Cost-Effectiveness Results		
TRC Benefits	TRC Costs	Net TRC

Scenario	TRC Benefits (\$Mil)	TRC Costs (\$Mil)	Net TRC Benefits (\$Mil)	TRC B/C Ratio
Program achievable	\$7,230	\$1,883	\$5,348	3.8
Maximum achievable	\$12,984	\$2,988	\$9,996	4.3

In the maximum achievable scenario, increasing incentives to 100 percent does not reduce costeffectiveness because incremental, not incentive, costs count as TRC costs. Further, program experience shows that some programs benefit from economies of scale as they grow larger. Therefore, nonincentive costs do not escalate at the same rate as incentive costs in the maximum scenario. These economies of scale improved cost-effectiveness in this scenario.<sup>13</sup>

Both scenarios are very cost-effective with TRC B/C ratios of about 4.0. This is largely because ComEd's avoided costs increase over time. The last year of this forecast is 2030, but benefits accrue up to 2055 as measures installed through programs in 2030 continue saving energy. The cost-effectiveness calculations are capturing all these benefits in the outer years of the forecast.

## **Combined Heat and Power**

CHP potential was also assessed in this study. A separate CHP potential report was also developed. Below is a summary of the CHP savings forecast relative to the energy efficiency potential forecast:

- Cumulative program achievable CHP savings in 2030 is 840,000 MWh.<sup>14</sup> If CHP savings is added to energy efficiency savings in this scenario, total cumulative savings increases 12 percent over energy efficiency potential alone in 2030. The energy efficiency forecast shows that cumulative energy efficiency savings is 7 percent of sales in 2030 in the program potential scenario. If CHP savings is added to this, savings levels increase to 8 percent of sales.
- Cumulative maximum achievable CHP savings in 2030 is 1,193,000 MWh. If CHP savings is added to energy efficiency savings in this scenario, total savings increases 12 percent over energy efficiency potential alone in 2030. The energy efficiency forecast shows that cumulative energy efficiency savings is 10 percent of sales in 2030 in the maximum achievable scenario. If CHP savings is added to this, savings levels increase to 11 percent of sales.
- The **incremental program achievable CHP savings** forecast averages 64,615 MWh per year in this scenario, which is a 6 percent increase in average annual energy efficiency potential.
- The **incremental maximum achievable CHP savings** forecast averages 91,769 MWh per year in this scenario, which is a 7 percent increase in average annual energy efficiency potential.

## Sensitivity Analysis

All forecasts have forecast error, or uncertainty. Energy efficiency program planners can better manage risk in program and portfolio performance by identifying those uncertainties over which they have some control and by taking actions to mitigate the associated risks. ICF performed a sensitivity analysis to identify some of the key drivers of uncertainty in ComEd program performance in the future. The analysis focused on the maximum achievable potential scenario and examined uncertainty around the following input variables:

1. Codes and standards/technological efficiency (measure incremental savings): Measure baseline efficiency is constantly improving due to codes and standards. At the same time, some technologies

<sup>&</sup>lt;sup>13</sup> Since all non-incentive program costs are TRCs, a large increase in the share of non-incentive costs would result in lower cost-effectiveness.

<sup>&</sup>lt;sup>14</sup> CHP savings reported in this section include public and private installations. In the CHP report, savings are reported separately for public and private installations, and in total.

are also evolving quickly and surpassing new efficient baselines. The interplay between codes and standards and technological efficiency was examined for high-impact measures in the analysis and for new construction programs.

- Retail rates: The cost of electricity to end-use customers impacts the economic attractiveness of energy efficiency, and therefore program participation. The U.S. Energy Information Administration (EIA) 2015 Annual Energy Outlook retail rate forecasts were used develop a range of retail rates for the sensitivity analysis.
- Customer growth: The extent to which the customer base grows over the timeframe of the forecast impacts the eligible stock (the market size) for energy efficiency. U.S. EIA Annual Energy Outlook 2015 growth rate forecasts were used to develop a range of customer growth rates for each sector in the analysis.
- 4. **Program incentive levels:** Program incentive levels impact participation by increasing or decreasing the economic attractiveness of measures, and therefore participation. Incentive levels, as a percentage of incremental cost, were varied in the sensitivity analysis.
- 5. **Market acceptance rate:** Uncertainty around program market acceptance assumptions was quantified for most programs. There is higher uncertainty around market acceptance rates for newer ComEd programs, and for the three additional programs included in the maximum achievable scenario, than there is for programs that ComEd has offered for many years.
- 6. **Net-to-gross ratios:** NTG ratios were varied in the sensitivity analysis to model the risks associated with evaluation, measurement, and verification (EM&V).
- 7. **Smart grid:** There is a great deal of uncertainty about what the future smart grid will actually look like and how much energy efficiency savings could be realized by smart grid—enabled measures, particularly in the residential sector. ICF modeled various smart grid scenarios in the sensitivity analysis in order to examine the range of possible savings associated with the Connected Home Program (see subsection below on Connected Home for further details).

Uncertainty around the maximum achievable assumptions for each of these input variables was quantified. Low and high values were estimated around the maximum achievable assumption levels, and uniform distributions were developed around each variable based on these upper and lower bounds.

Once uncertainty around the input parameters was specified, ICF's DSMOptimizer software was used to conduct a formal uncertainty analysis. The specific method of analysis employed was a Monte Carlo simulation, which leveraged the Latin-Hypercube Sampling methods built into DSMOptimizer. Monte Carlo simulation is widely used to translate probability distributions for multiple input parameters into probability distributions for outputs of interest. This allows for a quantification of the output uncertainty and provides the user with a much higher degree of confidence in the results in comparison to a single point value.

The uncertainty analysis results were then used to generate a sensitivity analysis through the use of Multivariate Linear Regression methods in ICF's DSMOptimizer. This estimates the relative influence of each input variable on the output, and it quantifies the influence through the use of a Standardized

Regression Coefficient, which can vary from 0 to 1 for each input variable (with 0 indicating no influence on the output and 1 indicating the input variable is responsible for all of the variation in the output observed in the uncertainty analysis).

ICF performed three Monte Carlo simulations examining uncertainty around cumulative savings in 2030, one analysis for each sector: residential, commercial, and industrial. The range of likely savings by sector and in total is shown in Figure 26. Cumulative savings outcomes range from about 7,000 to 12,000 GWh. Cumulative savings in the maximum achievable scenario is about 10,000 GWh. While there is a wide range of possible outcomes, the results of the simulation also showed that savings at the upper end of the spectrum are much more likely to occur than those at the lower end of the spectrum.

Sector	Net Cumulative GWh Savings 2030		
Sector	Min	Max	
Residential	1,799	2,818	
Commercial	4,679	8,766	
Industrial	501	708	
Total	6,979	12,292	

Figure 26. Range of Cumulative Energy Savings in 2030

The key factors driving performance uncertainty in each sector are discussed below.

### **Residential Sensitivity**

Figure 27 shows which input variables drive residential savings uncertainty the most in the form of a tornado chart, in which the size of the bars illustrates the significance of each respective input variable in influencing the output examined, in this case cumulative savings. The bigger the bar, the greater the impact on performance. A negative value on the x-axis indicates a negative correlation between the input and output variable of interest, whereas a positive value indicates a positive correlation. All of the values shown in the charts below are positively correlated with performance—that is, an increase in any of these variables results in an increase in cumulative savings. The residential tornado chart shows that the three parameters influencing residential cumulative MWh savings the most are the Lighting Program NTG ratio, HVAC and Weatherization Program incentive levels, and the Appliance Rebates Program incentive levels. It is not surprising that the Lighting NTG ratio has a high impact on cumulative savings in 2030 in the maximum achievable scenario. The large impact of the HVAC and Weatherization Program incentive costs reflect that a sufficient incentive level is required for the measures in both of these programs to make economically attractive to customers.


Figure 27. Key Factors Driving Variance in Residential Cumulative Savings

# **Commercial Sensitivity**

The results of the commercial sensitivity analysis are shown in Figure 28. The tornado chart shows that the three parameters influencing the commercial cumulative MWh savings the most are the Small Business Program NTG ratio for lighting measures, high-impact measure incremental savings, and the NTG ratio for LEDs for the BILD Program. ComEd's Small Business Program grows substantially in the maximum potential scenario over program achievable levels, in part due to the very large number of small business customers in ComEd's service area, and lighting is the most important end use for this program. This outcome shows that impact evaluation results for the Small Business Program are a key uncertainty for the commercial sector. In fact, 7 out of the top 10 factors driving commercial cumulative savings are NTG ratios; the biggest risks to commercial program performance may be related to EM&V outcomes.





# **Industrial Sensitivity**

Two input variables comprised the majority of industrial program performance uncertainty: customer growth rates for all programs and incentive levels for the Industrial Systems Program, as shown in Figure 29. Industrial subsector growth rates were derived from the U.S. EIA's 2015 Annual Energy Outlook. This outcome shows that the greatest uncertainty around industrial program savings levels has to do with the economic strength of the industrial sector, which is not a factor within ComEd's control. The analysis also shows that participation in the Industrial Systems Program is sensitive to incentive levels. Industrial system upgrades are often more complicated than prescriptive upgrades such as lighting or HVAC improvements. System upgrades require changes to the equipment produced by the industry and are therefore higher risk than prescriptive upgrades. As such, plant managers may require higher incentive levels to help offset the risks associated with system improvements.



Figure 29. Key Factors Driving Variance in Industrial Cumulative Savings

# **Connected Home**

Of the three additional program modeled in the maximum achievable scenario, Connected Home has the greatest potential and the greatest uncertainty due to questions around the evolution of the smart grid. Three out of 10 of the input variables in Figure 27 (which shows the input variables with the greatest impact on residential savings) are associated with the Connected Home Program. While ComEd does plan to have full smart meter deployment by 2018, the full potential of a Connected Home–type program can only be realized if many factors outside of ComEd's control coalesce.

Across the globe, the electric industry is transitioning toward a more customer-driven business that is increasingly responsive to changing customer expectations and technological advancements. On the customer side, energy consumers are beginning to expect utilities to (1) provide increased visibility into their energy usage, (2) allow customers to choose different products to save money, and (3) offer options to control energy consumption.

Many states and utilities recognize the need to modernize the grid and deploy technologies that can provide the visibility and control capabilities that keep pace with changing expectations. AMI deployment is recognized as a technology solution that can improve meter accuracy, provide granular energy usage data, and enhance billing options for the customer. There was an unprecedented expansion in AMI deployments from 2010 through 2014 due to the 2009 American Recovery and Reinvestment Act that matched funds to support utility AMI deployment. As of 2014, U.S. penetration of AMI meters stood at 36.3 percent.<sup>15</sup> This number has only increased with grid modernization efforts

<sup>&</sup>lt;sup>15</sup> U.S. Federal Energy Regulatory Commission (FERC): *Assessment of Demand Response and Advanced Metering Staff Report.* December 2015.

taking place in the United States, as can be observed, for example, in Illinois through the state's 2011 Energy Infrastructure Modernization Act.

As the electric utility industry continues to adopt grid modernization technologies, we will see customers continuing to access more information, faster, and more mobile than ever before in this digital age. This will have implications on the household level, as customers become more engaged with their energy usage and grow more aware and empowered by customer programs. The sections below describe three major elements needed to realize the full benefits of a Connected Home–type program:

- 1. AMI-enhanced platforms
- 2. Time-of-use (TOU) rates and Real Time Pricing
- 3. Network Service Providers and Integrators (NSPIs) and the Connected Home Halo Effect

### **AMI-Enhanced Platforms**

Foundational to the Connected Home Program is the deployment of AMI onto customers' meters, which enable increased customer benefits. Benefits to customers from AMI in this context include improved billing accuracy, increased visibility into customer energy profiles, increased energy information at the hourly or more granular level, opportunities to lower customer bills, and more timely and accurate bills.

Many utilities, including ComEd, not only are deploying AMI technology onto customers' meters but also are teaming with companies to provide platforms that give customers access to their energy data and increase awareness of their energy usage. The adoption of smart meters leads to greater levels of insight and facilitates more responsive feedback from customers as energy usage data become more visible at a more granular level. The combination of AMI and home-monitoring products is exposing more customers to energy efficiency opportunities and programs, thus paving the way for customers to opt into more demand response programs and interact more dynamically with the grid. These customer engagement efforts create value to utility customers and increase overall satisfaction, while laying the foundation for the other aspects of the Connected Home.

### **TOU and Real Time Rates**

Options to adopt in-home monitoring and smart devices and systems in the market are already being offered by numerous firms such as Alarm.com, Nest, ADT, AT&T, Comcast, and Neurio. The Home Depot and other big box stores are making such products available off-the-shelf today. While widespread adoption of these devices has not yet gained traction, this aspect of the Connected Home assumes that widespread customer adoption of in-home smart devices and systems have taken place to establish the smart home, or Connected Home. The use of these devices to control household energy usage throughout the day provides greater customer empowerment and unlocks opportunities for utilities to adopt more advanced billing options, and for customers to save more money.

In this context, with AMI and smart devices installed in customers' homes, utilities have the opportunity to provide more sophisticated rate options and enhanced billing opportunities to customers. TOU rates and Real Time pricing can incentivize occupants of Connected Homes to program their household

energy loads to run energy-intensive devices (e.g., dishwashers, washing machines) and charge electric vehicles during off-peak hours.

ComEd's current Real Time pricing rate and associated enhanced customer services are an important step toward leveraging the full benefits of such rates in a Connected Home.

## NSPIs and the Connected Home Halo Effect

As customer empowerment continues and rapid advances in energy technologies take place in the electric distribution system, the "halo effect" benefits of this participation may evolve concurrently within the context of a distributed market in which the utility provides reliable energy from a myriad of sources (generation plants to local distributed energy resource [DER] producers) and provides a range of services to connected customers (thus managing a multitude of dispersed connected energy sources across a multi-node distribution network). In such a market, ComEd could act as an NSPI.

In a scenario in which the Connected Home has established end-use devices in homes that can communicate with each other and are controllable by customers, these capabilities are unlocked and a "halo effect" takes place in which customers are more engaged with distributed markets, and their propensity to participate in energy efficiency programs increases as they also opt into demand response programs that take part in dynamic and distributed energy markets. Customers may give control of their Connected Home to a NSPI and allow their energy usage to be coordinated with the operation of the electricity system. The Connected Home could also include household-level DERs that allow customers to send energy back into the energy system or be coordinated with their home's energy usage. The optimization and installation of these services could be outsourced to the NSPI. Accordingly, as a potential NSPI, ComEd could manage services for the Connected Home and provide a menu of programs for eager Connected Home occupants to adopt.

### **Connected Home Forecast**

ComEd has in place many foundational elements required to realize the full benefits of a Connected Home in the future, including investments in AMI, a Real Time pricing rate, investments in Smart (Wi-Fi) thermostat programs, a successful Home Energy Report program, and other elements. Nonetheless, many technological, market, and policy barriers need to be overcome first.

Based on our sensitivity analysis, cumulative savings impacts in 2030 for Connected Home range from 24,451 MWh to 365,885 MWh. The maximum achievable cumulative savings forecast for Connected Home in 2030 is 110,500 MWh. The highest level of estimated savings for Connected Home (365,885 MWh) is about triple the maximum achievable forecast for this program.

# **Emerging Technologies**

In addition to Connected Home, ICF modeled a number of emerging technologies, which are described in Figure 30 below.

Measure Source*	Measure Name	Applicable Sector	End Use	Measure Type
DoD ESTCP	Air Source Cold Climate Heat Pump	Commercial	HVAC	Space Heating and Cooling
DoD ESTCP	NDW Cognitive Energy Management System	Commercial	Other	Energy Management
DoD ESTCP	Converged Energy Management Control System	Commercial	Other	Energy Management
DoD ESTCP	Innovative Phase Change Approach for Significant Energy Savings	Commercial	HVAC	Space Cooling
DoD ESTCP	Energy-Efficient Phase Change Materials (PCM) Insulation	Commercial	Building Envelope	Walls, Roof, and Floors
DoD ESTCP	Collaborative Building Energy Management and Control	Commercial	Other	Energy Management
E3T	HVAC Embedded Fault Detection and Diagnostics	Commercial	HVAC	Other
E3T	Condensing Residential Clothes Dryers	Residential	Appliances	Appliances
E3T	Daylight Redirecting Window Film	Commercial	Building Envelope	Windows
E3T	Engineered Window Louvers for Daylighting	Commercial	Building Envelope	Windows
E3T	Vacuum Insulation Panels	Commercial	Building Envelope	Walls, Roof, and Floors

#### Figure 30. Emerging Technologies Modeled

\* DoD ESTCP = U.S. Department of Defense Strategic Environmental Research and Development E3T = The Bonneville Power Administration (BPA) Energy Efficiency Emerging Technology

To select these measures for analysis, ICF assessed many emerging technology databases around the country, not just the DoD and BPA programs shown here, but the programs in New York and California, as well as other government programs. The initial emerging measure list totaled 768. We paired this initial measure list against the existing list of IL TRM and non-TRM measures, and we removed any emerging measures that were already covered. We also removed measures that were not applicable to ComEd (e.g., those designed for warm weather climates).

Each measure was assigned a technology readiness level (TRL), which is a scale of zero to nine used by organizations such as the National Aeronautics and Space Administration to assess the maturity of technologies. A TRL of zero means the technology is theoretical. A TRL of nine means the technology is fully commercially available. We assigned each measure a TRL value based on the measure documentation, and we then removed all measures with a TRL of less than seven.

Next, we further vetted the list of emerging measures with TRLs of seven to nine against the TRM and other non-TRM measures and selected a limited set of emerging technologies that are innovative and were not well represented by an existing measure type.

Finally, we modeled an Emerging Technologies Program using a wide range of participation and cost assumptions, reflecting the uncertainty around the performance of these measures in the marketplace.

Given this uncertainty, we also assumed a program start year of 2021 (the first year of the forecast for all other programs is 2017).

## **Emerging Measures Forecast**

Based on our analysis, Emerging Technology cumulative savings impacts in 2030 range from 0 MWh to 504,114 MWh, with levelized costs ranging from \$0.10 per kWh to \$0.30. If the highest level of savings is achieved, commercial Emerging Technology savings would equal 19 percent of Commercial Prescriptive and Custom savings in 2030 in the maximum achievable scenario. The highest level of residential Emerging Technology savings (i.e., from condensing clothes dryers) would equal 19 percent of cumulative Appliance Rebates savings in the maximum achievable scenario in 2030.

# Conclusion

A bottom-up analysis of energy efficiency potential in ComEd's service area for the 2017–2030 timeframe was performed. Economic potential is 32 TWh or about 35 percent of sales in 2017. Thirty-three percent of economic potential is in the residential sector, 48 percent is in the commercial sector, and 19 percent is in the industrial sector.

Achievable potential was estimated for 26 programs. In the program achievable scenario, net cumulative MWh savings in 2030 equal 7 percent of load. Savings in the maximum achievable scenario equal 10 percent of load. Small Business, Commercial Prescriptive and Custom, and Midstream Incentives are the three non-residential programs with the greatest shares of additional potential in the maximum achievable scenario. Connected Home, Lighting, and Retail Products Platform are the three residential programs with the greatest shares of additional potential in the maximum achievable scenario.

The program achievable scenario has a TRC benefit-cost ratio of 3.8, and the maximum achievable scenario has a TRC benefit-cost ratio of 4.3.

A sensitivity analysis of the maximum achievable scenario was also performed. Overall, cumulative savings is most sensitive to incentive levels and to net-to-gross assumptions. Industrial savings is also sensitive to customer growth rate assumptions. Connected Home is the program with the greatest level of uncertainty around performance due to uncertainty about smart grid technology and policy. The sensitivity analysis showed cumulative savings for this program could range from 24,451 MWh to 365,885 MWh. Other emerging technologies could contribute up to an additional 504,114 MWh in savings in 2030.

# Appendices

- Appendix A: Program Level Impacts and Costs
- Appendix B: Net-to-Gross Assumptions
- Appendix C: Market Penetration Estimates
- Appendix D: Residential Measure Assumptions
- Appendix E: Commercial Measure Assumptions
- Appendix F: Industrial Measure Assumptions

# Appendix A: Program Level Impacts and Costs

ComEd Energy Efficiency Potential Study Report, 2017-2030

## Residential Program Achievable Potential Forecast, by Program

Incremental Electricity Savings - MWh									
Program Name	2017	2018	2019	2020	2025	2030			
Lighting	158,985	148,482	141,883	90,257	65,216	55,410			
Fridge & Freezer Recycling	27,508	27,473	27,695	23,888	19,814	16,523			
Multifamily	5,832	5,307	4,719	3,277	2,576	2,057			
Home Energy Report	269,046	57,330	56,640	78,829	98,097	116,242			
Home Energy Assessment	6,371	7,229	8,074	7,365	7,071	6,594			
Appliance Rebates	4,229	6,169	7,408	7,980	8,247	8,480			
HVAC and Weatherization	7,559	8,567	9,227	9,634	9,718	9,558			
New Construction	358	361	363	292	191	196			
Elementary Education	515	511	507	503	485	467			
DCEO	6,804	6,811	6,819	6,826	6,862	6,899			
Total Portfolio	491,131	271,902	266,756	232,049	220,588	224,123			

Incremental Demand Savings - M	w					
Program Name	2017	2018	2019	2020	2025	2030
Lighting	16.3	15.3	14.6	9.5	6.9	5.9
Fridge & Freezer Recycling	3.5	3.5	3.5	3.0	2.5	2.1
Multifamily	0.6	0.6	0.5	0.4	0.3	0.3
Home Energy Report	11.5	2.5	2.4	3.4	4.2	5.0
Home Energy Assessment	0.7	0.7	0.8	0.8	0.7	0.7
Appliance Rebates	0.7	1.0	1.2	1.3	1.3	1.3
HVAC and Weatherization	3.1	3.5	3.7	3.8	3.8	3.8
New Construction	0.0	0.0	0.0	0.0	0.0	0.0
Elementary Education	0.3	0.3	0.3	0.3	0.3	0.3
DCEO	2.5	2.5	2.5	2.5	2.5	2.5
Total Portfolio	39.5	30.1	29.9	25.1	22.7	22.0

Cumulative Electricity Savings	- MWh					
Program Name	2017	2018	2019	2020	2025	2030
Lighting	158,985	307,466	449,349	455,974	721,113	686,244
Fridge & Freezer Recycling	27,508	54,982	82,677	106,565	185,591	150,320
Multifamily	5,832	11,139	15,858	13,813	18,406	24,036
Home Energy Report	269,046	57,330	56,640	78,829	98,097	116,242
Home Energy Assessment	6,371	13,600	21,663	25,488	52,618	67,693
Appliance Rebates	4,229	10,398	17,806	25,786	63,994	92,753
HVAC and Weatherization	7,559	16,126	25,353	34,987	83,222	128,963
New Construction	358	653	916	1,091	1,609	2,005
Elementary Education	515	1,025	1,532	2,036	4,496	4,329
DCEO	6,804	13,616	20,434	27,260	61,498	84,104
Total Portfolio	491,131	493,921	703,236	786,033	1,318,044	1,393,715

Appendix A: Program Level Impacts and Costs Residential Program Achievable Potential Forecast, by Program

Cumulative Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Lighting	16.3	31.6	46.2	47.2	75.7	73.0
Fridge & Freezer Recycling	3.5	6.9	10.5	13.5	23.2	18.9
Multifamily	0.6	1.2	1.8	1.6	2.4	3.0
Home Energy Report	11.5	2.5	2.4	3.4	4.2	5.0
Home Energy Assessment	0.7	1.4	2.2	2.7	5.5	7.0
Appliance Rebates	0.7	1.7	2.9	4.2	10.7	14.6
HVAC and Weatherization	3.1	6.6	10.3	14.1	33.3	52.3
New Construction	0.0	0.1	0.1	0.2	0.3	0.4
Elementary Education	0.3	0.6	0.9	1.2	2.6	2.5
DCEO	2.5	5.1	7.6	10.1	22.8	30.8
Total Portfolio	39.5	58.1	85.5	98.9	182.2	209.4

Annual Program Costs - \$ mi	l					
Program Name	2017	2018	2019	2020	2025	2030
Lighting	\$33.1	\$30.3	\$28.7	\$16.9	\$13.4	\$11.9
Fridge & Freezer Recycling	\$9.2	\$9.2	\$9.2	\$9.0	\$8.7	\$8.5
Multifamily	\$1.5	\$1.4	\$1.2	\$0.6	\$0.6	\$0.5
Home Energy Report	\$12.2	\$12.0	\$12.0	\$12.0	\$9.1	\$7.1
Home Energy Assessment	\$5.7	\$6.5	\$7.3	\$7.4	\$8.2	\$8.2
Appliance Rebates	\$2.9	\$4.0	\$4.8	\$5.2	\$5.4	\$5.6
HVAC and Weatherization	\$8.0	\$8.9	\$9.5	\$9.8	\$9.5	\$9.3
New Construction	\$0.5	\$0.5	\$0.5	\$0.4	\$0.2	\$0.2
Elementary Education	\$0.4	\$0.4	\$0.3	\$0.3	\$0.2	\$0.1
DCEO	\$7.3	\$7.3	\$7.4	\$7.4	\$7.4	\$7.4
Total Portfolio	\$80.8	\$80.5	\$81.0	\$68.9	\$62.8	\$59.0

#### Appendix A: Program Level Impacts and Costs Residential Maximum Achievable Potential Forecast, by Program

Incremental Electricity Saving	s - MWh					
Program Name	2017	2018	2019	2020	2025	2030
Lighting	191,851	182,975	178,098	127,361	90,859	69,305
Fridge & Freezer Recycling	30,259	30,100	30,217	25,953	21,134	17,319
Multifamily	5,314	4,996	4,464	3,415	2,711	2,188
Home Energy Report	269,046	57,330	56,640	78,829	98,097	116,242
Home Energy Assessment	9,644	10,947	12,239	11,387	11,774	10,735
Appliance Rebates	5,610	8,180	9,816	10,565	10,814	10,727
HVAC and Weatherization	21,711	24,320	25,832	26,601	25,976	24,806
New Construction	358	360	362	291	191	195
Elementary Education	512	511	511	383	382	380
DCEO	6,804	6,811	6,819	6,826	6,862	6,899
Retail Products Platform	3,197	4,674	5,632	6,090	6,392	6,394
Online Marketplace	2,566	2,722	2,785	2,853	2,867	2,868
Connected Home	3,284	7,157	12,628	17,522	22,084	22,103
Total Portfolio	551,786	350,889	360,617	332,256	293,004	272,205

Incremental Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Lighting	19.7	18.8	18.4	13.3	9.6	7.4
Fridge & Freezer Recycling	3.8	3.8	3.8	3.3	2.7	2.2
Multifamily	0.6	0.5	0.5	0.4	0.3	0.3
Home Energy Report	0.0	0.0	0.0	0.0	0.0	0.0
Home Energy Assessment	1.0	1.1	1.2	1.2	1.0	0.9
Appliance Rebates	0.9	1.3	1.5	1.6	1.6	1.6
HVAC and Weatherization	10.5	11.7	12.2	12.5	12.2	11.7
New Construction	0.0	0.0	0.0	0.0	0.0	0.0
Elementary Education	0.1	0.1	0.1	0.1	0.1	0.1
DCEO	2.5	2.5	2.5	2.5	2.5	2.5
Retail Products Platform	0.3	0.4	0.5	0.6	0.6	0.6
Online Marketplace	0.3	0.3	0.3	0.3	0.3	0.3
Connected Home	0.0	0.0	0.0	0.0	0.0	0.0
Total Portfolio	40.0	40.8	41.4	36.0	31.1	27.7

#### Appendix A: Program Level Impacts and Costs Residential Maximum Achievable Potential Forecast, by Program

Cumulative Electricity Saving	s - MWh					
Program Name	2017	2018	2019	2020	2025	2030
Lighting	191,851	374,826	552,924	588,289	991,587	955,928
Fridge & Freezer Recycling	30,259	60,359	90,576	116,529	200,754	159,600
Multifamily	5,314	10,311	14,775	13,383	19,085	24,697
Home Energy Report	269,046	57,330	56,640	78,829	98,097	116,242
Home Energy Assessment	9,644	20,590	32,811	38,886	83,123	104,567
Appliance Rebates	5,610	13,790	23,605	34,171	85,423	118,640
HVAC and Weatherization	21,711	46,032	71,864	98,465	228,967	350,591
New Construction	358	651	912	1,085	1,598	1,987
Elementary Education	512	1,023	1,534	1,918	3,829	3,681
DCEO	6,804	13,616	20,434	27,260	61,498	84,104
Retail Products Platform	3,197	7,871	13,502	19,593	51,380	72,332
Online Marketplace	2,566	5,288	8,073	10,926	24,551	33,105
Connected Home	3,284	10,441	23,069	40,591	107,961	110,500
Total Portfolio	551,786	636,416	933,954	1,096,655	1,979,182	2,157,954

Cumulative Demand Savings - MV	V					
Program Name	2017	2018	2019	2020	2025	2030
Lighting	19.7	38.5	56.9	60.9	103.9	101.5
Fridge & Freezer Recycling	3.8	7.6	11.5	14.8	25.1	20.1
Multifamily	0.6	1.1	1.6	1.5	2.4	3.0
Home Energy Report	0.0	0.0	0.0	0.0	0.0	0.0
Home Energy Assessment	1.0	2.1	3.4	4.0	8.2	10.1
Appliance Rebates	0.9	2.1	3.7	5.3	13.4	18.0
HVAC and Weatherization	10.5	22.2	34.4	46.9	109.0	168.4
New Construction	0.0	0.1	0.1	0.2	0.3	0.4
Elementary Education	0.1	0.2	0.4	0.5	1.0	1.0
DCEO	2.5	5.1	7.6	10.1	22.8	30.8
Retail Products Platform	0.3	0.7	1.2	1.8	4.7	7.4
Online Marketplace	0.3	0.5	0.8	1.1	2.5	3.5
Connected Home	0.0	0.0	0.0	0.0	0.0	0.0
Total Portfolio	40	81	122	148	295	366

Appendix A: Program Level Impacts and Costs Residential Maximum Achievable Potential Forecast, by Program

Annual Program Costs - \$ mil						
Program Name	2017	2018	2019	2020	2025	2030
Lighting	\$50.9	\$47.6	\$45.5	\$29.0	\$21.9	\$17.5
Fridge & Freezer Recycling	\$9.9	\$9.9	\$9.9	\$9.6	\$9.2	\$8.9
Multifamily	\$1.4	\$1.3	\$1.2	\$0.6	\$0.6	\$0.6
Home Energy Report	\$12.0	\$12.0	\$12.0	\$12.0	\$11.5	\$11.9
Home Energy Assessment	\$9.4	\$10.7	\$12.2	\$12.0	\$16.0	\$15.8
Appliance Rebates	\$4.5	\$6.2	\$7.4	\$8.0	\$8.2	\$8.1
HVAC and Weatherization	\$20.2	\$22.6	\$23.9	\$24.5	\$23.9	\$22.9
New Construction	\$0.7	\$0.7	\$0.7	\$0.6	\$0.4	\$0.4
Elementary Education	\$0.4	\$0.4	\$0.3	\$0.3	\$0.2	\$0.1
DCEO	\$7.3	\$7.3	\$7.4	\$7.4	\$7.4	\$7.4
Retail Products Platform	\$1.4	\$1.7	\$1.9	\$2.0	\$2.1	\$2.1
Online Marketplace	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5	\$0.5
Connected Home	\$3.9	\$7.9	\$13.7	\$18.8	\$23.6	\$23.6
Total Portfolio	\$122.5	\$128.8	\$136.6	\$125.2	\$125.4	\$119.7

#### Appendix A: Program Level Impacts and Costs Commercial Program Achievable Potential Forecast, by Program

Incremental Electricity Savings - MWh						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	208,573	219,903	220,230	210,982	181,754	178,940
Street Lighting	5,387	7,604	7,205	5,116	1,687	5,814
Midstream Incentives	120,706	133,341	132,774	126,382	118,719	118,396
C&I New Construction	31,888	31,888	30,294	30,294	27,340	23,441
Small Business	139,329	143,591	142,423	139,171	119,311	113,693
Retrocommissioning	32,598	35,077	34,505	32,677	31,468	31,342
Data Center	15,639	15,637	15,635	15,633	15,624	15,618
AirCare+	3,068	4,307	4,955	5,163	5,375	5,380
DCEO	107,801	107,758	107,715	104,019	92,696	91,045
Multifamily Common Area	3,923	3,662	3,421	3,198	2,311	1,697
Total Portfolio	664,990	699,107	695,736	669,438	593,973	583,669

Incremental Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	45.0	55.0	62.0	64.3	60.7	60.3
Street Lighting	0.5	0.7	0.6	0.5	0.2	0.5
Midstream Incentives	7.4	8.2	8.2	7.8	7.0	6.9
C&I New Construction	8.0	8.0	7.6	7.6	6.8	5.9
Small Business	22.8	23.4	23.3	22.7	19.5	18.7
Retrocommissioning	0.5	0.6	0.5	0.5	0.5	0.5
Data Center	1.8	1.8	1.8	1.8	1.8	1.8
AirCare+	2.1	3.1	3.6	3.9	4.0	4.0
DCEO	15.8	15.8	15.8	15.3	13.6	13.3
Multifamily Common Area	0.2	0.2	0.2	0.2	0.1	0.1
Total Portfolio	103.9	116.5	123.4	124.3	114.0	111.9

Cumulative Electricity Savings - MWh									
Program Name	2017	2018	2019	2020	2025	2030			
Commercial Prescriptive & Custom	208,573	428,476	648,706	859,688	1,281,312	1,456,440			
Street Lighting	5,387	12,992	20,197	25,313	36,681	37,106			
Midstream Incentives	120,706	254,047	386,820	513,203	635,638	643,256			
C&I New Construction	31,888	63,777	94,071	124,365	268,337	397,107			
Small Business	139,329	282,920	425,343	564,514	1,197,009	1,369,869			
Retrocommissioning	32,598	67,675	102,179	134,857	155,163	156,748			
Data Center	15,639	31,276	46,911	62,544	140,683	187,504			
AirCare+	3,068	7,375	12,093	14,579	16,284	16,286			
DCEO	107,801	215,560	323,275	427,294	477,346	457,047			
Multifamily Common Area	3,923	7,585	11,006	14,204	27,401	37,027			
Total Portfolio	664,990	1,364,097	2,059,596	2,726,357	4,208,453	4,721,362			

#### Appendix A: Program Level Impacts and Costs

### Commercial Program Achievable Potential Forecast, by Program

Cumulative Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	45.0	100.0	162.0	226.3	447.9	538.8
Street Lighting	0.5	1.2	1.8	2.3	3.3	3.3
Midstream Incentives	7.4	15.7	23.9	31.7	44.8	45.6
C&I New Construction	8.0	15.9	23.5	31.1	67.1	99.3
Small Business	22.8	46.2	69.5	92.2	196.0	220.4
Retrocommissioning	0.5	1.1	1.6	2.1	2.5	2.5
Data Center	1.8	3.6	5.4	7.1	16.1	21.4
AirCare+	2.1	5.2	8.8	10.5	12.0	12.0
DCEO	15.8	31.6	47.4	62.6	70.0	67.0
Multifamily Common Area	0.2	0.4	0.6	0.7	1.4	1.9
Total Portfolio	103.9	220.4	343.8	466.0	859.6	1,010.3

Annual Program Costs - \$ mil						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	\$37.0	\$38.9	\$39.3	\$38.0	\$33.5	\$33.0
Street Lighting	\$0.8	\$1.2	\$1.1	\$0.8	\$0.3	\$0.9
Midstream Incentives	\$6.7	\$7.4	\$7.4	\$7.0	\$6.6	\$6.6
C&I New Construction	\$6.8	\$6.8	\$6.5	\$6.5	\$5.8	\$5.0
Small Business	\$21.4	\$22.0	\$21.9	\$21.4	\$18.3	\$17.4
Retrocommissioning	\$5.3	\$5.7	\$5.6	\$5.3	\$5.1	\$5.1
Data Center	\$1.8	\$1.8	\$1.8	\$1.8	\$1.8	\$1.8
AirCare+	\$0.8	\$1.1	\$1.2	\$1.3	\$1.4	\$1.4
DCEO	\$25.2	\$25.2	\$25.2	\$24.4	\$21.9	\$21.5
Multifamily Common Area	\$1.5	\$1.4	\$1.3	\$1.2	\$0.9	\$0.6
Total Portfolio	\$105.8	\$110.1	\$109.9	\$106.4	\$94.6	\$92.6

Incremental Electricity Savings - MWh										
Program Name	2017	2018	2019	2020	2025	2030				
Commercial Prescriptive & Custom	416,806	406,429	373,730	335,616	266,577	246,187				
Street Lighting	9,467	9,377	6,330	3,807	1,839	4,748				
Midstream Incentives	243,134	252,112	232,482	203,834	193,568	192,751				
C&I New Construction	38,455	38,455	36,532	36,532	32,970	28,268				
Small Business	331,737	327,965	311,221	290,644	198,420	196,409				
Retrocommissioning	86,854	83,529	72,081	59,377	62,789	60,846				
Data Center	16,681	16,680	16,678	16,677	16,668	16,664				
AirCare+	5,071	6,930	7,756	7,946	8,326	8,360				
DCEO	107,801	107,758	107,715	104,019	92,696	91,045				
Multifamily Common Area	4,484	4,174	3,890	3,629	2,597	1,892				
Total Portfolio	1,256,006	1,249,235	1,164,524	1,058,452	873,853	845,277				

Incremental Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	125.1	148.7	158.8	158.9	147.0	143.0
Street Lighting	0.8	0.8	0.6	0.3	0.2	0.4
Midstream Incentives	15.2	15.8	14.6	12.8	10.9	11.3
C&I New Construction	9.6	9.6	9.1	9.1	8.2	7.1
Small Business	54.2	53.6	50.8	47.5	32.3	32.6
Retrocommissioning	1.4	1.3	1.1	0.9	1.0	1.0
Data Center	1.9	1.9	1.9	1.9	1.9	1.9
AirCare+	3.5	5.1	5.9	6.2	6.4	6.4
DCEO	15.8	15.8	15.8	15.3	13.6	13.3
Multifamily Common Area	0.2	0.2	0.2	0.2	0.1	0.1
Total Portfolio	227.5	252.6	258.6	253.0	221.5	217.1

Cumulative Electricity Savings - MWh									
Program Name	2017	2018	2019	2020	2025	2030			
Commercial Prescriptive & Custom	416,806	823,235	1,196,965	1,532,581	2,111,321	2,423,781			
Street Lighting	9,467	18,844	25,174	28,981	39,475	41,036			
Midstream Incentives	243,134	495,246	727,727	931,561	1,014,793	1,028,153			
C&I New Construction	38,455	76,909	113,441	149,973	323,590	478,875			
Small Business	331,737	659,701	970,922	1,261,566	2,418,205	2,443,091			
Retrocommissioning	86,854	170,383	242,464	301,841	291,852	299,655			
Data Center	16,681	33,361	50,039	66,716	150,074	200,036			
AirCare+	5,071	12,001	19,403	22,985	25,316	25,290			
DCEO	107,801	215,560	323,275	427,294	477,346	457,047			
Multifamily Common Area	4,484	8,658	12,548	16,177	31,063	41,828			
Total Portfolio	1,256,006	2,505,241	3,669,411	4,723,499	6,851,973	7,396,964			

#### Appendix A: Program Level Impacts and Costs Commercial Maximum Achievable Potential Forecast, by Program

Cumulative Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	125.1	273.8	432.6	591.5	1,202.7	1,441.7
Street Lighting	0.8	1.7	2.2	2.6	3.5	3.7
Midstream Incentives	15.2	31.0	45.5	58.4	71.7	70.8
C&I New Construction	9.6	19.2	28.4	37.5	80.9	119.7
Small Business	54.2	107.7	158.6	206.0	395.9	392.1
Retrocommissioning	1.4	2.7	3.9	4.8	4.6	4.8
Data Center	1.9	3.8	5.7	7.6	17.1	22.8
AirCare+	3.5	8.6	14.5	17.2	19.3	19.3
DCEO	15.8	31.6	47.4	62.6	70.0	67.0
Multifamily Common Area	0.2	0.5	0.7	0.8	1.6	2.2
Total Portfolio	227.5	480.1	738.7	988.2	1,865.8	2,141.9

Annual Program Costs - \$ mil						
Program Name	2017	2018	2019	2020	2025	2030
Commercial Prescriptive & Custom	\$160.8	\$159.0	\$148.6	\$135.2	\$103.6	\$89.5
Street Lighting	\$1.2	\$1.2	\$0.8	\$0.5	\$0.2	\$0.6
Midstream Incentives	\$10.1	\$10.7	\$9.7	\$8.4	\$6.9	\$7.2
C&I New Construction	\$10.0	\$10.0	\$9.5	\$9.5	\$8.6	\$7.4
Small Business	\$60.2	\$59.5	\$56.5	\$52.8	\$36.0	\$35.6
Retrocommissioning	\$14.3	\$13.8	\$11.9	\$9.8	\$10.4	\$10.0
Data Center	\$4.9	\$4.9	\$4.9	\$4.9	\$4.8	\$4.8
AirCare+	\$0.8	\$1.1	\$1.2	\$1.3	\$1.3	\$1.3
DCEO	\$25.2	\$25.2	\$25.2	\$24.4	\$21.9	\$21.5
Multifamily Common Area	\$2.3	\$2.1	\$2.0	\$1.8	\$1.3	\$1.0
Total Portfolio	\$287.6	\$285.3	\$268.2	\$246.6	\$193.7	\$178.0

#### Appendix A: Program Level Impacts and Costs Industrial Program Achievable Potential Forecast, by Program

Incremental Electricity Savings - MWh									
Program Name	2017	2018	2019	2020	2025	2030			
Industrial Systems	39,420	50,635	52,881	49,544	20,194	13,180			
Industrial Prescriptive & Custom	49,472	59,179	60,258	56,235	19,586	10,870			
Strategic Energy Management	9,314	12,155	13,611	13,671	8,004	5,144			
Total Portfolio	98,206	121,970	126,750	119,450	47,784	29,195			

Incremental Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Industrial Systems	8.1	10.3	10.7	10.0	4.0	2.7
Industrial Prescriptive & Custom	9.2	11.1	11.3	10.5	3.7	2.0
Strategic Energy Management	1.8	2.3	2.6	2.6	1.5	1.0
Total Portfolio	19.1	23.7	24.6	23.1	9.2	5.7

Cumulative Electricity Savings - MWh									
Program Name	2017	2018	2019	2020	2025	2030			
Industrial Systems	39,420	84,095.85	128,624.57	163,302.38	249,579.62	261,809.48			
Industrial Prescriptive & Custom	49,472	108,651	168,909	225,144	395,300	293,794			
Strategic Energy Management	9,314	18,520	28,266	34,007	47,445	50,754			
Total Portfolio	98,206	211,267	325,799	422,454	692,324	606,358			

Cumulative Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Industrial Systems	8.1	17.1	26.0	32.7	48.6	50.1
Industrial Prescriptive & Custom	9.2	20.3	31.6	42.1	73.9	54.6
Strategic Energy Management	1.8	3.5	5.3	6.5	9.1	9.9
Total Portfolio	19.1	40.9	62.9	81.2	131.6	114.6

Annual Program Costs - \$ mil						
Program Name	2017	2018	2019	2020	2025	2030
Industrial Systems	\$9.3	\$12.0	\$12.5	\$11.7	\$4.8	\$3.1
Industrial Prescriptive & Custom	\$13.8	\$16.5	\$16.8	\$15.6	\$5.4	\$3.0
Strategic Energy Management	\$0.9	\$1.2	\$1.4	\$1.4	\$0.8	\$0.5
Total Portfolio	\$24.0	\$29.7	\$30.6	\$28.7	\$11.0	\$6.7

#### Appendix A: Program Level Impacts and Costs Industrial Maximum Achievable Potential Forecast, by Program

Incremental Electricity Savings - MWh									
Program Name	2017	2018	2019	2020	2025	2030			
Industrial Systems	54,560	66,061	65,920	58,537	18,617	12,312			
Industrial Prescriptive & Custom	62,968	73,749	72,689	64,747	7,586	16,177			
Strategic Energy Management	12,027	15,331	16,491	15,770	6,806	5,032			
Total Portfolio	129,555	155,141	155,099	139,054	33,009	33,521			

Incremental Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Industrial Systems	11.1	13.3	13.3	11.6	3.7	2.6
Industrial Prescriptive & Custom	11.8	13.8	13.6	12.1	1.4	3.0
Strategic Energy Management	2.3	2.9	3.1	3.0	1.3	1.0
Total Portfolio	25.1	30.0	30.0	26.7	6.4	6.6

Cumulative Electricity Savings - MWh										
Program Name	2017	2018	2019	2020	2025	2030				
Industrial Systems	54,560	113,171.74	169,102.52	210,573.71	297,366.09	292,141.44				
Industrial Prescriptive & Custom	62,968	136,717	209,406	274,153	416,971	286,844				
Strategic Energy Management	12,027	23,670	35,467	41,744	53,312	55,111				
Total Portfolio	129,555	273,559	413,975	526,471	767,649	634,097				

Cumulative Demand Savings - MW						
Program Name	2017	2018	2019	2020	2025	2030
Industrial Systems	11.1	22.8	33.9	41.7	57.3	55.5
Industrial Prescriptive & Custom	11.8	25.6	39.2	51.3	78.0	53.1
Strategic Energy Management	2.3	4.5	6.7	7.9	10.3	10.9
Total Portfolio	25.1	52.8	79.7	100.9	145.6	119.5

Annual Program Costs - \$ mil						
Program Name	2017	2018	2019	2020	2025	2030
Industrial Systems	\$19.0	\$23.1	\$23.0	\$20.4	\$6.5	\$4.3
Industrial Prescriptive & Custom	\$25.9	\$30.3	\$29.8	\$26.6	\$3.1	\$6.6
Strategic Energy Management	\$2.4	\$3.1	\$3.3	\$3.2	\$1.4	\$1.0
Total Portfolio	\$47.3	\$56.4	\$56.2	\$50.2	\$11.0	\$12.0

# Appendix B: Net to Gross Ratio Assumptions

# Residential Programs

		Net
		to
Program Name	Net to Gross Description	Gross Ratio
Lighting	Standard CELS	0.59
Lighting	Standard LED pre-2020	0.55
Lighting	Standard LED 2020-2030	0.75
Lighting	Specialty LEDs	0.55
Lighting	LED Trim Kits	0.55
Fridge & Freezer Recycling	Fridge Recycling	0.53
Fridge & Freezer Recycling	Freezer Recycling	0.57
Fridge & Freezer Recycling	Room AC Recycling	0.50
Multifamily	Lighting	0.98
Multifamily	Faucet aerators	0.95
Multifamily	Showerheads	0.92
Multifamily	Pstat	0.90
Multifamily	WiFi Tstat	0.80
Home Energy Report	Home Energy Report	1.00
Home Energy Assessment	Lighting	0.80
Home Energy Assessment	Hot Water DI	0.80
Home Energy Assessment	Pstat & Pstat Education	0.90
Home Energy Assessment	WiFi Tstat	0.80
Appliance Rebates	Clothes Washers	0.68
Appliance Rebates	All other	0.80
HVAC and Weatherization	WiFi Tstat	0.80
HVAC and Weatherization	All other	0.90
New Construction	New Construction	0.85
Elementary Education	Lighting	0.83
Elementary Education	All other	1.00
Retail Products Platform	Retail Products Platform	0.80
Online Marketplace	Online Marketplace	0.80
Connected Home	Connected Home	0.80
DCEO	DCEO	1.00

# Commercial Programs

		Net
		to
		Gross
Program Name	Net to Gross Description	Ratio
Commercial Prescriptive & Custom	Lighting - Fluorescent	0.74
Commercial Prescriptive & Custom	Lighting - LED	0.74
Commercial Prescriptive & Custom	Lighting - Controls	0.74
Commercial Prescriptive & Custom	HVAC - Packaged	0.63
Commercial Prescriptive & Custom	HVAC - Chillers	0.63
Commercial Prescriptive & Custom	HVAC - VFDs	0.63
Commercial Prescriptive & Custom	HVAC - Other	0.63
Commercial Prescriptive & Custom	Refrigeration	0.63
Commercial Prescriptive & Custom	Hot Water	0.63
Commercial Prescriptive & Custom	Prescriptive - other	0.63
Commercial Prescriptive & Custom	Custom - Lighting	0.68
Commercial Prescriptive & Custom	Custom - Non-lighting	0.68
Street Lighting	Street Lighting	0.80
Midstream Incentives	LED Lighting	0.77
Midstream Incentives	Fluorescent Lighting	0.61
Midstream Incentives	HVAC	0.80
C&I New Construction	C&I New Construction	0.80
Small Business	Lighting	0.91
Small Business	Refrigeration	0.91
Small Business	All other	0.91
Retrocommissioning	Retrocommissioning	0.95
Data Center	Data Center	0.60
AirCare+	AirCare+	0.80
Multifamily Common Area	Multifamily Common Area	0.95
DCEO	DCEO	0.82

# Industrial Programs

		Net
		to
		Gross
Program Name	Net to Gross Description	Ratio
Industrial Systems	Industrial Systems	0.80
Industrial Prescriptive & Custom	Industrial Prescriptive & Custom	0.68
Strategic Energy Management	Strategic Energy Management	0.80

ComEd Energy Efficiency Potential Study Report, 2017-2030

Residential Appliance Rebates Program, Program Achievable Potential

Annual Installs							
Appliance Rebates	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	Washers	15,397	22,512	27,123	29,333	30,783	30,793
ENERGY STAR and CEE Tier 2 Refrigerator	Refrigerators	9,396	13,737	16,551	17,900	18,784	20,822
ENERGY STAR Dehumidifier V 3	Dehumidifiers	14	21	25	27	29	30
Heat Pump Water Heaters	Water Heaters	364	532	641	693	728	735
High Efficiency Bathroom Exhaust Fan	Fans	3,114	4,553	5,485	5,933	6,226	6,228
Pool Pumps	Pumps	809	1,165	1,375	1,449	1,320	1,276
Smart Wifi Thermostats	Thermostats	588	860	1,036	1,121	1,226	1,231

Annual Market Penetration Rate							
Appliance Rebates	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	Washers	24.5%	35.9%	43.2%	46.7%	49.0%	49.0%
ENERGY STAR and CEE Tier 2 Refrigerator	Refrigerators	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
ENERGY STAR Dehumidifier V 3	Dehumidifiers	2.0%	2.9%	3.5%	3.8%	4.0%	4.0%
Heat Pump Water Heaters	Water Heaters	1.1%	1.6%	2.0%	2.1%	2.2%	2.2%
High Efficiency Bathroom Exhaust Fan	Fans	1.1%	1.7%	2.0%	2.2%	2.3%	2.3%
Pool Pumps	Pumps	1.7%	2.4%	2.9%	3.2%	3.3%	3.3%
Smart Wifi Thermostats	Thermostats	2.5%	3.7%	4.4%	4.8%	5.0%	5.0%

#### Residential Elementary Education Program, Program Achievable Potential

Annual Installs							
Elementary Education	Units	2017	2018	2019	2020	2025	2030
Faucet Aerators and Showerheads	Units	5,262	5,222	5,183	5,144	4,954	4,771
Annual Market Penetration Rate							
Elementary Education	Units	2017	2018	2019	2020	2025	2030
Faucet Aerators and Showerheads	Units	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%

Residential Fridge & Freezer Recycling Program, Program Achievable Potential

Annual Installs							
Fridge & Freezer Recycling	Units	2017	2018	2019	2020	2025	2030
Freezer Recycling	Freezers	5,521	5,485	5,273	4,324	2,852	1,881
Refrigerator Recycling	Refrigerators	38,762	38,731	39,294	34,110	29,002	24,659
Room Air Conditioner Recycling	Units	600	646	678	610	609	608

Annual Market Penetration Rate							
Fridge & Freezer Recycling	Units	2017	2018	2019	2020	2025	2030
Freezer Recycling	%	7.8%	8.5%	8.9%	8.0%	8.0%	8.0%
Refrigerator Recycling	%	3.3%	3.4%	3.5%	3.2%	3.2%	3.2%
Room Air Conditioner Recycling	%	0.03%	0.04%	0.04%	0.03%	0.03%	0.03%

#### Residential Home Energy Assessments Program, Program Achievable Potential

Annual Installs							
Home Energy Assessment	Units	2017	2018	2019	2020	2025	2030
Bathroom Low Flow Aerators	Aerators	438	501	562	624	680	678
ENERGY STAR Compact Fluorescent Lamp (CFL)	Lamps	171,811	194,883	217,364	0	0	0
Home Energy Audit & Retrofit Single Family: Tier 2	Measures	16,036	18,327	20,617	22,908	25,199	25,199
Kitchen Low Flow Aerators	Aerators	438	501	562	624	680	678
Low flow shower head	Showerheads	233	265	298	331	360	359
Omnidirectional A-type LED lamps	Lamps	171,811	194,883	217,364	458,164	414,144	383,516
Programmable Thermostats	Thermostats	422	337	270	216	216	216
Smart Wifi Thermostats	Thermostats	123	185	277	415	2,058	2,026
Water Heater Temp Setback	Measures	169	193	217	241	265	265

Annual Market Penetration Rate							
Home Energy Assessment	Units	2017	2018	2019	2020	2025	2030
Bathroom Low Flow Aerators	%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
ENERGY STAR Compact Fluorescent Lamp (CFL)	%	0.8%	0.9%	1.0%	0.0%	0.0%	0.0%
Home Energy Audit & Retrofit Single Family: Tier 2	%	0.7%	0.8%	0.9%	1.0%	1.1%	1.1%
Kitchen Low Flow Aerators	%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
Low flow shower head	%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%
Omnidirectional A-type LED lamps	%	0.8%	0.9%	1.0%	2.0%	2.0%	2.0%
Programmable Thermostats	%	0.06%	0.05%	0.04%	0.03%	0.03%	0.03%
Smart Wifi Thermostats	%	0.1%	0.1%	0.1%	0.2%	1.0%	1.0%
Water Heater Temp Setback	%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%

Residential Home Energy Report (HER) Program, Program Achievable Potential

Annual Installs							
Home Energy Report	Units	2017	2018	2019	2020	2025	2030
Residential Mailed Home Energy Report (HER)	Homes	1,570,368	334,621	330,599	460,110	572,570	678,478
Annual Market Penetration Rate							
Home Energy Report	Units	2017	2018	2019	2020	2025	2030
Residential Mailed Home Energy Report (HER)	%	48.3%	8.1%	7.6%	9.1%	9.4%	10.1%

#### Residential HVAC and Weatherization Program, Program Achievable Potential

Annual Installs							
HVAC and Weatherization	Units	2017	2018	2019	2020	2025	2030
Air Sealing	Homes	5,761	6,424	6,784	6,958	7,026	6,920
Air Source Heat Pump	Units	8	14	22	29	0	0
Basement Sidewall Insulation	Homes	36	41	43	44	44	44
Central Air Conditioning > 14.5 SEER	Units	308	344	364	375	0	0
Duct Insulation and Sealing	Homes	5,012	5,589	5,903	6,054	6,114	6,023
Ductless Heat Pump	Units	16	28	43	57	80	80
Floor insulation above crawlspace	Homes	17	18	19	20	20	20
Furnace Blower Motor	Units	986	1,102	1,167	1,201	1,232	1,232
Ground Source Heat Pump	Units	3	6	9	12	0	0
Smart Wifi Thermostats	Thermostats	96	164	247	321	404	406
Wall and Ceiling/Attic Insulation	Homes	53	59	62	63	64	63

Annual Market Penetration Rate							
HVAC and Weatherization	Units	2017	2018	2019	2020	2025	2030
Air Sealing	%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%
Air Source Heat Pump	%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%
Basement Sidewall Insulation	%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%
Central Air Conditioning > 14.5 SEER	%	0.4%	0.4%	0.5%	0.5%	0.0%	0.0%
Duct Insulation and Sealing	%	0.2%	0.3%	0.3%	0.3%	0.3%	0.3%
Ductless Heat Pump	%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
Floor insulation above crawlspace	%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%
Furnace Blower Motor	%	0.6%	0.6%	0.7%	0.7%	0.7%	0.7%
Ground Source Heat Pump	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Smart Wifi Thermostats	%	1.0%	1.7%	2.6%	3.5%	5.0%	5.0%
Wall and Ceiling/Attic Insulation	%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%

Residential Lighting Program, Program Achievable Potential

Annual Installs							
Lighting	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Compact Fluorescent Lamp (CFL)	Lamps	4,881,194	3,589,114	2,584,162	0	0	0
LED Downlights	Lamps	1,015,924	1,015,924	1,185,245	1,354,566	1,354,566	1,431,925
Omnidirectional A-type LED lamps	Lamps	2,349,054	2,859,718	3,166,116	3,497,010	2,064,950	1,401,473
Total	Lamps	8,246,173	7,464,756	6,935,523	4,851,576	3,419,515	2,833,398

Annual Market Penetration Rate							
Lighting	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Compact Fluorescent Lamp (CFL)	%	18.2%	13.4%	9.6%	0.0%	0.0%	0.0%
LED Downlights	%	6.4%	6.4%	7.5%	8.6%	8.6%	8.6%
Omnidirectional A-type LED lamps	%	12.3%	15.0%	16.6%	14.9%	8.8%	5.2%

#### Residential Multifamily Program, Program Achievable Potential

Annual Installs							
Multifamily	Units	2017	2018	2019	2020	2025	2030
Home Energy Audit & Retrofit Multifamily: Tier 1	Homes	17,225	16,984	16,746	16,512	15,388	14,340
ENERGY STAR Compact Fluorescent Lamp (CFL)	Lamps	221,894	193,936	169,500	0	0	0
Omnidirectional A-type LED lamps	Lamps	0	0	0	145,725	107,393	79,143
Programmable Thermostats	Thermostats	158	156	155	154	149	144
Smart Wifi Thermostats	Thermostats	0	109	109	109	108	107
Bathroom Low Flow Aerators	Aerators	848	846	844	842	831	821
Kitchen Low Flow Aerators	Aerators	848	846	844	842	831	821
Low flow shower head	Shower Heads	662	660	658	657	649	641

Annual Market Penetration Rate							
Multifamily	Units	2017	2018	2019	2020	2025	2030
Home Energy Audit & Retrofit Multifamily: Tier 1	%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
ENERGY STAR Compact Fluorescent Lamp (CFL)	%	12.6%	12.6%	12.6%	0.0%	0.0%	0.0%
Omnidirectional A-type LED lamps	%	0.0%	0.0%	0.0%	5.9%	5.9%	5.9%
Programmable Thermostats	%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Smart Wifi Thermostats	%	0.0%	0.2%	0.2%	0.2%	0.2%	0.2%
Bathroom Low Flow Aerators	%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Kitchen Low Flow Aerators	%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Low flow shower head	%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%

#### Residential New Construction Program, Program Achievable Potential

Annual Installs							
New Construction	Units	2017	2018	2019	2020	2025	2030
Air Source Heat Pump	Units	6	6	6	5	3	3
Ground Source Heat Pump	Units	8	8	8	6	4	4
CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	Units	6	6	6	5	3	3
Central Air Conditioning > 14.5 SEER	Units	173	174	175	140	92	94
Furnace Blower Motor	Motors	128	129	129	104	68	70
Heat Pump Water Heaters	Water Heaters	18	18	18	15	10	10
Water Heater Temp Setback	Homes	13	13	13	11	7	7
Smart Wifi Thermostats	Thermostats	9	10	10	8	5	5
ENERGY STAR and CEE Tier 2 Refrigerator	Refrigerators	59	59	59	48	31	32
Bathroom Low Flow Aerators	Aerators	30	30	30	24	16	16
Kitchen Low Flow Aerators	Aerators	30	30	30	24	16	16
Low flow shower head	Shower Heads	14	15	15	12	8	8
ENERGY STAR Air Purifier/Cleaner	Purifiers	45	45	46	37	24	25
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	Washers	39	39	39	32	21	21
High Efficiency Bathroom Exhaust Fan	Fans	189	190	191	154	101	103
Interior Hardwired Lighting Fixtures	Fixtures	1,370	1,380	1,389	1,118	732	749
Exterior Hardwired Lighting Fixtures	Fixtures	1,017	1,027	1,034	832	543	556
LED Downlights	Lamps	435	437	440	353	232	238

Annual Market Penetration Rate							
New Construction	Units	2017	2018	2019	2020	2025	2030
Air Source Heat Pump	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Ground Source Heat Pump	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Central Air Conditioning > 14.5 SEER	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Furnace Blower Motor	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Heat Pump Water Heaters	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Water Heater Temp Setback	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Smart Wifi Thermostats	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
ENERGY STAR and CEE Tier 2 Refrigerator	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Bathroom Low Flow Aerators	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Kitchen Low Flow Aerators	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Low flow shower head	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
ENERGY STAR Air Purifier/Cleaner	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
High Efficiency Bathroom Exhaust Fan	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Interior Hardwired Lighting Fixtures	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Exterior Hardwired Lighting Fixtures	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
LED Downlights	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%

#### Residential Appliance Rebates Program, Maximum Achievable Potential

Annual Installs							
Appliance Rebates	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Air Purifier/Cleaner	Purifiers	1,224	1,790	2,156	2,332	2,447	2,448
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	Washers	9,596	14,030	16,904	18,281	19,185	19,191
ENERGY STAR and CEE Tier 2 Refrigerator	Refrigerators	17,961	26,225	31,536	34,026	35,260	34,962
ENERGY STAR Dehumidifier V 3	Dehumidifiers	16	23	28	30	32	32
Heat Pump Water Heaters	Water Heaters	379	554	667	721	757	757
High Efficiency Bathroom Exhaust Fan	Fans	3,138	4,588	5,528	5,978	6,274	6,276
Pool Pumps	Pumps	879	1,266	1,492	1,572	1,422	1,373
Smart Wifi Thermostats	Thermostats	582	851	1,025	1,109	1,163	1,164

Annual Market Penetration Rate							
Appliance Rebates	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Air Purifier/Cleaner	%	1.8%	2.6%	3.1%	3.3%	3.5%	3.5%
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	%	19.1%	27.9%	33.6%	36.4%	38.2%	38.2%
ENERGY STAR and CEE Tier 2 Refrigerator	%	0.3%	0.5%	0.6%	0.6%	0.7%	0.7%
ENERGY STAR Dehumidifier V 3	%	2.0%	2.9%	3.5%	3.8%	4.0%	4.0%
Heat Pump Water Heaters	%	1.1%	1.6%	2.0%	2.1%	2.2%	2.2%
High Efficiency Bathroom Exhaust Fan	%	1.1%	1.7%	2.0%	2.2%	2.3%	2.3%
Pool Pumps	%	1.7%	2.4%	2.9%	3.2%	3.3%	3.3%
Smart Wifi Thermostats	%	2.5%	3.7%	4.4%	4.8%	5.0%	5.0%

Residential Connected Home Program, Maximum Achievable Potential

Annual Installs							
Connected Home	Units	2017	2018	2019	2020	2025	2030
Connected homes	Homes	15,329	33,408	58,947	81,791	103,084	103,173
Annual Market Penetration Rate							
Connected Home	Units	2017	2018	2019	2020	2025	2030
Connected homes	%	0.1%	0.3%	0.6%	0.8%	1.0%	1.0%

Faucet Aerators and Showerheads

Residential Elementary Education Program, Maximum Achievable Potential

Annual Installs							
Elementary Education	Units	2017	2018	2019	2020	2025	2030
Efficient light bulbs	Lamps	23,402	23,402	23,402	12,796	12,796	12,796
Faucet Aerators and Showerheads	Fixtures	1,403	1,400	1,398	1,395	1,381	1,367
Annual Market Penetration Rate							
Elementary Education	Units	2017	2018	2019	2020	2025	2030
Efficient light bulbs	%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%

0.2%

0.2%

0.2%

%

#### Residential Fridge & Freezer Recycling Program, Maximum Achievable Potential

Annual Installs							
Fridge & Freezer Recycling	Units	2017	2018	2019	2020	2025	2030
Freezer Recycling	Freezers	6,073	5,982	5,698	4,627	2,922	1,845
Refrigerator Recycling	Refrigerators	42,638	42,461	42,927	37,127	31,050	25,967
Room Air Conditioner Recycling	Units	660	711	746	671	670	669

Annual Market Penetration Rate							
Fridge & Freezer Recycling	Units	2017	2018	2019	2020	2025	2030
Freezer Recycling	%	8.6%	9.3%	9.8%	8.8%	8.8%	8.8%
Refrigerator Recycling	%	3.6%	3.7%	3.9%	3.5%	3.5%	3.5%
Room Air Conditioner Recycling	%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%

0.2%

0.2%

0.2%

#### Residential Home Energy Assessment Program, Maximum Achievable Potential

Annual Installs							
Home Energy Assessment	Units	2017	2018	2019	2020	2025	2030
Bathroom Low Flow Aerators	Aerators	658	750	842	934	1,012	1,010
ENERGY STAR Compact Fluorescent Lamp (CFL)	Lamps	257,717	291,220	323,411	0	0	0
Home Energy Audit & Retrofit Single Family: Tier 2	Homes	24,054	27,490	30,926	34,362	37,799	37,799
Kitchen Low Flow Aerators	Aerators	658	750	842	934	1,012	1,010
Low flow shower head	Showerheads	349	398	447	495	537	534
Omnidirectional A-type LED lamps	Lamps	257,717	291,220	323,411	687,246	590,161	527,409
Programmable Thermostats	Thermostats	345	276	221	176	176	176
Smart Wifi Thermostats	Thermostats	1,063	1,592	2,383	3,564	17,178	16,620
Water Heater Temp Setback	Measures	253	289	325	361	397	397

Annual Market Penetration Rate							
Home Energy Assessment	Units	2017	2018	2019	2020	2025	2030
Bathroom Low Flow Aerators	%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%
ENERGY STAR Compact Fluorescent Lamp (CFL)	%	1.1%	1.3%	1.4%	0.0%	0.0%	0.0%
Home Energy Audit & Retrofit Single Family: Tier 2	%	1.1%	1.2%	1.4%	1.5%	1.7%	1.7%
Kitchen Low Flow Aerators	%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%
Low flow shower head	%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%
Omnidirectional A-type LED lamps	%	1.1%	1.3%	1.4%	3.0%	3.0%	3.0%
Programmable Thermostats	%	0.1%	0.1%	0.1%	0.05%	0.05%	0.05%
Smart Wifi Thermostats	%	0.1%	0.2%	0.3%	0.5%	2.3%	2.3%
Water Heater Temp Setback	%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%

Residential Home Energy Report Program, Maximum Achievable Potential

Annual Installs							
Home Energy Report	Units	2017	2018	2019	2020	2025	2030
Residential Mailed Home Energy Report (HER)	Homes	1,570,368	380,171	403,008	546,512	524,904	570,945
Annual Market Penetration Rate							
Home Energy Report	Units	2017	2018	2019	2020	2025	2030
Residential Mailed Home Energy Report (HER)	%	48.3%	8.1%	7.6%	9.1%	11.1%	12.2%

Residential HVAC and Weatherization Program, Maximum Achievable Potential

Annual Installs							
HVAC and Weatherization	Units	2017	2018	2019	2020	2025	2030
Air Sealing	Homes	19,961	22,145	23,251	23,701	23,179	22,105
Air Source Heat Pump	Units	8	14	22	29	0	0
Basement Sidewall Insulation	Homes	317	353	373	382	385	378
Central Air Conditioning > 14.5 SEER	Units	308	344	364	375	0	0
Duct Insulation and Sealing	Homes	17,081	18,945	19,885	20,263	19,784	18,836
Ductless Heat Pump	Units	16	28	43	57	80	80
Floor insulation above crawlspace	Homes	130	144	152	156	157	154
Furnace Blower Motor	Units	1,972	2,204	2,335	2,402	2,463	2,465
Ground Source Heat Pump	Units	9	15	23	30	0	0
Smart Wifi Thermostats	Thermostats	638	1,096	1,650	2,151	2,776	2,792
Wall and Ceiling/Attic Insulation	Homes	249	277	291	298	295	285

Annual Market Penetration Rate							
HVAC and Weatherization	Units	2017	2018	2019	2020	2025	2030
Air Sealing	%	1.1%	1.3%	1.3%	1.4%	1.4%	1.4%
Air Source Heat Pump	%	0.03%	0.05%	0.07%	0.10%	0.00%	0.00%
Basement Sidewall Insulation	%	1.0%	1.2%	1.2%	1.3%	1.3%	1.3%
Central Air Conditioning > 14.5 SEER	%	0.4%	0.4%	0.5%	0.5%	0.0%	0.0%
Duct Insulation and Sealing	%	0.8%	0.9%	1.0%	1.0%	1.0%	1.0%
Ductless Heat Pump	%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%
Floor insulation above crawlspace	%	1.1%	1.2%	1.3%	1.3%	1.3%	1.3%
Furnace Blower Motor	%	1.1%	1.3%	1.3%	1.4%	1.4%	1.4%
Ground Source Heat Pump	%	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%
Smart Wifi Thermostats	%	2.0%	3.5%	5.3%	7.0%	9.9%	10.0%
Wall and Ceiling/Attic Insulation	%	0.7%	0.7%	0.8%	0.8%	0.8%	0.8%

#### Residential Lighting Program, Maximum Achievable Potential

Annual Installs							
Lighting	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Compact Fluorescent Lamp (CFL)	Lamps	5,369,314	3,948,025	2,842,578	0	0	0
LED Downlights	Lamps	1,329,168	1,329,168	1,550,696	1,772,224	1,772,224	1,772,224
Omnidirectional A-type LED lamps	Lamps	3,459,103	4,211,082	4,662,269	5,769,399	3,406,772	2,011,665

Annual Market Penetration Rate							
Lighting	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Compact Fluorescent Lamp (CFL)	%	20.0%	14.7%	10.6%	0.0%	0.0%	0.0%
LED Downlights	%	7.1%	7.1%	8.2%	9.4%	9.4%	9.4%
Omnidirectional A-type LED lamps	%	13.5%	16.5%	18.3%	16.4%	9.7%	5.7%

#### Residential Multifamily Program, Maximum Achievable Potential

Annual Installs							
Multifamily	Units	2017	2018	2019	2020	2025	2030
Bathroom Low Flow Aerators	Aerators	848	846	844	842	831	821
ENERGY STAR Compact Fluorescent Lamp (CFL)	Lamps	200,031	174,827	152,799	0	0	0
Home Energy Audit & Retrofit Multifamily: Tier 1	Homes	17,225	16,984	16,746	16,512	15,388	14,340
Kitchen Low Flow Aerators	Aerators	848	846	844	842	831	821
Low flow shower head	Showerheads	662	660	658	657	649	641
Omnidirectional A-type LED lamps	Lamps	0	0	0	145,725	107,393	79,143
Programmable Thermostats	Thermostats	153	152	151	150	145	140
Smart Wifi Thermostats	Thermostats	0	216	216	215	211	207

Annual Market Penetration Rate							
Multifamily	Units	2017	2018	2019	2020	2025	2030
Bathroom Low Flow Aerators	%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
ENERGY STAR Compact Fluorescent Lamp (CFL)	%	12.6%	12.6%	12.6%	0.0%	0.0%	0.0%
Home Energy Audit & Retrofit Multifamily: Tier 1	%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Kitchen Low Flow Aerators	%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Low flow shower head	%	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Omnidirectional A-type LED lamps	%	0.0%	0.0%	0.0%	5.9%	5.9%	5.9%
Programmable Thermostats	%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%
Smart Wifi Thermostats	%	0.0%	0.4%	0.4%	0.4%	0.4%	0.4%

#### Residential New Construction Program, Maximum Achievable Potential

Annual Installs							
New Construction	Units	2017	2018	2019	2020	2025	2030
Air Source Heat Pump	Units	6	6	6	5	3	3
Bathroom Low Flow Aerators	Aerators	30	30	30	24	16	16
CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	Units	6	6	6	5	3	3
Central Air Conditioning > 14.5 SEER	Units	129	129	130	104	68	70
ENERGY STAR Air Purifier/Cleaner	Air Purifiers	45	45	46	37	24	25
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	Washers	39	39	39	32	21	21
ENERGY STAR and CEE Tier 2 Refrigerator	Refrigerators	59	59	59	48	31	32
Exterior Hardwired Lighting Fixtures	Fixtures	1,026	1,031	1,036	833	546	559
Furnace Blower Motor	Motors	128	129	129	104	68	70
Ground Source Heat Pump	Units	8	8	8	6	4	4
Heat Pump Water Heaters	Units	18	18	18	15	10	10
High Efficiency Bathroom Exhaust Fan	Fans	189	190	191	154	101	103
Interior Hardwired Lighting Fixtures	Fixtures	1,370	1,376	1,383	1,112	729	746
Kitchen Low Flow Aerators	Aerators	30	30	30	24	16	16
LED Downlights	Lamps	435	437	440	353	232	237
Low flow shower head	Showerheads	14	15	15	12	8	8

Appendix C: Market Penetration Estimates							
Smart Wifi Thermostats	Thermostats	25	25	25	20	13	13
Water Heater Temp Setback	Measures	13	13	13	11	7	7

Annual Market Penetration Rate							
New Construction	Units	2017	2018	2019	2020	2025	2030
Air Source Heat Pump	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Bathroom Low Flow Aerators	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Central Air Conditioning > 14.5 SEER	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
ENERGY STAR Air Purifier/Cleaner	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
ENERGY STAR and CEE Tier 2 Refrigerator	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Exterior Hardwired Lighting Fixtures	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Furnace Blower Motor	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Ground Source Heat Pump	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Heat Pump Water Heaters	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
High Efficiency Bathroom Exhaust Fan	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Interior Hardwired Lighting Fixtures	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Kitchen Low Flow Aerators	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
LED Downlights	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Low flow shower head	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Smart Wifi Thermostats	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%
Water Heater Temp Setback	%	0.8%	0.8%	0.8%	0.6%	0.4%	0.4%

Residential Online Marketplace Program, Maximum Achievable Potential

Annual Installs							
Online Marketplace	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Torchiere - OM	Lamps	4,538	4,814	4,925	4,967	4,991	4,991
LED Downlights - OM	Lamps	45,466	48,238	49,345	49,765	50,011	50,013
Omnidirectional A-type LED lamps - OM	Lamps	45,635	48,417	49,528	52,872	53,133	53,135
Smart Strip	Strips	501	532	544	548	551	551

Annual Market Penetration Rate							
Online Marketplace	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Torchiere - OM	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
LED Downlights - OM	%	1.5%	1.6%	1.6%	1.7%	1.7%	1.7%
Omnidirectional A-type LED lamps - OM	%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%
Smart Strip	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%

#### Residential Retail Products Platform Program, Maximum Achievable Potential

Annual Installs							
Retail Products Platform	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Air Purifier/Cleaner - RPP	Air Purifiers	2,651	3,876	4,670	5,050	5,300	5,302
ENERGY STAR Clothes Dryer - RPP	Dryers	12,066	17,641	21,255	22,987	24,123	24,131
ENERGY STAR Freezer - RPP	Freezers	5,993	8,762	10,557	11,417	11,981	11,985

Annual Market Penetration Rate							
Retail Products Platform	Units	2017	2018	2019	2020	2025	2030
ENERGY STAR Air Purifier/Cleaner - RPP	%	3.9%	5.7%	6.9%	7.4%	7.8%	7.8%
ENERGY STAR Clothes Dryer - RPP	%	8.3%	12.1%	14.6%	15.8%	16.6%	16.6%
ENERGY STAR Freezer - RPP	%	7.1%	10.4%	12.5%	13.5%	14.2%	14.2%

#### Commercial AirCare+ Program, Program Achievable Potential

Annual Installs							
AirCare+	Units	2017	2018	2019	2020	2025	2030
Air Conditioner Tune-up	Tune-Ups	605	872	1,027	1,099	1,142	1,142
Small Commercial Programmable Thermostat Adjustments	Adjustments	275	355	411	432	446	446
Small Commercial Programmable Thermostats	Thermostats	210	269	264	223	238	240

Annual Market Penetration Rate							
AirCare+	Units	2017	2018	2019	2020	2025	2030
Air Conditioner Tune-up	%	1.50%	2.19%	2.64%	2.86%	3.00%	3.00%
Small Commercial Programmable Thermostat Adjustments	%	12.50%	18.28%	22.02%	23.81%	24.99%	25.00%
Small Commercial Programmable Thermostats	%	12.50%	18.28%	22.02%	23.81%	24.99%	25.00%

#### Commercial C&I New Construction Program, Program Achievable Potential

Annual Installs							
C&I New Construction	Units	2017	2018	2019	2020	2025	2030
Lrg New Const >100K sq ft	Square Feet	11,164,798	11,164,798	10,606,558	10,606,558	9,572,419	8,207,153
Sm New Const <=100K sq ft	Square Feet	2,263,500	2,263,500	2,150,325	2,150,325	1,940,669	1,663,881

Annual Market Penetration Rate							
C&I New Construction	Units	2017	2018	2019	2020	2025	2030
Lrg New Const >100K sq ft	%	41.46%	41.46%	39.39%	39.39%	35.55%	30.48%
Sm New Const <=100K sq ft	%	41.46%	41.46%	39.39%	39.39%	35.55%	30.48%

#### Commercial Commercial Prescriptive & Custom Program, Program Achievable Potential

Annual Installs									
Commercial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030		
Automatic Door Closer for Walk-in Coolers and Freezers	Units	1,369	1,631	1,672	1,595	1,148	1,292		
Beverage and Snack Machine Controls	Controls	1,286	1,538	1,586	1,523	1,453	1,447		
Commercial Custom Measure	Measures	389	436	450	448	400	353		
Commercial Freezers - Glass Door - 30 to 50 ft3	Freezers	1	1	1	1	1	1		
Commercial Freezers - Glass Door - greater than 50 ft3 capacity	Freezers	1	1	1	1	1	1		
Commercial Freezers - Glass Door - up to 15 ft3 capacity	Freezers	1	1	1	1	1	1		
Commercial Freezers - Solid Door - 15 to 30ft3 capacity	Freezers	1	1	1	1	1	1		
Compressed Air No-Loss Condensate Drains	Drains	228	388	515	572	492	462		
Computer Power Management Software	Measures	5,173	8,688	11,289	12,175	11,569	11,588		
Delamping	Lamps	10,208	9,765	9,348	8,955	7,757	8,059		
Door Heater Controls for Cooler or Freezer	Units	2,832	3,383	3,479	3,334	2,197	1,928		
Electric Chillers	Chillers	84	146	199	230	252	253		
Electronically Commutated Motors (ECM) for Walk-in and Reach-in									
Coolers/Freezers	ECMs	1,261	1,500	1,534	1,460	928	573		
ENERGY STAR and CEE Tier 1 Room Air Conditioner	Units	146	252	344	398	437	437		
ICF International	13	ComEd Energy Efficiency Potential Report, 2017-2030							
Appendix C: Market Penetration Estimates									
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ENERGY STAR Dishwasher	Dishwashers	2	4	5	6	6	6		
ENERGY STAR Electric Convection Oven	Ovens	17	29	40	46	51	51		
ENERGY STAR Griddle	Griddles	1	2	3	3	3	3		
ENERGY STAR Hot Food Holding Cabinets	Cabinets	1	1	1	1	2	2		
ENERGY STAR Refrigerated Beverage Vending Machine	Vending Machines	4	5	5	5	6	6		
Evaporator Fan Control	Controls	3,847	4,800	5,221	5,323	4,867	4,339		
Heat Pump Systems	Units	27	46	63	73	80	80		
High Efficiency Pre-Rinse Spray Valve	Valves	17	29	38	41	40	40		
High Performance and Reduced Wattage T8 Fixtures and Lamps	Lamps & Fixtures	148,670	139,209	130,351	122,056	112,743	112,700		
High Speed Fans	Fans	77	133	182	210	231	231		
High Volume Low Speed Fans	Fans	4	6	8	10	11	11		
Kitchen Demand Ventilation Controls	Controls	1	2	2	3	3	3		
LED Bulbs and Fixtures	Lamps & Fixtures	978	1,502	1,672	1,477	808	691		
LED Exit Signs	Signs	40,672	54,735	46,164	25,468	157	1		
Live Stock Waterer	Waterers	8	15	20	23	25	25		
Night Covers for Open Refrigerated Display Cases	Cases	617	743	772	749	719	717		
Occupancy Sensor Lighting Controls	Controls	16,472	27,709	36,103	39,088	29,971	31,996		
Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump									
(PTHP)	Units	1,275	2,204	3,011	3,480	3,824	3,826		
Refrigeration Economizers	Economizers	1,673	2,065	2,216	2,225	1,878	1,546		
Single-Package and Split System Unitary Air Conditioners-2018	Units	0	2,202	2,653	2,869	0	0		
Single-Package and Split System Unitary Air Conditioners-2023	Units	0	0	0	0	47	47		
Single-Package and Split System Unitary Air Conditioners-Current	Units	1,824	0	0	0	0	0		
Strip Curtain for Walk-in Coolers and Freezers	Units	652	785	817	794	724	726		
T5 Fixtures and Lamps	Lamps & Fixtures	28,366	27,072	25,847	24,688	19,751	15,970		
Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	VSDs	1,449	1,449	1,449	1,449	1,449	1,449		
VSD Air Compressor	Compressors	4	6	9	10	11	11		

Annual Market Penetration Rate										
Commercial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030			
Automatic Door Closer for Walk-in Coolers and Freezers	%	5.89%	7.47%	8.28%	8.63%	8.84%	8.84%			
Beverage and Snack Machine Controls	%	6.12%	7.76%	8.60%	8.96%	9.18%	9.19%			
Commercial Custom Measure	%	2.51%	2.87%	3.04%	3.10%	3.14%	3.14%			
Commercial Freezers - Glass Door - 30 to 50 ft3	%	3.06%	5.29%	7.23%	8.35%	9.18%	9.19%			
Commercial Freezers - Glass Door - greater than 50 ft3 capacity	%	3.06%	5.29%	7.23%	8.35%	9.18%	9.19%			
Commercial Freezers - Glass Door - up to 15 ft3 capacity	%	3.06%	5.29%	7.23%	8.35%	9.18%	9.19%			
Commercial Freezers - Solid Door - 15 to 30ft3 capacity	%	0.12%	0.21%	0.29%	0.33%	0.36%	0.36%			
Compressed Air No-Loss Condensate Drains	%	1.64%	2.84%	3.87%	4.48%	4.92%	4.92%			
Computer Power Management Software	%	2.82%	4.88%	6.67%	7.70%	8.47%	8.47%			
Delamping	%	4.62%	4.62%	4.62%	4.62%	4.62%	4.62%			
Door Heater Controls for Cooler or Freezer	%	6.12%	7.76%	8.60%	8.96%	9.18%	9.19%			
Electric Chillers	%	1.97%	3.40%	4.65%	5.37%	5.90%	5.91%			
Electronically Commutated Motors (ECM) for Walk-in and Reach-in										
Coolers/Freezers	%	6.12%	7.76%	8.60%	8.96%	9.18%	9.19%			
ENERGY STAR and CEE Tier 1 Room Air Conditioner	%	0.30%	0.51%	0.70%	0.81%	0.89%	0.89%			
ENERGY STAR Dishwasher	%	1.27%	2.20%	3.01%	3.48%	3.82%	3.82%			
ICF International	14	C	ComEd Energy Efficiency Potential Report, 2017-2030							

Appendix C: Market Penetration Estimates							
ENERGY STAR Electric Convection Oven	%	1.39%	2.40%	3.28%	3.79%	4.17%	4.17%
ENERGY STAR Griddle	%	3.06%	5.29%	7.23%	8.35%	9.18%	9.19%
ENERGY STAR Hot Food Holding Cabinets	%	3.06%	5.29%	7.23%	8.35%	9.18%	9.19%
ENERGY STAR Refrigerated Beverage Vending Machine	%	3.03%	3.83%	4.25%	4.43%	4.54%	4.54%
Evaporator Fan Control	%	1.52%	1.92%	2.13%	2.22%	2.27%	2.27%
Heat Pump Systems	%	1.56%	2.70%	3.69%	4.27%	4.69%	4.69%
High Efficiency Pre-Rinse Spray Valve	%	3.06%	5.29%	7.23%	8.35%	9.18%	9.19%
High Performance and Reduced Wattage T8 Fixtures and Lamps	%	6.36%	6.36%	6.36%	6.36%	6.36%	6.36%
High Speed Fans	%	1.42%	2.45%	3.34%	3.86%	4.24%	4.25%
High Volume Low Speed Fans	%	1.34%	2.31%	3.15%	3.65%	4.01%	4.01%
Kitchen Demand Ventilation Controls	%	1.25%	2.16%	2.95%	3.41%	3.75%	3.75%
LED Bulbs and Fixtures	%	17.12%	29.59%	40.42%	46.71%	51.33%	51.36%
LED Exit Signs	%	22.14%	38.26%	52.26%	60.39%	66.36%	66.41%
Live Stock Waterer	%	1.07%	1.84%	2.52%	2.91%	3.20%	3.20%
Night Covers for Open Refrigerated Display Cases	%	3.66%	4.63%	5.14%	5.35%	5.48%	5.48%
Occupancy Sensor Lighting Controls	%	2.68%	4.63%	6.33%	7.31%	8.03%	8.04%
Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump							
(PTHP)	%	1.19%	2.05%	2.80%	3.23%	3.55%	3.56%
Refrigeration Economizers	%	2.88%	3.64%	4.04%	4.21%	4.31%	4.31%
Single-Package and Split System Unitary Air Conditioners-2018	%	0.00%	1.17%	1.41%	1.52%	0.00%	0.00%
Single-Package and Split System Unitary Air Conditioners-2023	%	0.00%	0.00%	0.00%	0.00%	2.51%	2.51%
Single-Package and Split System Unitary Air Conditioners-Current	%	1.09%	0.00%	0.00%	0.00%	0.00%	0.00%
Strip Curtain for Walk-in Coolers and Freezers	%	6.12%	7.76%	8.60%	8.96%	9.18%	9.19%
T5 Fixtures and Lamps	%	3.57%	3.57%	3.57%	3.57%	3.57%	3.57%
Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	%	24.57%	24.57%	24.57%	24.57%	24.57%	24.57%
VSD Air Compressor	%	0.10%	0.17%	0.23%	0.27%	0.29%	0.29%

#### Commercial Data Center Program, Program Achievable Potential

Annual Installs							
Data Center	Units	2017	2018	2019	2020	2025	2030
Air Flow Management	Projects	7	7	7	7	7	7
Load Distribution	Projects	4	4	4	4	4	4
Waterside Economizer	Projects	3	3	3	3	3	3

Annual Market Penetration Rate							
Data Center	Units	2017	2018	2019	2020	2025	2030
Air Flow Management	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Load Distribution	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Waterside Economizer	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%

Commercial Midstream Incentives Program, Program Achievable Potential

Annual Installs							
Midstream Incentives	Units	2017	2018	2019	2020	2025	2030
High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	Lamps & Fixtures	138,045	164,765	169,465	162,588	123,060	137,820
LED Bulbs and Fixtures	Lamps & Fixtures	438,644	483,955	481,556	458,194	435,861	434,129

Annual Market Penetration Rate							
Midstream Incentives	Units	2017	2018	2019	2020	2025	2030
High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	%	11.1%	14.0%	15.6%	16.2%	16.6%	16.6%
LED Bulbs and Fixtures	%	5.8%	6.8%	7.2%	7.4%	7.5%	7.5%

#### Commercial RetroCommissioning Program, Program Achievable Potential

RetroCommissioning Units 2017 2018	2019 202	2025	2030
RetroCommissioning Measures 38,770,384 41,718,369 41,03	37,856 38,864,74	37,426,118	37,276,685

Annual Market Penetration Rate							
RetroCommissioning	Units	2017	2018	2019	2020	2025	2030
RetroCommissioning	%	6.0%	6.9%	7.3%	7.4%	7.5%	7.5%

#### Commercial Small Business Program, Program Achievable Potential

Annual Installs							
Small Business	Units	2017	2018	2019	2020	2025	2030
Low Flow Faucet Aerators - Electric DHW fuel	Aerators	32,963	33,971	33,695	32,925	28,202	28,926
Low Flow Showerheads - Electric DHW fuel	Showerheads	11	11	11	11	9	9
Small Business Program Lighting Upgrades	Measures	5,246	5,406	5,362	5,240	4,488	4,314
Small Business Program Refrigeration Upgrades	Measures	5,246	5,406	5,362	5,240	4,488	3,825
Small Commercial Programmable Thermostats	Thermostats	256	264	262	256	258	258

Annual Market Penetration Rate							
Small Business	Units	2017	2018	2019	2020	2025	2030
Low Flow Faucet Aerators - Electric DHW fuel	%	2.9%	3.0%	3.1%	3.1%	3.1%	3.1%
Low Flow Showerheads - Electric DHW fuel	%	2.9%	3.0%	3.1%	3.1%	3.1%	3.1%
Small Business Program Lighting Upgrades	%	2.9%	3.0%	3.1%	3.1%	3.1%	3.1%
Small Business Program Refrigeration Upgrades	%	2.9%	3.0%	3.1%	3.1%	3.1%	3.1%
Small Commercial Programmable Thermostats	%	2.9%	3.0%	3.1%	3.1%	3.1%	3.1%

Commercial Street Lighting Program, Program Achievable Potential

Annual Installs							
Street Lighting	Units	2017	2018	2019	2020	2025	2030
LED Traffic and Pedestrian Signals	Signals	9,702	14,003	13,894	10,588	3,875	11,470
Annual Market Penetration Rate							
Street Lighting	Units	2017	2018	2019	2020	2025	2030
LED Traffic and Pedestrian Signals	%	12.1%	20.9%	28.5%	33.0%	36.2%	36.2%

Commercial Multifamily Common Area Program, Program Achievable Potential

Annual Installs							
Multifamily Common Area	Units	2017	2018	2019	2020	2025	2030
MF DI Lighting	Lamps & Fixtures	60,648	56,607	52,883	49,445	35,732	26,227

Annual Market Penetration Rate							
Multifamily Common Area	Units	2017	2018	2019	2020	2025	2030
MF DI Lighting	%	1.8%	1.7%	1.6%	1.5%	1.2%	0.9%

#### Commercial AirCare+ Program, Maximum Achievable Potential

Annual Installs							
AirCare+	Units	2017	2018	2019	2020	2025	2030
Air Conditioner Tune-up	Tune-Ups	1,009	1,438	1,670	1,774	1,834	1,834
Small Commercial Programmable Thermostat Adjustments	Adjustments	512	592	684	703	722	722
Small Commercial Programmable Thermostats	Thermostats	350	405	339	232	293	308

Annual Market Penetration Rate							
AirCare+	Units	2017	2018	2019	2020	2025	2030
Air Conditioner Tune-up	%	2.5%	3.7%	4.4%	4.8%	5.0%	5.0%
Small Commercial Programmable Thermostat Adjustments	%	20.8%	30.5%	36.7%	39.7%	41.7%	41.7%
Small Commercial Programmable Thermostats	%	20.8%	30.5%	36.7%	39.7%	41.7%	41.7%

#### Commercial C&I New Construction Program, Maximum Achievable Potential

Annual Installs							
C&I New Construction	Units	2017	2018	2019	2020	2025	2030
Lrg New Const >100K sq ft	Square Feet	13,463,730	13,463,730	12,790,544	12,790,544	11,543,466	9,897,079
Sm New Const <=100K sq ft	Square Feet	2,729,576	2,729,576	2,593,097	2,593,097	2,340,270	2,006,489

Annual Market Penetration Rate							
C&I New Construction	Units	2017	2018	2019	2020	2025	2030
Lrg New Const >100K sq ft	%	50.0%	50.0%	47.5%	47.5%	42.9%	36.8%
Sm New Const <=100K sq ft	%	50.0%	50.0%	47.5%	47.5%	42.9%	36.8%

#### Commercial Commercial Prescriptive & Custom Program, Maximum Achievable Potential

Annual Installs							
Commercial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030
Automatic Door Closer for Walk-in Coolers and Freezers	Units	2,244	2,564	2,491	2,237	1,372	1,776
Beverage and Snack Machine Controls	Controls	2,297	2,626	2,550	2,291	2,214	2,172
Commercial Custom Measure	Measures	1,302	1,368	1,310	1,208	746	483
Commercial Freezers - Glass Door - 30 to 50 ft3	Freezers	1	1	1	1	1	1
Commercial Freezers - Glass Door - greater than 50 ft3 capacity	Freezers	1	1	1	1	1	1
Commercial Freezers - Glass Door - up to 15 ft3 capacity	Freezers	1	1	1	1	1	1
Commercial Freezers - Solid Door - 15 to 30ft3 capacity	Freezers	1	1	1	1	1	1
Compressed Air No-Loss Condensate Drains	Drains	1,023	1,385	1,490	1,403	673	939
Computer Power Management Software	Measures	13,461	18,236	19,610	18,463	17,217	16,951
Delamping	Lamps	21,815	19,465	17,418	15,634	11,969	13,680
Door Heater Controls for Cooler or Freezer	Units	4,975	5,686	5,522	4,961	2,311	2,504
Electric Chillers	Chillers	586	856	1,032	1,116	1,171	1,171
Electronically Commutated Motors (ECM) for Walk-in and Reach-in							
Coolers/Freezers	ECMs	2,017	2,305	2,239	2,011	937	423
ENERGY STAR and CEE Tier 1 Room Air Conditioner	Units	1,932	2,825	3,404	3,682	3,864	3,865
ICF International	18		ComEd Ener	gy Efficiency	Potential Re	eport, 2017-	2030

Appendix C: Market Penetration Estimates							
ENERGY STAR Dishwasher	Dishwashers	5	8	9	10	11	11
ENERGY STAR Electric Convection Oven	Ovens	90	131	158	171	179	179
ENERGY STAR Griddle	Griddles	3	4	4	5	5	5
ENERGY STAR Hot Food Holding Cabinets	Cabinets	2	2	3	3	3	3
ENERGY STAR Refrigerated Beverage Vending Machine	Vending Machines	10	12	14	14	15	15
Evaporator Fan Control	Controls	24,877	28,430	27,612	24,805	11,557	5,221
Guest Room Energy Management (PTAC & PTHP)	Measures	0.02	0.03	0.04	0.04	0.04	0.04
Heat Pump Systems	Units	416	609	733	793	832	833
High Efficiency Pre-Rinse Spray Valve	Valves	41	57	62	60	58	57
High Performance and Reduced Wattage T8 Fixtures and Lamps	Lamps & Fixtures	250,930	218,662	190,543	166,041	156,937	151,261
High Speed Fans	Fans	249	364	439	474	498	498
High Volume Low Speed Fans	Fans	19	28	34	37	39	39
Kitchen Demand Ventilation Controls	Controls	6	9	11	12	12	12
LED Bulbs and Fixtures	Lamps & Fixtures	3,633	3,212	1,743	836	1,433	518
LED Exit Signs	Signs	78,090	65,652	29,947	8,140	1	0
Live Stock Waterer	Waterers	58	85	102	111	116	116
Night Covers for Open Refrigerated Display Cases	Covers	1,532	1,751	1,701	1,528	1,477	1,449
Occupancy Sensor Lighting Controls	Controls	40,843	55,877	60,993	58,492	36,438	45,304
Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump							
(PTHP)	Units	6,894	10,080	12,144	13,134	13,783	13,788
Refrigeration Economizers	Economizers	6,468	7,392	7,179	6,450	3,005	1,358
Single-Package and Split System Unitary Air Conditioners-Current	Units	9,894	14,466	17,429	18,849	19,781	19,788
Strip Curtain for Walk-in Coolers and Freezers	Units	2,114	2,416	2,347	2,108	1,856	1,807
T5 Fixtures and Lamps	Lamps & Fixtures	103,676	90,572	79,153	69,203	35,655	18,799
Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	VSDs	5,654	5,654	5,654	5,654	5,654	5,654
VSD Air Compressor	Compressors	27	39	47	51	54	54

Annual Market Penetration Rate							
Commercial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030
Automatic Door Closer for Walk-in Coolers and Freezers	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Beverage and Snack Machine Controls	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Commercial Custom Measure	%	9.6%	11.0%	11.6%	11.9%	12.0%	12.0%
Commercial Freezers - Glass Door - 30 to 50 ft3	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Commercial Freezers - Glass Door - greater than 50 ft3 capacity	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Commercial Freezers - Glass Door - up to 15 ft3 capacity	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Commercial Freezers - Solid Door - 15 to 30ft3 capacity	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Compressed Air No-Loss Condensate Drains	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Computer Power Management Software	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Delamping	%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%
Door Heater Controls for Cooler or Freezer	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Electric Chillers	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Electronically Commutated Motors (ECM) for Walk-in and Reach-in							
Coolers/Freezers	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
ENERGY STAR and CEE Tier 1 Room Air Conditioner	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
ENERGY STAR Dishwasher	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
ENERGY STAR Electric Convection Oven	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
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Appendix C: Market Penetration Estimates							
ENERGY STAR Griddle	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
ENERGY STAR Hot Food Holding Cabinets	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
ENERGY STAR Refrigerated Beverage Vending Machine	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Evaporator Fan Control	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Guest Room Energy Management (PTAC & PTHP)	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Heat Pump Systems	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
High Efficiency Pre-Rinse Spray Valve	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
High Performance and Reduced Wattage T8 Fixtures and Lamps	%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%
High Speed Fans	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
High Volume Low Speed Fans	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Kitchen Demand Ventilation Controls	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
LED Bulbs and Fixtures	%	42.5%	62.1%	74.9%	81.0%	85.0%	85.0%
LED Exit Signs	%	42.5%	62.1%	74.9%	81.0%	85.0%	85.0%
Live Stock Waterer	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Night Covers for Open Refrigerated Display Cases	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Occupancy Sensor Lighting Controls	%	6.4%	9.4%	11.3%	12.2%	12.9%	12.9%
Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump							
(PTHP)	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Refrigeration Economizers	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
Single-Package and Split System Unitary Air Conditioners-Current	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%
Strip Curtain for Walk-in Coolers and Freezers	%	9.8%	12.4%	13.8%	14.3%	14.7%	14.7%
T5 Fixtures and Lamps	%	12.9%	12.9%	12.9%	12.9%	12.9%	12.9%
Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	%	60.6%	60.6%	60.6%	60.6%	60.6%	60.6%
VSD Air Compressor	%	7.3%	10.7%	12.9%	14.0%	14.7%	14.7%

#### Commercial Data Center Program, Maximum Achievable Potential

Annual Installs							
Data Center	Units	2017	2018	2019	2020	2025	2030
Air Flow Management	Projects	5	5	5	5	5	5
Load Distribution	Projects	5	5	5	5	5	5
Waterside Economizer	Projects	5	5	5	5	5	5

Annual Market Penetration Rate							
Data Center	Units	2017	2018	2019	2020	2025	2030
Air Flow Management	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Load Distribution	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
Waterside Economizer	%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%

#### Commercial Midstream Incentives Program, Maximum Achievable Potential

Annual Installs							
Midstream Incentives	Units	2017	2018	2019	2020	2025	2030
High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	Lamps & Fixtures	428,498	431,828	358,800	275,604	229,599	235,971
LED Bulbs and Fixtures	Lamps & Fixtures	877,287	908,702	838,802	736,275	715,505	706,386
Single-Package and Split System Unitary Air Conditioners-2018	Lamps & Fixtures	0	2,252	2,713	2,934	0	0

Annual Market Penetration Rate									
Midstream Incentives	Units	2017	2018	2019	2020	2025	2030		
High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	%	23.1%	29.2%	32.4%	33.7%	34.6%	34.6%		
LED Bulbs and Fixtures	%	11.6%	13.5%	14.5%	14.8%	15.0%	15.0%		
Single-Package and Split System Unitary Air Conditioners-2018	%	0.0%	1.5%	1.8%	1.9%	0.0%	0.0%		

#### Commercial RetroCommissioning Program, Maximum Achievable Potential

Annual Installs							
RetroCommissioning	Units	2017	2018	2019	2020	2025	2030
RetroCommissioning	Measures	103,299,394	99,345,240	85,729,377	70,619,710	74,677,407	72,367,496

Annual Market Penetration Rate							
RetroCommissioning	Units	2017	2018	2019	2020	2025	2030
RetroCommissioning	%	16.0%	18.3%	19.3%	19.7%	20.0%	20.0%

#### Commercial Small Business Program, Maximum Achievable Potential

Annual Installs							
Small Business	Units	2017	2018	2019	2020	2025	2030
Low Flow Faucet Aerators - Electric DHW fuel	Aerators	78,483	77,590	73,629	68,761	46,824	54,907
Low Flow Showerheads - Electric DHW fuel	Showerheads	26	26	25	23	16	17
Small Business Program Lighting Upgrades	Upgrades	12,490	12,348	11,718	10,943	7,452	7,584
Small Business Program Refrigeration Upgrades	Upgrades	12,490	12,348	11,718	10,943	7,452	5,047
Small Commercial Programmable Thermostats	Thermostats	610	603	573	535	548	548

Annual Market Penetration Rate							
Small Business	Units	2017	2018	2019	2020	2025	2030
Low Flow Faucet Aerators - Electric DHW fuel	%	6.8%	7.2%	7.4%	7.5%	7.5%	7.5%
Low Flow Showerheads - Electric DHW fuel	%	6.8%	7.2%	7.4%	7.5%	7.5%	7.5%
Small Business Program Lighting Upgrades	%	6.8%	7.2%	7.4%	7.5%	7.5%	7.5%
Small Business Program Refrigeration Upgrades	%	6.8%	7.2%	7.4%	7.5%	7.5%	7.5%
Small Commercial Programmable Thermostats	%	6.8%	7.2%	7.4%	7.5%	7.5%	7.5%

Commercial Street Lighting Program, Maximum Achievable Potential

Annual Installs							
Street Lighting	Units	2017	2018	2019	2020	2025	2030
LED Traffic and Pedestrian Signals	Signals	17,179	17,809	13,055	8,613	4,179	10,328
Annual Market Penetration Rate							
Street Lighting	Units	2017	2018	2019	2020	2025	2030
LED Traffic and Pedestrian Signals	%	21.6%	31.6%	38.1%	41.2%	43.2%	43.2%

Commercial Multifamily Common Area Program, Maximum Achievable Potential

Annual Installs							
Multifamily Common Area	Units	2017	2018	2019	2020	2025	2030
High Performance and Reduced Wattage T8 Fixtures and Lamps	Lamps & Fixtures	69,312	64,529	60,138	56,100	40,144	29,242

Annual Market Penetration Rate							
Multifamily Common Area	Units	2017	2018	2019	2020	2025	2030
High Performance and Reduced Wattage T8 Fixtures and Lamps	%	2.0%	1.9%	1.8%	1.7%	1.3%	1.0%

Industrial Prescriptive & Custom Program, Program Achievable Potential

Annual Installs							
Industrial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030
Automated Temperature Control	Controls	22,318	26,073	25,546	22,545	7,267	7,107
Efficient Lighting Design	Measures	147,267	176,998	181,163	170,279	65,302	28,453
High efficiency ballasts for lighting	Ballasts	131,783	156,748	157,940	145,241	35,083	25,304
High efficiency non-packaged HVAC equipment	Units	874	16	0	0	0	42
High Efficiency Unitary AC	Units	32,729	39,677	41,129	39,324	19,406	2,089
Premium efficiency ventilation control with VSD	Units	4,984	6,439	7,271	7,710	8,629	9,450
Warehouse Loading Dock Seals	Seals	1,309	1,282	870	252	0	125

Annual Market Penetration Rate							
Industrial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030
Automated Temperature Control	%	4.0%	5.1%	5.6%	5.9%	6.0%	6.0%
Efficient Lighting Design	%	3.6%	4.6%	5.1%	5.3%	5.4%	5.4%
High efficiency ballasts for lighting	%	4.0%	5.1%	5.6%	5.9%	6.0%	6.0%
High efficiency non-packaged HVAC equipment	%	4.0%	5.1%	5.6%	5.9%	6.0%	6.0%
High Efficiency Unitary AC	%	3.2%	4.1%	4.5%	4.7%	4.8%	4.8%
Premium efficiency ventilation control with VSD	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Warehouse Loading Dock Seals	%	1.3%	1.6%	1.8%	1.9%	1.9%	1.9%

## Industrial Systems Program, Program Achievable Potential

Annual Installs							
Industrial Systems	Units	2017	2018	2019	2020	2025	2030
Air Curtains (Dryer)	Curtains	5,998	5,631	4,509	3,880	43	0
Air Curtains (Oven)	Curtains	1,036	1,223	1,060	949	12	0
Eliminate air leaks	Measures	3,739	4,965	5,344	4,939	1,908	1,888
Impeller Trimming (Pump)	Measures	10,870	14,437	15,505	13,289	0	0
Insulation (Dryer)	Measures	16,387	21,197	21,518	16,138	828	0
Insulation (Furnace)	Measures	11,962	15,167	14,716	9,720	0	0
Insulation (Kiln)	Measures	11,464	14,522	14,059	9,226	0	0
Minimize operating air pressure	Measures	33,547	47,020	55,135	54,559	21,340	21,417
Optimization of pumping system	Measures	785	1,137	1,417	1,567	1,235	558
Optimized chilled water temperature and/or optimized condenser temperature	Measures	5,644	7,713	8,710	8,464	2,040	2,075
Optimized condenser pressure	Measures	5,644	7,713	8,710	8,464	2,040	2,075
Optimized Distribution System	Measures	33,645	46,557	53,761	52 <i>,</i> 639	1,247	12,498
Optimized motor control	Measures	31,580	45,548	56,374	61,575	41,622	7,249
Premium Efficiency Control with ASDs (Pumps)	Measures	22,747	33,060	41,455	46,175	39,120	22,756
Preventative Dryer Maintenance	Measures	10,602	13,626	13,602	10,216	2,736	2,770
Preventative Fan Maintenance	Measures	11,269	16,518	20,962	24,248	29,103	29,265
Preventative Furnace Maintenance	Measures	8,050	10,091	9,505	6,053	1,658	1,664
Preventative Kiln Maintenance	Measures	7,609	9,510	8,894	5 <i>,</i> 537	1,538	1,545
Preventative Motor Maintenance	Measures	23,078	32,810	39,677	42,967	26,822	14,530
Preventative Oven Maintenance	Measures	10,602	13,626	13,602	10,216	2,736	2,770
Preventative Pump Maintenance	Measures	18,376	26,467	32,683	36,456	32,355	17,966
Preventative refrigeration/cooling system maintenance	Measures	4,325	5,738	6,122	5,349	1,252	1,247
Process Heat Recovery to Preheat Makeup Water	Measures	7,060	9,624	10,837	10,168	1,388	377
Replace compressed air use with mechanical or electrical	Measures	15,488	14,300	5,744	0	0	0
Smart Defrost Controls	Controls	4,979	4,977	2,273	1	0	0
Synchronous Belts for Air Compressors	Belts	38,260	51,583	56,974	51,614	3,508	12,083
VSD on chiller compressor	VSDs	23,487	32,954	39,126	40,286	8,845	0

Annual Market Penetration Rate							
Industrial Systems	Units	2017	2018	2019	2020	2025	2030
Air Curtains (Dryer)	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Air Curtains (Oven)	%	0.23%	0.33%	0.42%	0.49%	0.56%	0.57%
Eliminate air leaks	%	4.00%	5.85%	7.49%	8.63%	9.96%	10.00%
Impeller Trimming (Pump)	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Insulation (Dryer)	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Insulation (Furnace)	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Insulation (Kiln)	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Minimize operating air pressure	%	4.00%	5.85%	7.49%	8.63%	9.96%	10.00%
Optimization of pumping system	%	0.57%	0.84%	1.07%	1.24%	1.43%	1.43%
Optimized chilled water temperature and/or optimized condenser temperature	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Optimized condenser pressure	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Optimized Distribution System	%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%
Optimized motor control	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Premium Efficiency Control with ASDs (Pumps)	%	1.03%	1.50%	1.92%	2.22%	2.56%	2.57%
Preventative Dryer Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative Fan Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative Furnace Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative Kiln Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative Motor Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative Oven Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative Pump Maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Preventative refrigeration/cooling system maintenance	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Process Heat Recovery to Preheat Makeup Water	%	0.07%	0.10%	0.13%	0.14%	0.17%	0.17%
Replace compressed air use with mechanical or electrical	%	3.59%	5.26%	6.73%	7.76%	8.95%	8.98%
Smart Defrost Controls	%	2.20%	3.22%	4.12%	4.75%	5.48%	5.50%
Synchronous Belts for Air Compressors	%	1.92%	2.82%	3.60%	4.15%	4.79%	4.81%
VSD on chiller compressor	%	1.57%	2.30%	2.94%	3.39%	3.91%	3.93%

#### Industrial Strategic Energy Management Program, Program Achievable Potential

Annual Installs							
Strategic Energy Management	Units	2017	2018	2019	2020	2025	2030
Minimize operating air pressure	Measures	16,609	21,760	24,442	24,253	9,561	5,684
Optimization of pumping system	Measures	2,551	3,459	4,115	4,458	4,095	3,116
Optimized chilled water temperature and/or optimized condenser temperature	Measures	13,997	17,988	19,671	19,356	4,572	4,173
Optimized condenser pressure	Measures	13,997	17,988	19,671	19,356	4,572	4,173
Optimized Distribution System	Measures	12,438	16,476	18,904	19,470	10,391	2,517
Optimized motor control	Measures	30,750	41,596	49,351	53,348	48,610	36,518
Preventative Dryer Maintenance	Measures	4,233	4,964	4,527	3,063	795	740
Preventative Fan Maintenance	Measures	8,434	11,494	13,781	15,403	18,233	19,308
Preventative Furnace Maintenance	Measures	2,377	2,642	2,112	878	293	294
Preventative Kiln Maintenance	Measures	2,294	2,545	2,022	815	281	281
Preventative Motor Maintenance	Measures	17,400	22,876	26,025	27,210	18,344	8,166
Preventative Oven Maintenance	Measures	4,233	4,964	4,527	3,063	795	740
Preventative Pump Maintenance	Measures	14,418	19,040	21,738	22,752	14,838	6,293
Preventative refrigeration/cooling system maintenance	Measures	4,873	5,309	4,066	2,175	601	603

Annual Market Penetration Rate							
Strategic Energy Management	Units	2017	2018	2019	2020	2025	2030
Minimize operating air pressure	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Optimization of pumping system	%	0.27%	0.37%	0.44%	0.49%	0.54%	0.54%
Optimized chilled water temperature and/or optimized condenser temperature	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Optimized condenser pressure	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Optimized Distribution System	%	0.01%	0.01%	0.02%	0.02%	0.02%	0.02%
Optimized motor control	%	1.84%	2.49%	3.00%	3.32%	3.66%	3.67%
Preventative Dryer Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative Fan Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative Furnace Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative Kiln Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative Motor Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative Oven Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative Pump Maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%
Preventative refrigeration/cooling system maintenance	%	2.00%	2.72%	3.27%	3.62%	3.99%	4.00%

Industrial Prescriptive & Custom Program, Program Achievable Potential

Annual Installs							
Industrial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030
Demand-Controlled Ventilation	Measures	1,092	0	0	0	60	0
Destratification Fans	Fans	42,837	50,889	51,180	11,840	1,223	46,940
Ground Source Heat Pump	Units	27,898	31,558	29,299	7,876	8,191	23,680
High efficiency ballasts for lighting	Ballasts	2,270	2,011	969	0	285	0
High Efficiency Unitary AC	Units	164,729	191,374	185,808	5	37,783	161,694
Premium efficiency ventilation control with VSD	Measures	186,328	219,385	217,603	17,157	43,497	195,599
Ventilation Heat Recovery	Measures	8,644	11,127	12,511	14,404	15,388	13,202

Annual Market Penetration Rate							
Industrial Prescriptive & Custom	Units	2017	2018	2019	2020	2025	2030
Demand-Controlled Ventilation	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Destratification Fans	%	0.07%	0.09%	0.10%	0.10%	0.11%	0.11%
Ground Source Heat Pump	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High efficiency ballasts for lighting	%	5.00%	6.33%	7.02%	7.32%	7.50%	7.50%
High Efficiency Unitary AC	%	5.00%	6.33%	7.02%	7.32%	7.50%	7.50%
Premium efficiency ventilation control with VSD	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ventilation Heat Recovery	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Industrial Systems Programs, Program Achievable Potential

Annual Installs							
Industrial Systems	Units	2017	2018	2019	2020	2025	2030
Air Curtains (Oven)	Curtains	12,246	16,209	17,257	1,248	0	14,481
Cooling Tower Optimization	Measures	1,797	1,941	1,600	0	0	1,331
Eliminate air leaks	Measures	13,252	16,268	14,555	3,426	3,437	7,890
HE Dry-Type Transformers	Measures	7,497	6,058	4,920	0	0	3,804
High efficiency battery charger (for forklifts)	Chargers	20,483	25,293	23,068	0	0	12,323
High Efficiency Chiller	Chillers	13,252	16,268	14,555	3,426	3,437	7,890
High/Premium Efficiency Motors	Motors	10,063	11,937	9,715	2,070	2,078	3,227
High/Premium Efficiency Motors (Fans)	Motors	14,952	17,974	15,256	0	0	5,711
High/Premium Efficiency Motors (Pumps)	Motors	9,511	11,237	9,036	1,925	1,932	2,750
Impeller Trimming (Pump)	Measures	14,330	17,202	14,545	0	0	5,320
Insulation (Dryer)	Measures	55,619	73,895	79,064	0	28,131	66,834
Insulation (Kiln)	Measures	6,224	5,312	748	0	0	0
Insulation (Oven)	Measures	7,055	9,343	9,933	2,434	2,425	8,699
Minimize operating air pressure	Measures	5,406	6,874	6,698	1,482	1,486	4,785
Optimization of pumping system	Measures	7,055	9,343	9,933	2,434	2,425	8,699
Optimized chilled water temperature and/or optimized condenser temperature	Measures	32,825	45,154	51,833	1,460	0	50,505
Optimized sizes of air receiver tanks	Measures	16,581	20,757	19,625	0	0	12,056
Optimized sizing of compressor system	Measures	1,362	1,943	2,369	1,300	0	2,533
Premium Efficiency Air Dryer (compressors)	Measures	39 <i>,</i> 458	56,538	69,339	43,980	6,795	74,838
Premium efficiency ASD compressor	Measures	22,971	32,502	38,994	24,739	17,788	42,016
Preventative Dryer Maintenance	Measures	14,086	20,534	25,840	34,447	32,040	29,732
Preventative Kiln Maintenance	Measures	39,474	56,385	68,709	35,364	0	73,350
Preventative Motor Maintenance	Measures	28,847	40,463	47,838	18,608	17,585	50,432
Preventative Pump Maintenance	Measures	41,933	56,235	60,381	23,131	23,215	49,468
Sequencing Control	Controls	4,674	5,963	5,913	2,199	2,210	4,732
Smart Defrost Controls	Controls	63,917	81,858	81,447	0	26,590	58,094
Synchronous Belts (Fans)	Belts	19,556	12,912	1,826	0	0	0

Annual Market Penetration Rate							
Industrial Systems	Units	2017	2018	2019	2020	2025	2030
Air Curtains (Oven)	%	0.39%	0.57%	0.74%	0.85%	0.98%	0.98%
Cooling Tower Optimization	%	0.35%	0.51%	0.65%	0.75%	0.86%	0.86%
Eliminate air leaks	%	5.00%	7.32%	9.37%	10.79%	12.45%	12.50%
HE Dry-Type Transformers	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High efficiency battery charger (for forklifts)	%	0.04%	0.06%	0.08%	0.09%	0.11%	0.11%
High Efficiency Chiller	%	0.03%	0.05%	0.06%	0.07%	0.08%	0.08%
High/Premium Efficiency Motors	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High/Premium Efficiency Motors (Fans)	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
High/Premium Efficiency Motors (Pumps)	%	0.00%	0.00%	0.00%	0.01%	0.01%	0.01%
Impeller Trimming (Pump)	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Insulation (Dryer)	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Insulation (Kiln)	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Insulation (Oven)	%	0.06%	0.09%	0.12%	0.14%	0.16%	0.16%
Minimize operating air pressure	%	5.00%	7.32%	9.37%	10.79%	12.45%	12.50%
Optimization of pumping system	%	0.99%	1.45%	1.86%	2.15%	2.48%	2.49%
Optimized chilled water temperature and/or optimized condenser temperature	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Optimized sizes of air receiver tanks	%	0.38%	0.56%	0.72%	0.83%	0.95%	0.96%
Optimized sizing of compressor system	%	0.00%	0.00%	0.01%	0.01%	0.01%	0.01%
Premium Efficiency Air Dryer (compressors)	%	0.07%	0.10%	0.13%	0.15%	0.17%	0.17%
Premium efficiency ASD compressor	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Preventative Dryer Maintenance	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Preventative Kiln Maintenance	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Preventative Motor Maintenance	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Preventative Pump Maintenance	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Sequencing Control	%	2.39%	3.50%	4.47%	5.16%	5.95%	5.97%
Smart Defrost Controls	%	2.75%	4.02%	5.15%	5.94%	6.85%	6.87%
Synchronous Belts (Fans)	%	0.39%	0.57%	0.73%	0.84%	0.97%	0.97%

Industrial Strategic Energy Management Program, Program Achievable Potential

Annual Installs							
Strategic Energy Management	Units	2017	2018	2019	2020	2025	2030
Cooling Tower Optimization	Measures	5,292	5 <i>,</i> 835	4,562	885	892	2,288
Correctly sized motors	Measures	5,292	5,835	4,562	885	892	2,288
Minimize operating air pressure	Measures	2,971	3,043	1,867	359	360	169
Optimization of pumping system	Measures	2,868	2,928	1,776	343	344	130
Optimized chilled water temperature and/or optimized condenser temperature	Measures	17,342	22,512	24,992	4,687	2,188	24,483
Optimized condenser pressure	Measures	17,496	21,966	23,065	4,969	5,046	21,404
Optimized Distribution System	Measures	6,091	6,117	3,579	750	752	1,033
Optimized motor control	Measures	17,496	21,966	23,065	4,969	5,046	21,404
Optimized sizing of compressor system	Measures	3,557	4,770	5,581	4,419	1,982	5,913
Preventative Dryer Maintenance	Measures	18,022	23,197	25,381	6,027	6,480	25,098
Preventative Fan Maintenance	Measures	10,543	14,296	17,020	22,005	22,449	18,958
Preventative Kiln Maintenance	Measures	42,501	56,964	66,694	55,628	29,119	70,855
Preventative Motor Maintenance	Measures	21,749	28,048	30,959	11,780	8,818	31,222
Preventative Oven Maintenance	Measures	20,761	26,424	28,189	6,325	6,340	25,921

Annual Market Penetration Rate							
Strategic Energy Management	Units	2017	2018	2019	2020	2025	2030
Cooling Tower Optimization	%	0.38%	0.51%	0.62%	0.68%	0.75%	0.75%
Correctly sized motors	%	0.001%	0.002%	0.002%	0.002%	0.003%	0.003%
Minimize operating air pressure	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Optimization of pumping system	%	0.38%	0.51%	0.62%	0.68%	0.75%	0.75%
Optimized chilled water temperature and/or optimized condenser temperature	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Optimized condenser pressure	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Optimized Distribution System	%	0.01%	0.02%	0.02%	0.02%	0.03%	0.03%
Optimized motor control	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Optimized sizing of compressor system	%	0.01%	0.01%	0.02%	0.02%	0.02%	0.02%
Preventative Dryer Maintenance	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Preventative Fan Maintenance	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Preventative Kiln Maintenance	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Preventative Motor Maintenance	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%
Preventative Oven Maintenance	%	2.50%	3.40%	4.09%	4.52%	4.99%	5.00%

# Appendix D: Residential Measure Assumptions

ComEd Energy Efficiency Potential Study Report, 2017-2030

## Appendix D: Residential Assumptions

Measure ID	Sub- Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Increment al Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
1	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	Time of Sale	AC unit	12	\$40.0	7	0.011	0.0
2	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	New Constructi on	AC unit	12	\$40.0	7	0.011	0.0
3	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	Time of Sale	AC unit	12	\$40.0	7	0.011	0.0
4	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	New Constructi on	AC unit	12	\$40.0	7	0.011	0.0
5	All	AC/Elect ric Resistan ce Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	average existing room air conditioner casement only	Early Replacem ent	AC unit	12	\$448.0	53	0.076	0.0
6	All	AC/Gas Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	average existing room air conditioner	Early Replacem ent	AC unit	12	\$448.0	53	0.076	0.0
7	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	ENERGY STAR V 2.0 casement- slider	Time of Sale	AC unit	12	\$40.0	6	0.009	0.0
8	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	ENERGY STAR V 2.0 casement- slider	New Constructi on	AC unit	12	\$40.0	6	0.009	0.0
9	All	Electric Heating	Appliances	CEE Tier 2 Room Air Conditioner	CEE Tier 2 with reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with reverse cycle < 14000 Btu/h	Time of Sale	AC unit	12	\$100.0	34	0.048	0.0
10	All	Electric Heating	Appliances	CEE Tier 2 Room Air Conditioner	CEE Tier 2 with reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with reverse cycle <	New Constructi on	AC unit	12	\$100.0	34	0.048	0.0

\*Residential applicability factors were developed only for measures included in the potential analyses.

**ICF** International

## Appendix D: Residential Measure Assumptions

						14000 Btu/h							
11	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	ENERGY STAR V 2.0 casement- slider	Time of Sale	AC unit	12	\$40.0	6	0.009	0.0
12	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	ENERGY STAR V 2.0 casement- slider	New Constructi on	AC unit	12	\$40.0	6	0.009	0.0
13	All	AC/Elect ric Resistan ce Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	average existing room air conditioner casement- slider	Early Replacem ent	AC unit	12	\$448.0	68	0.097	0.0
14	All	AC/Gas Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	average existing room air conditioner casement only	Early Replacem ent	AC unit	12	\$448.0	68	0.097	0.0
15	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	AC unit	12	\$40.0	9	0.012	0.0
16	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	New Constructi on	AC unit	12	\$40.0	9	0.012	0.0
17	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	AC unit	12	\$40.0	9	0.012	0.0

18		Gar	Appliances	CEE Tier 1 and	CEE Tier 1 and	ENERGY	Now	AC unit	10	\$10.0	0	0.012	0.0
10	All	Heating	Арриансез	ENERGY STAR V3.0 Room Air Conditioner	ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	Constructi on	ACUIII	12	\$40.0	9	0.012	0.0
19	All	Gas Heating	Appliances	CEE Tier 2 Room Air Conditioner	CEE Tier 2 with reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with reverse cycle < 14000 Btu/h	Time of Sale	AC unit	12	\$100.0	34	0.048	0.0
20	All	Gas Heating	Appliances	CEE Tier 2 Room Air Conditioner	CEE Tier 2 with reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with reverse cycle < 14000 Btu/h	New Constructi on	AC unit	12	\$100.0	34	0.048	0.0
21	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	air purifier	9	\$70.0	524	0.004	0.0
22	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cleaner - RPP	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	air purifier	9	\$70.0	524	0.004	0.0
23	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	New Constructi on	air purifier	9	\$70.0	524	0.004	0.0
24	All	Gas Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	air purifier	9	\$70.0	524	0.004	0.0
25	All	Gas Heating	Appliances	ENERGY STAR Air Purifier/Cleaner - RPP	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	air purifier	9	\$70.0	524	0.004	0.0
26	All	Gas Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	New Constructi on	air purifier	9	\$70.0	524	0.004	0.0
27	All	Electric DHW w/Electri c Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	New Constructi on	Clothes washer	14	\$65.0	163	0.021	0.0

28	All	Electric	Appliances	ENERGY STAR	ENERGY STAR	minimum federal	Time of	Clothes	14	\$65.0	163	0.021	0.0
		w/Eloctri		and 2 Clothos	(Electric dryor)	standard	Sale	Washei					
		w/Liecui		Washers	(Liectife di yei)	Clothes							
		Hosting		Washers		Washor							
		Rate				(Floctric							
		Nate				dryer)							
29	All	Electric	Appliances	ENERGY STAR	ENERGY STAR	minimum	New	Clothes	14	\$65.0	163	0.021	0.0
		DHW		and CEE Tier 2	Clothes Washer	federal	Constructi	washer					
		w/Non-		and 3 Clothes	(Electric dryer)	standard	on						
		Electric		Washers		Clothes							
		Heating				Washer							
		Rate				(Electric							
						dryer)							
30	All	Electric	Appliances	ENERGY STAR	ENERGY STAR	minimum	Time of	Clothes	14	\$65.0	163	0.021	0.0
		DHW		and CEE Tier 2	Clothes Washer	federal	Sale	washer					
		w/Non-		and 3 Clothes	(Electric dryer)	standard							
		Electric		Washers		Clothes							
		Heating				Washer							
		Rate				(Electric							
21	A 11	6	A			dryer)	New	Clather	1.4	¢cr o	70	0.010	2.7
31	All	Gas	Appliances	ENERGY STAR	ENERGY STAR	fodorol	New	Clothes	14	\$65.0	76	0.010	3.7
		Water		and CEE TIER 2	(Floateric devor)	rederal	Constructi	washer					
		пеацеі		Washers	(Electric di yer)	Clothos	UII						
				washers		Washer							
						(Floctric							
						(Liecthe dryer)							
32	ΔII	Gas	Annliances	ENERGY STAR	ENERGY STAR	minimum	New	Clothes	14	\$65.0	76	0.010	37
52	7.01	Water	ripplicatees	and CEE Tier 2	Clothes Washer	federal	Constructi	washer	1.	<i>Q</i> 00.0	,0	0.010	5.7
		Heater		and 3 Clothes	(Electric drver)	standard	on						
				Washers	(,	Clothes							
						Washer							
						(Electric							
						dryer)							
33	All	Gas	Appliances	ENERGY STAR	ENERGY STAR	minimum	Time of	Clothes	14	\$65.0	76	0.010	3.7
		Water		and CEE Tier 2	Clothes Washer	federal	Sale	washer					
		Heater		and 3 Clothes	(Electric dryer)	standard							
				Washers		Clothes							
						Washer							
						(Electric							
						dryer)							
34	All	Gas	Appliances	ENERGY STAR	ENERGY STAR	minimum	Time of	Clothes	14	\$65.0	76	0.010	3.7
		Water		and CEE Tier 2	Clothes Washer	federal	Sale	washer					
		Heater		and 3 Clothes	(Electric dryer)	standard							
				Washers		Clothes							
						Washer							
						(Electric							
						dryer)							

35	All	Electric DHW	Appliances	ENERGY STAR and CEE Tier 2	ENERGY STAR Clothes Washer (gas	minimum federal	New Constructi	Clothes washer	14	\$65.0	100	0.013	2.2
		c Heating		Washers	dryer)	Standard Clothes Washer (gas	on						
36	٨	Flectric	Appliances	ENERGY STAR	ENERGY STAR	minimum	Time of	Clothes	1/	\$65.0	100	0.013	2.2
30	All	DHW w/Electri c Heating	Appliances	and CEE Tier 2 and 3 Clothes Washers	Clothes Washer (gas dryer)	federal standard Clothes Washer (gas	Sale	washer	14	ŞUJ.U	100	0.015	2.2
		Rate				dryer)							
37	All	Electric DHW w/Non- Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	Clothes washer	14	\$65.0	100	0.013	2.2
38	All	Electric DHW w/Non- Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$65.0	100	0.013	2.2
39	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas drver)	New Constructi on	Clothes washer	14	\$65.0	13	0.002	5.9
40	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	Clothes washer	14	\$65.0	13	0.002	5.9
41	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$65.0	13	0.002	5.9
42	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$65.0	13	0.002	5.9

43	All	Electric DHW	Appliances	ENERGY STAR and CEE Tier 2	ENERGY STAR Most Efficient Clothes	minimum federal	New Constructi	Clothes washer	14	\$210.0	242	0.031	0.0
		w/Electri		and 3 Clothes	Washer (Electric	standard	on	indone.					
		c		Washers	dryer)	Clothes							
		Heating				Washer							
		Rate				(Electric							
						dryer)							
44	All	Electric	Appliances	ENERGY STAR	ENERGY STAR Most	minimum	Time of	Clothes	14	\$210.0	242	0.031	0.0
		DHW		and CEE Tier 2	Efficient Clothes	federal	Sale	washer					
		w/Electri		and 3 Clothes	Washer (Electric	standard							
		С		Washers	dryer)	Clothes							
		Heating				Washer							
		Rate				(Electric							
15	A II	Electric	Appliancos	ENERGY STAR	ENERGY STAR Most	uryer)	Time of	Clothos	11	\$210.0	212	0.021	0.0
45	All		Appliances	and CEE Tier 2	Efficient Clothes	federal		washer	14	\$210.0	242	0.051	0.0
		w/Non-		and 3 Clothes	Washer (Flectric	standard	Jale	washer					
		Electric		Washers	drver)	Clothes							
		Heating				Washer							
		Rate				(Electric							
						dryer)							
46	All	Electric	Appliances	ENERGY STAR	ENERGY STAR Most	minimum	New	Clothes	14	\$210.0	242	0.031	0.0
		DHW		and CEE Tier 2	Efficient Clothes	federal	Constructi	washer					
		w/Non-		and 3 Clothes	Washer (Electric	standard	on						
		Electric		Washers	dryer)	Clothes							
		Heating				Washer							
		Rate				(Electric							
47	A 11	Cas	Annelieneen			dryer)	New	Clathes	1.4	¢210.0	80	0.011	6.6
47	All	GdS	Appliances	and CEE Tior 2	Efficient Clothes	fodoral	Constructi	Clothes	14	\$210.0	89	0.011	0.0
		Heater		and 3 Clothes	Washer (Electric	standard	constructi	Washei					
		Heater		Washers	dryer)	Clothes	UII						
				Washers	uryery	Washer							
						(Electric							
						dryer)							
48	All	Gas	Appliances	ENERGY STAR	ENERGY STAR Most	minimum	New	Clothes	14	\$210.0	89	0.011	6.6
		Water		and CEE Tier 2	Efficient Clothes	federal	Constructi	washer					
		Heater		and 3 Clothes	Washer (Electric	standard	on						
				Washers	dryer)	Clothes							
						Washer							
						(Electric							
						dryer)				4			
49	All	Gas	Appliances	ENERGY STAR	ENERGY STAR Most	minimum	Time of	Clothes	14	Ş210.0	89	0.011	6.6
		Water		and CEE Tier 2	Efficient Clothes	tederal	Sale	washer					
		Heater		and 3 Clothes	wasner (Electric	standard							
				washers	uryer)	Washer							
						(Floctric							

50	D. Re:	Gas	Appliances	ENERCY STAP	ENERGY STAR Most	minimum	Time of	Clothos	1/	\$210.0	80	0.011	6.6
50	AII	Gas Water Heater	Appliances	and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR MOST Efficient Clothes Washer (Electric dryer)	federal standard Clothes Washer (Electric	Sale	washer	14	\$210.0	89	0.011	0.0
						dryer)							
51	All	Electric DHW w/Electri c Heating Bate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas	New Constructi on	Clothes washer	14	\$210.0	150	0.019	3.1
52	All	Electric DHW w/Electri c Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$210.0	150	0.019	3.1
53	All	Electric DHW w/Non- Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	Clothes washer	14	\$210.0	150	0.019	3.1
54	All	Electric DHW w/Non- Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$210.0	150	0.019	3.1
55	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	Clothes washer	14	\$210.0	0	0.000	9.7
56	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	Clothes washer	14	\$210.0	0	0.000	9.7
57	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$210.0	0	0.000	9.7

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Appendix	k D: Res	idential I	Measure As	sumptions									
58	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	Clothes washer	14	\$210.0	0	0.000	9.7
59	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$140.0	136	0.021	0.0
60	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Retrofit	Refrigerato r	12	\$551.0	136	0.021	0.0
61	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$140.0	136	0.021	0.0
62	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$140.0	136	0.021	0.0

	D: Res		Appliances			fodoral	Dotrofit	Defrigerate	10	ĆEE1 0	126	0.021	0.0
03	АШ	Heating	Аррнансез	and CEE Tier 2 Refrigerator	better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Retront	r	12	\$ <b>331</b> .0	130	0.021	0.0
64	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$140.0	136	0.021	0.0
65	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	New Constructi on	Refrigerato r	12	\$140.0	163	0.025	0.0
66	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Retrofit	Refrigerato r	12	\$551.0	163	0.025	0.0
67	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted	federal standard refrigerator- freezer/auto matic defrost/side	Time of Sale	Refrigerato r	12	\$140.0	163	0.025	0.0

					freezer/with through the door ice service	mounted freezer/with through the door ice service							
68	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	New Constructi on	Refrigerato r	12	\$140.0	163	0.025	0.0
69	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Retrofit	Refrigerato r	12	\$551.0	163	0.025	0.0
70	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Time of Sale	Refrigerato r	12	\$140.0	163	0.025	0.0
71	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$140.0	129	0.019	0.0

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Appendix	D: Res	sidential I	Measure As	ssumptions									
72	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Retrofit	Refrigerato r	12	\$551.0	129	0.019	0.0
73	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$140.0	129	0.019	0.0
74	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$140.0	129	0.019	0.0
75	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Retrofit	Refrigerato r	12	\$551.0	129	0.019	0.0
76	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted	federal standard Refrigerator- freezer/auto matic defrost/side	Time of Sale	Refrigerato r	12	\$140.0	129	0.019	0.0

Jendix	D: Res	luential l	vieasure As	sumptions									
					freezer/without through the door ice service	mounted freezer/with out through the door ice service							
77	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	New Constructi on	Refrigerato r	12	\$140.0	151	0.023	0.0
78	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Retrofit	Refrigerato r	12	\$551.0	151	0.023	0.0
79	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Time of Sale	Refrigerato r	12	\$140.0	151	0.023	0.0
80	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	New Constructi on	Refrigerato r	12	\$140.0	151	0.023	0.0
81	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic	federal standard refrigeator- freezer/auto matic	Retrofit	Refrigerato r	12	\$551.0	151	0.023	0.0

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					defrost/top mounted freezer/through the door ice service	defrost/top mounted freezer/thro ugh the door ice service							
82	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Time of Sale	Refrigerato r	12	\$140.0	151	0.023	0.0
83	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	New Constructi on	Refrigerato r	12	\$140.0	110	0.017	0.0
84	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Retrofit	Refrigerato r	12	\$551.0	110	0.017	0.0
85	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic	federal standard Refrigerator- freezer/auto matic	Time of Sale	Refrigerato r	12	\$140.0	110	0.017	0.0

Annendix D: Residential Measure Assumptions

Appendix	D: Res	sidential i	vieasure As	sumptions									
					defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost							
86	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	New Constructi on	Refrigerato r	12	\$140.0	110	0.017	0.0
87	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Retrofit	Refrigerato r	12	\$551.0	110	0.017	0.0
88	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service &	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice	Time of Sale	Refrigerato r	12	\$140.0	110	0.017	0.0

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## Appendix D: Residential Measure Assumptions

				·	refrigerators w/ automatic defrost	service & refrigerators w/ automatic defrost							
89	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	New Constructi on	Refrigerato r	12	\$140.0	108	0.016	0.0
90	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Retrofit	Refrigerato r	12	\$551.0	108	0.016	0.0
91	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Time of Sale	Refrigerato r	12	\$140.0	108	0.016	0.0
92	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	New Constructi on	Refrigerato r	12	\$140.0	108	0.016	0.0
93	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Retrofit	Refrigerato r	12	\$551.0	108	0.016	0.0
94	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Time of Sale	Refrigerato r	12	\$140.0	108	0.016	0.0
95	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	New Constructi on	Refrigerato r	12	\$140.0	92	0.014	0.0

Appendix	D: Res	sidential l	Measure As	sumptions									
96	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Retrofit	Refrigerato r	12	\$551.0	92	0.014	0.0
97	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Time of Sale	Refrigerato r	12	\$140.0	92	0.014	0.0
98	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	New Constructi on	Refrigerato r	12	\$140.0	92	0.014	0.0
99	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Retrofit	Refrigerato r	12	\$551.0	92	0.014	0.0
100	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Time of Sale	Refrigerato r	12	\$140.0	92	0.014	0.0
101	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	226	0.034	0.0
102	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard)	average existing refrigerator with average	Early Replacem ent	Refrigerato r	12	\$551.0	226	0.034	0.0

Appendix	D: Res	sidential I	Measure As	sumptions									
					refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	remaining useful life							
103	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	359	0.054	0.0
104	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	359	0.054	0.0
105	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	371	0.056	0.0
106	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	371	0.056	0.0
107	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) refrigerator-	average existing refrigerator with average	Early Replacem ent	Refrigerato r	12	\$551.0	221	0.033	0.0

#### Appendix D: Residential Measure Assumptions

					freezer/automatic defrost/top mounted freezer/through the door ice service	remaining useful life							
108	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) refrigerator- freezer/automatic defrost/top mounted freezer/through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	221	0.033	0.0
109	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	235	0.035	0.0
110	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	235	0.035	0.0
111	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerator- freezer/partial automatic defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	307	0.046	0.0
112	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	307	0.046	0.0
# Appendix D: Residential Measure Assumptions

					freezer/partial automatic defrost								
113	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	312	0.047	0.0
114	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$551.0	312	0.047	0.0
115	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	123	0.018	0.0
116	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	123	0.018	0.0
117	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	144	0.022	0.0

118	All	Gas	Appliances	ENERGY STAR	Early Replacement:	average	Early	Refrigerato	12	\$451.0	144	0.022	0.0
		Heating		Refrigerator	than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	existing refrigerator with average remaining useful life	ent	Γ					
119	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	253	0.038	0.0
120	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	253	0.038	0.0
121	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	293	0.044	0.0
122	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	293	0.044	0.0

123	All	Electric	Appliances	ENERGY STAR	Early Replacement:	average	Early	Refrigerato	12	\$451.0	169	0.025	0.0
		Heating		and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/	existing refrigerator with average remaining useful life	Replacem ent	r					
124	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	169	0.025	0.0
125	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	242	0.036	0.0
126	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	242	0.036	0.0
127	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacem ent	Refrigerato r	12	\$451.0	257	0.039	0.0
128	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard)	average existing refrigerator with average	Early Replacem ent	Refrigerato r	12	\$451.0	257	0.039	0.0

#### **Appendix D: Residential Measure Assumptions** Refrigerators&Refrig remaining useful life eratorfreezer/manual defrost 129 All Electric Appliances ENERGY STAR Estar (≥ 20% better federal New Refrigerato 12 \$40.0 52 0.008 0.0 and CEE Tier 2 Heating than federal standard Constructi Refrigerator standard) refrigeatoron refrigeatorfreezer/auto freezer/automatic matic defrost/top mounted defrost/top freezer/through the mounted door ice service freezer/thro ugh the door ice service 130 All Electric Appliances ENERGY STAR Estar (≥ 20% better federal Refrigerato 12 \$451.0 52 0.008 0.0 Retrofit and CEE Tier 2 Heating than federal standard Refrigerator standard) refrigeatorrefrigeatorfreezer/auto freezer/automatic matic defrost/top mounted defrost/top freezer/through the mounted door ice service freezer/thro ugh the door ice service 131 ENERGY STAR Estar (≥ 20% better 12 \$40.0 52 0.008 0.0 All Electric Appliances federal Time of Refrigerato Heating and CEE Tier 2 than federal standard Sale r standard) Refrigerator refrigeatorfreezer/auto refrigeatorfreezer/automatic matic defrost/top mounted defrost/top freezer/through the mounted door ice service freezer/thro ugh the door ice service 132 All Gas Appliances ENERGY STAR Estar (≥ 20% better federal New Refrigerato 12 \$40.0 52 0.008 0.0 Heating and CEE Tier 2 than federal standard Constructi Refrigerator standard) refrigeatoron refrigeatorfreezer/auto freezer/automatic matic defrost/top mounted defrost/top freezer/through the mounted door ice service freezer/thro ugh the door ice service 133 All ENERGY STAR Estar (≥ 20% better federal Refrigerato 12 \$451.0 52 0.008 0.0 Gas Appliances Retrofit Heating and CEE Tier 2 than federal standard r Refrigerator standard) refrigeatorrefrigeatorfreezer/auto freezer/automatic matic defrost/top mounted defrost/top

# Appendix D: Residential Measure Assumptions

					freezer/through the door ice service	mounted freezer/thro ugh the door ice service							
134	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Time of Sale	Refrigerato r	12	\$40.0	52	0.008	0.0
135	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$40.0	54	0.008	0.0
136	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Retrofit	Refrigerato r	12	\$451.0	54	0.008	0.0
137	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$40.0	54	0.008	0.0

138	All	Gas	Appliances	ENERGY STAR	Estar (≥ 20% better	federal	New	Refrigerato	12	\$40.0	54	0.008	0.0
		пеаші		Refrigerator	standard) refrigerator- freezer/automatic	refrigerator- freezer/auto matic	on	·					
					defrost/bottom mounted freezer/without	defrost/bott om mounted freezer/with							
					through the door ice service	out through the door ice service							
139	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice	Retrofit	Refrigerato r	12	\$451.0	54	0.008	0.0
						service							
140	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	federal standard refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$40.0	54	0.008	0.0
141	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	New Constructi on	Refrigerato r	12	\$40.0	57	0.009	0.0
142	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted	federal standard refrigerator- freezer/auto matic defrost/side	Retrofit	Refrigerato r	12	\$451.0	57	0.009	0.0

penuix	D: Res	sidential I	vieasure As	sumptions									
					freezer/with through the door ice service	mounted freezer/with through the							
						door ice service							
143	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Time of Sale	Refrigerato r	12	\$40.0	57	0.009	0.0
144	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	New Constructi on	Refrigerato r	12	\$40.0	57	0.009	0.0
145	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Retrofit	Refrigerato r	12	\$451.0	57	0.009	0.0
146	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	federal standard refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Time of Sale	Refrigerato r	12	\$40.0	57	0.009	0.0

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Appendix	D: Res	sidential I	Measure As	sumptions									
147	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$40.0	52	0.008	0.0
148	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Retrofit	Refrigerato r	12	\$451.0	52	0.008	0.0
149	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$40.0	52	0.008	0.0
150	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	New Constructi on	Refrigerato r	12	\$40.0	52	0.008	0.0
151	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted	federal standard Refrigerator- freezer/auto matic defrost/side	Retrofit	Refrigerato r	12	\$451.0	52	0.008	0.0

pendix	D: Res	idential I	Measure As	sumptions									
					freezer/without through the door ice service	mounted freezer/with out through the door ice service							
152	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	federal standard Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Time of Sale	Refrigerato r	12	\$40.0	52	0.008	0.0
153	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	New Constructi on	Refrigerato r	12	\$40.0	44	0.007	0.0
.54	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Retrofit	Refrigerato r	12	\$451.0	44	0.007	0.0
155	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-	federal standard Refrigerator- freezer/auto	Time of Sale	Refrigerato r	12	\$40.0	44	0.007	0.0

Appendix	D. Res	luentiari	vieasure As	sumptions									
					freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost							
156	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	New Constructi on	Refrigerato r	12	\$40.0	44	0.007	0.0
157	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Retrofit	Refrigerato r	12	\$451.0	44	0.007	0.0
158	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service &	federal standard Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through	Time of Sale	Refrigerato r	12	\$40.0	44	0.007	0.0

Appendix D: Residential Measure Assumptions

# Appendix D: Residential Measure Assumptions

				·	refrigerators w/ automatic defrost	the door ice service & refrigerators w/ automatic defrost							
159	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	New Constructi on	Refrigerato r	12	\$40.0	43	0.006	0.0
160	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Retrofit	Refrigerato r	12	\$451.0	43	0.006	0.0
161	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Time of Sale	Refrigerato r	12	\$40.0	43	0.006	0.0
162	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	New Constructi on	Refrigerato r	12	\$40.0	43	0.006	0.0
163	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Retrofit	Refrigerato r	12	\$451.0	43	0.006	0.0
164	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator- freezer/partial automatic defrost	federal standard Refrigerator- freezer/parti al automatic defrost	Time of Sale	Refrigerato r	12	\$40.0	43	0.006	0.0
165	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	New Constructi on	Refrigerato r	12	\$40.0	37	0.006	0.0

Appendix	CD: Res	sidential I	Measure As	sumptions									
166	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Retrofit	Refrigerato r	12	\$451.0	37	0.006	0.0
167	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Time of Sale	Refrigerato r	12	\$40.0	37	0.006	0.0
168	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	New Constructi on	Refrigerato r	12	\$40.0	37	0.006	0.0
169	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Retrofit	Refrigerato r	12	\$451.0	37	0.006	0.0
170	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrig erator- freezer/manual defrost	federal standard Refrigerators &Refrigerato r- freezer/man ual defrost	Time of Sale	Refrigerato r	12	\$40.0	37	0.006	0.0
171	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	New Constructi on	Clothes washer	14	\$152.0	160	0.022	0.0
172	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer - RPP	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	Time of Sale	Clothes washer	14	\$152.0	160	0.022	0.0
173	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	New Constructi on	Clothes washer	14	\$152.0	160	0.022	0.0

174	All	Gas	Appliances	ENERGY STAR	ENERGY STAR	minimum	Time of	Clothes	14	\$152.0	160	0.022	0.0
		Heating		Clothes Dryer - RPP	Clothes Dryer (Electric)	federal Clothes Dryer (Electric)	Sale	washer					
175	All	Electric	Appliances	ENERGY STAR	ENERGY STAR	minimum	New	Clothes	14	\$152.0	25	0.003	4.4
		Heating		Clothes Dryer	Clothes Dryer (Gas)	federal Clothes Dryer (Gas)	Constructi on	washer					
176	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	Time of Sale	Clothes washer	14	\$152.0	25	0.003	4.4
177	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	New Constructi on	Clothes washer	14	\$152.0	25	0.003	4.4
178	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	Time of Sale	Clothes washer	14	\$152.0	25	0.003	4.4
179	All	Electric Heating	Appliances	ENERGY STAR Dehumidifier V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	Time of Sale	Dehumidifi er	12	\$60.0	99	0.023	0.0
180	All	Electric Heating	Appliances	ENERGY STAR Dehumidifier V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	New Constructi on	Dehumidifi er	12	\$60.0	99	0.023	0.0
181	All	Gas Heating	Appliances	ENERGY STAR Dehumidifier V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	Time of Sale	Dehumidifi er	12	\$60.0	99	0.023	0.0
182	All	Gas Heating	Appliances	ENERGY STAR Dehumidifier V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	New Constructi on	Dehumidifi er	12	\$60.0	99	0.023	0.0
183	All	Electric Heating	Appliances	ENERGY STAR Dehumidifier V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	Time of Sale	Dehumidifi er	12	\$60.0	178	0.041	0.0
184	All	Electric Heating	Appliances	ENERGY STAR Dehumidifier V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	New Constructi on	Dehumidifi er	12	\$60.0	178	0.041	0.0

185	All	Gas	Appliances	ENERGY STAR	75 to ≤185 pints/day	>75 to ≤185	Time of	Dehumidifi	12	\$60.0	178	0.041	0.0
100		Heating	, pp. area	Dehumidifier V 3	≥2.80 L/kWh	pints/day, ≥2.5 L/kWh	Sale	er		çono	1.0	0.0.12	
186	All	Gas Heating	Appliances	ENERGY STAR Dehumidifier V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	New Constructi on	Dehumidifi er	12	\$60.0	178	0.041	0.0
187	All	Electric Heating	Appliances	ENERGY STAR Dishwasher (standard; electric DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	Time of Sale	Dishwasher	13	\$50.0	12	0.001	0.0
188	All	Electric Heating	Appliances	ENERGY STAR Dishwasher (standard; electric DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	New Constructi on	Dishwasher	13	\$50.0	12	0.001	0.0
189	All	Gas Heating	Appliances	ENERGY STAR Dishwasher (standard; electric DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	Time of Sale	Dishwasher	13	\$50.0	12	0.001	0.0
190	All	Gas Heating	Appliances	ENERGY STAR Dishwasher (standard; electric DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	New Constructi on	Dishwasher	13	\$50.0	12	0.001	0.0
191	All	Electric Heating	Appliances	ENERGY STAR Dishwasher (standard; gas DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	New Constructi on	Dishwasher	13	\$50.0	5	0.001	0.3
192	All	Electric Heating	Appliances	ENERGY STAR Dishwasher (standard; gas DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	New Constructi on	Dishwasher	13	\$50.0	5	0.001	0.3
193	All	Gas Heating	Appliances	ENERGY STAR Dishwasher (standard; gas DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	New Constructi on	Dishwasher	13	\$50.0	5	0.001	0.3
194	All	Gas Heating	Appliances	ENERGY STAR Dishwasher (standard; gas DHW)	295 kwh/year, 4.25 gal/cycle	307 kWh/year, 5.0 gal/cycle	New Constructi on	Dishwasher	13	\$50.0	5	0.001	0.3
195	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	Time of Sale	Freezer	11	\$35.0	31	0.005	0.0
196	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	Time of Sale	Freezer	11	\$35.0	31	0.005	0.0

### Appendix D: Residential Measure Assumptions

197	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	New Constructi on	Freezer	11	\$35.0	31	0.005	0.0
198	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	New Constructi on	Freezer	11	\$35.0	31	0.005	0.0
199	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/manual defrost	NAECA - Upright/man ual defrost	Time of Sale	Freezer	11	\$35.0	35	0.006	0.0
200	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/manual defrost	NAECA - Upright/man ual defrost	Time of Sale	Freezer	11	\$35.0	35	0.006	0.0
201	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/manual defrost	NAECA - Upright/man ual defrost	New Constructi on	Freezer	11	\$35.0	35	0.006	0.0
202	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/manual defrost	NAECA - Upright/man ual defrost	New Constructi on	Freezer	11	\$35.0	35	0.006	0.0
203	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/auto matic defrost	Time of Sale	Freezer	11	\$35.0	47	0.008	0.0
204	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/auto matic defrost	Time of Sale	Freezer	11	\$35.0	47	0.008	0.0
205	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/auto matic defrost	New Constructi on	Freezer	11	\$35.0	47	0.008	0.0
206	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/auto matic defrost	New Constructi on	Freezer	11	\$35.0	47	0.008	0.0
207	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	Time of Sale	Freezer	11	\$35.0	23	0.006	0.0
208	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	Time of Sale	Freezer	11	\$35.0	23	0.006	0.0

# Appendix D: Residential Measure Assumptions

209	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	New Constructi on	Freezer	11	\$35.0	23	0.006	0.0
210	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	New Constructi on	Freezer	11	\$35.0	23	0.006	0.0
211	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/auto matic defrost	Time of Sale	Freezer	11	\$35.0	46	0.010	0.0
212	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/auto matic defrost	Time of Sale	Freezer	11	\$35.0	46	0.010	0.0
213	All	Electric Heating	Appliances	ENERGY STAR Freezer - RPP	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/auto matic defrost	Time of Sale	Freezer	11	\$35.0	46	0.010	0.0
214	All	Gas Heating	Appliances	ENERGY STAR Freezer - RPP	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/auto matic defrost	Time of Sale	Freezer	11	\$35.0	46	0.010	0.0
215	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/auto matic defrost	New Constructi on	Freezer	11	\$35.0	46	0.010	0.0
216	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/auto matic defrost	New Constructi on	Freezer	11	\$35.0	46	0.010	0.0
217	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/manual defrost	NAECA - compact upright/man ual defrost	Time of Sale	Freezer	11	\$35.0	32	0.008	0.0
218	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/manual defrost	NAECA - compact upright/man ual defrost	Time of Sale	Freezer	11	\$35.0	32	0.008	0.0

219	All	Electric	Appliances	ENERGY STAR	20% more efficient	NAECA -	New	Freezer	11	\$35.0	32	0.008	0.0
		Heating		Freezer	tnan NAECA - compact upright/manual defrost	compact upright/man ual defrost	on						
220	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/manual defrost	NAECA - compact upright/man ual defrost	New Constructi on	Freezer	11	\$35.0	32	0.008	0.0
221	All	Electric Heating	Appliances	Freezer Recycling	Recycling post-1990 chest and all others freezers	Keeping post-1990 chest and all others freezers	Early Retireme nt	Freezer	8	\$120.0	697	0.082	0.0
222	All	Gas Heating	Appliances	Freezer Recycling	Recycling post-1990 chest and all others freezers	Keeping post-1990 chest and all others freezers	Early Retireme nt	Freezer	8	\$120.0	697	0.082	0.0
223	All	Electric Heating	Appliances	Freezer Recycling	Recycling post-1990 upright/automatic defrost freezer	Keeping post-1990 upright/auto matic defrost freezer	Early Retireme nt	Freezer	8	\$120.0	714	0.084	0.0
224	All	Gas Heating	Appliances	Freezer Recycling	Recycling post-1990 upright/automatic defrost freezer	Keeping post-1990 upright/auto matic defrost freezer	Early Retireme nt	Freezer	8	\$120.0	714	0.084	0.0
225	All	Electric Heating	Appliances	Freezer Recycling	Recycling post-1990 Upright/manual defrost freezer	Keeping post-1990 Upright/man ual defrost freezer	Early Retireme nt	Freezer	8	\$120.0	714	0.084	0.0
226	All	Gas Heating	Appliances	Freezer Recycling	Recycling post-1990 Upright/manual defrost freezer	Keeping post-1990 Upright/man ual defrost freezer	Early Retireme nt	Freezer	8	\$120.0	714	0.084	0.0
227	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 chest and all others freezers	Keeping pre- 1990 chest and all others freezers	Early Retireme nt	Freezer	8	\$120.0	1004	0.118	0.0
228	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 chest and all others freezers	Keeping pre- 1990 chest and all others freezers	Early Retireme nt	Freezer	8	\$120.0	1004	0.118	0.0

229	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 upright/automatic	Keeping pre- 1990	Early Retireme	Freezer	8	\$120.0	1021	0.120	0.0
					defrost freezer	upright/auto matic defrost freezer	nt						
230	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 upright/automatic defrost freezer	Keeping pre- 1990 upright/auto matic defrost freezer	Early Retireme nt	Freezer	8	\$120.0	1021	0.120	0.0
231	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 Upright/manual defrost freezer	Keeping pre- 1990 Upright/man ual defrost freezer	Early Retireme nt	Freezer	8	\$120.0	1021	0.120	0.0
232	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 Upright/manual defrost freezer	Keeping pre- 1990 Upright/man ual defrost freezer	Early Retireme nt	Freezer	8	\$120.0	1021	0.120	0.0
233	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping post-1990 refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
234	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping post-1990 refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
235	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	Keeping post-1990 refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0

						the door ice service							
236	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	Keeping post-1990 refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
237	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	Keeping post-1990 refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	945	0.117	0.0
238	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	Keeping post-1990 refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	945	0.117	0.0
239	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	Keeping post-1990 Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	945	0.117	0.0

	D. NC3		vicusure As							64.00.0	0.45	0.447	
240	All	Gas Heating	Appliances	Retrigerator Recycling	Recycling post-1990 Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	Keeping post-1990 Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Early Retireme nt	Retrigerato r	8	\$120.0	945	0.117	0.0
241	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Keeping post-1990 Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
242	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Keeping post-1990 Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
243	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator- freezer/partial automatic defrost	Keeping post-1990 Refrigerator- freezer/parti al automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0

#### Appendix D: Residential Measure Assumptions

Appendix	D: Res	sidential I	Measure As	sumptions									
244	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator- freezer/partial automatic defrost	Keeping post-1990 Refrigerator- freezer/parti al automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
245	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerators&Refrig erator- freezer/manual defrost	Keeping post-1990 Refrigerators &Refrigerato r- freezer/man ual defrost	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
246	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerators&Refrig erator- freezer/manual defrost	Keeping post-1990 Refrigerators &Refrigerato r- freezer/man ual defrost	Early Retireme nt	Refrigerato r	8	\$120.0	588	0.073	0.0
247	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping pre- 1990 refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0
248	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigeator- freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping pre- 1990 refrigeator- freezer/auto matic defrost/top mounted freezer/thro ugh the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0
249	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	Keeping pre- 1990 refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0

						the door ice service							
250	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator- freezer/automatic defrost/bottom mounted freezer/without through the door ice service	Keeping pre- 1990 refrigerator- freezer/auto matic defrost/bott om mounted freezer/with out through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0
251	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	Keeping pre- 1990 refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1370	0.169	0.0
252	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator- freezer/automatic defrost/sidemounted freezer/with through the door ice service	Keeping pre- 1990 refrigerator- freezer/auto matic defrost/side mounted freezer/with through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1370	0.169	0.0
253	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	Keeping pre- 1990 Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1370	0.169	0.0

Appendix	D: Res	idential N	Measure As	sumptions									
254	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator- freezer/automatic defrost/sidemounted freezer/without through the door ice service	Keeping pre- 1990 Refrigerator- freezer/auto matic defrost/side mounted freezer/with out through the door ice service	Early Retireme nt	Refrigerato r	8	\$120.0	1370	0.169	0.0
255	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Keeping pre- 1990 Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0
256	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator- freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Keeping pre- 1990 Refrigerator- freezer/auto matic defrost/top mounted freezer/with out through the door ice service & refrigerators w/ automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0
257	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator- freezer/partial automatic defrost	Keeping pre- 1990 Refrigerator- freezer/parti al automatic defrost	Early Retireme nt	Refrigerato r	8	\$120.0	1014	0.125	0.0

258	All	Gas	Appliances	Refrigerator	Recycling pre-1990	Keeping pre-	Early	Refrigerato	8	\$120.0	1014	0.125	0.0
		пеация		Recycling	freezer/partial	Refrigerator-	nt	r					
					automatic defrost	freezer/parti							
						al automatic							
259	All	Electric	Appliances	Refrigerator	Recycling pre-1990	Keeping pre-	Early	Refrigerato	8	\$120.0	1014	0.125	0.0
		Heating		Recycling	Refrigerators&Refrig	1990	Retireme	r					
					erator- froozor/manual	Refrigerators	nt						
					defrost	r-							
						freezer/man							
260	A 11	Cas	Annliancos	Defrigerator	Poculing pro 1000	ual defrost	Forby	Defrigerate	0	¢120.0	1014	0.125	0.0
200	All	Heating	Appliances	Recycling	Refrigerators&Refrig	1990	Retireme	r	0	\$120.0	1014	0.125	0.0
		0		, 0	erator-	Refrigerators	nt						
					freezer/manual	&Refrigerato							
					demost	r- freezer/man							
						ual defrost							
261	All	Gas	Appliances	Room Air	Recycling old unit	existing	Early	AC unit	4	\$120.0	232	0.331	0.0
		Heating		Recycling		room air	Retireme nt						
						conditioner,							
		<u></u>	A 11			EER 7.7				<u></u>	222	0.001	
262	All	Electric	Appliances	Room Air Conditioner	Recycling old unit	existing inefficient	Early Retireme	AC UNIT	4	\$120.0	232	0.331	0.0
				Recycling		room air	nt						
						conditioner,							
263	All	Electric	Consumer	Smart Strip	5 plug smart strip	standard	Time of	power strip	4	\$16.0	57	0.006	0.0
		Heating	Electronics			power strip	Sale						
264	Singl	Electric	Consumer	Smart Strip	5 plug smart strip	standard	Direct	power strip	4	\$16.0	57	0.006	0.0
	eFa	Heating	Electronics			power strip	Install						
	mily &Du												
	plex												
265	Mult	Electric	Consumer	Smart Strip	5 plug smart strip	standard	Direct	power strip	4	\$16.0	57	0.006	0.0
	lfami ly	Heating	Electronics			power strip	Install						
266	All	Gas	Consumer	Smart Strip	5 plug smart strip	standard	Time of	power strip	4	\$16.0	57	0.006	0.0
		Lleating					Cala						

Appendix	k D: Res	idential I	Measure As	sumptions									
267	Singl eFa mily &Du plex	Gas Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	power strip	4	\$16.0	57	0.006	0.0
268	Mult ifami ly	Gas Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	power strip	4	\$16.0	57	0.006	0.0
269	All	Electric Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Time of Sale	power strip	4	\$26.0	103	0.012	0.0
270	Singl eFa mily &Du plex	Electric Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	power strip	4	\$26.0	103	0.012	0.0
271	Mult ifami ly	Electric Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	power strip	4	\$26.0	103	0.012	0.0
272	All	Gas Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Time of Sale	power strip	4	\$26.0	103	0.012	0.0
273	Singl eFa mily &Du plex	Gas Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	power strip	4	\$26.0	103	0.012	0.0
274	Mult ifami ly	Gas Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	power strip	4	\$26.0	103	0.012	0.0
275	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	Faucet	9	\$8.0	45	0.071	0.0
276	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	Faucet	9	\$8.0	45	0.071	0.0

277	Singl	Electric	Hot Water	Faucet Aerators	1.5 GPM or less	2.25 GPM or	Retrofit	Faucet	9	\$8.0	45	0.071	0.0
277	eFa	DHW	not water	and	1.5 GI WI OF 1055	more	Retront	Tuucci	5	<i>90.0</i>	45	0.071	0.0
	mily	w/Electri		Showerheads		more							
	& Du	w/Liecui		Showerneads									
	nlov	Hosting											
	piex	Rate											
278	Singl	Electric	Hot Water	Bathroom Low	1.5 GPM or less	2.25 GPM or	Retrofit	Faucet	9	\$8.0	45	0.071	0.0
	eFa	DHW		Flow Aerators		more							
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
279	Mult	Electric	Hot Water	Bathroom Low	1.5 GPM or less	2.25 GPM or	Retrofit	Faucet	9	\$8.0	70	0.070	0.0
	ifami	DHW		Flow Aerators		more							
	ly	w/Electri											
		С											
		Heating											
		Rate								1			
280	Mult	Electric	Hot Water	Bathroom Low	1.5 GPM or less	2.25 GPM or	Retrofit	Faucet	9	\$8.0	70	0.070	0.0
	Ifami	DHW		Flow Aerators		more							
	ly	w/Non-											
		Electric											
		Heating											
201	Singl	Floctric	Hot Wator	Pathroom Low	1 E CDM or loss	2 2E CDM or	Now	Faucat	0	ćo o	45	0.071	0.0
201	oFo		HUL WALE	Elow Agrators	1.5 GPIVI UI IESS	2.25 GPINI 01	Constructi	Faucet	9	Ş0.U	45	0.071	0.0
	era milu	W/Electri		FIOW ACTALOTS		more	constructi						
	יוחא גרום	w/Electri					UII						
	nlov	Heating											
	piex	Rate											
282	Singl	Electric	Hot Water	Bathroom Low	1.5 GPM or less	2.25 GPM or	New	Faucet	9	\$8.0	45	0.071	0.0
	eFa	DHW		Flow Aerators		more	Constructi			<b>7</b> • • •			
	milv	w/Non-				more	on						
	, &Du	Electric											
	plex	Heating											
	P -	Rate											
283	Mult	Electric	Hot Water	Bathroom Low	1.5 GPM or less	2.25 GPM or	New	Faucet	9	\$8.0	70	0.070	0.0
	ifami	DHW		Flow Aerators		more	Constructi						
	ly	w/Electri					on						
		С											
		Heating											
		Rate											
284	Mult	Electric	Hot Water	Bathroom Low	1.5 GPM or less	2.25 GPM or	New	Faucet	9	\$8.0	70	0.070	0.0
	ifami	DHW		Flow Aerators		more	Constructi						
	ly	w/Non-					on						
		Electric											
		Heating											
		Rate											

285	Singl	Flectric	Hot Water	Kitchen Low	22 GPM or less	2 75 GDM or	Retrofit	Faucet	۵	Śջn	131	0.031	0.0
205	eFa	DHW	not water	Flow Aerators	2.2 OF WI OF 1855	2.75 GFIVI OI	Netront	Taucet	9	<b>Ş8.</b> 0	151	0.031	0.0
	mily	w/Electri		How Actators		more							
	8.Du	w/ Liecti i											
	nlov	Hosting											
	piex	Rate											
286	Singl	Electric	Hot Water	Kitchen Low	2.2 GPM or less	2.75 GPM or	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
	eFa	DHW		Flow Aerators		more							
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
287	Singl	Electric	Hot Water	Faucet Aerators	2.2 GPM or less	2.75 GPM or	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
	eFa	DHW		and		more							
	mily	w/Electri		Showerheads									
	&Du	с											
	plex	Heating											
		Rate											
288	Singl	Electric	Hot Water	Kitchen Low	2.2 GPM or less	2.75 GPM or	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
	eFa	DHW		Flow Aerators		more							
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
289	Mult	Electric	Hot Water	Kitchen Low	2.2 GPM or less	2.75 GPM or	Retrofit	Faucet	9	\$8.0	103	0.029	0.0
	ifami	DHW		Flow Aerators		more							
	ly	w/Electri											
		С											
		Heating											
		Rate											
290	Mult	Electric	Hot Water	Kitchen Low	2.2 GPM or less	2.75 GPM or	Retrofit	Faucet	9	\$8.0	103	0.029	0.0
	ifami	DHW		Flow Aerators		more							
	ly	w/Non-											
		Electric											
		Heating											
201	Circel	Rate	List Mater	Kitahan Laur	2.2 CDM ex lass	2.75 CDM ar	New	Faurat	0	će o	101	0.021	0.0
291	Singi	Electric	Hot water	Kitchen Low	2.2 GPIVI or less	2.75 GPIM or	New	Faucet	9	\$8.0	131	0.031	0.0
	era	DHVV		Flow Aerators		more	Constructi						
	nniny 8 Du	w/Electri					on						
	aDu	L											
	piex	пеацінg Рато											
202	Circal	Flastria	List Mater	Kitah an Law	2.2 CDM ex lass	2.75 CDM ar	New	Faurat	0	ć0.0	101	0.021	0.0
292	Singi	Electric	HOT Water		2.2 GPIVI OF IESS	2.75 GPIVI Or	New Construct:	Faucet	9	\$8.U	131	0.031	0.0
	e⊦a	UHW W/Non		FIOW Aerators		more	Constructi						
	mily 8.0	W/INOII-					on						
	aDu	Hosting											
	piex	Rato											
		ndle											

293	Mult	Flectric	Hot Water	Kitchen Low	2.2 GPM or less	2.75 GPM or	New	Faucet	9	\$8.0	107	0.031	0.0
255	ifami	DHW		Flow Aerators	2.2 01 101 1035	more	Constructi	radeet	5	<b>Ç0.0</b>	107	0.051	0.0
	lv	w/Flectri		now Actual		more	on						
	.,	c c					on						
		Heating											
		Rate											
20/	Mult	Electric	Hot Water	Kitchen Low	2.2 GPM or less	2 75 GPM or	New	Faucet	9	\$ <u>8</u> 0	107	0.031	0.0
234	ifami	DHW	not water	Flow Aerators	2.2 01 101 01 1833	more	Constructi	Taucet	5	Ş0.0	107	0.051	0.0
	lv	w/Non-		TIOW ACTALOIS		more	on						
	iy	Flectric					on						
		Heating											
		Rate											
295	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	328	0.034	0.0
	eFa	DHW		head			Install	d		+			
	milv	w/Electri											
	, &Du	c											
	plex	Heating											
	•	Rate											
296	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	238	0.025	0.0
	eFa	DHW		head				d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate											
297	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	238	0.025	0.0
	eFa	DHW		head				d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate								4			
298	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	238	0.025	0.0
	e⊦a	DHW		head			Sale	d					
	mily	W/Electri											
	&Du	C											
	plex	Heating											
200	NAul+	Floctric	Hot Water	Low flow shower	1 E CDM		Direct	Showarhaa	10	¢17.0	250	0.046	0.0
299	ifami		HOL Water	Low now shower	1.5 GPIVI	2.5 GPIVI	Direct	Showennea	10	\$17.0	328	0.046	0.0
	h	w/Eloctri		neau			IIIStall	u					
	iy	w/Liectin											
		Heating											
		Rate											
200	Mul+	Electric	Hot Water	Low flow showor	1 5 CDM	2.5 GDM	Potrofit	Showorhoo	10	¢17.0	261	0.022	0.0
300	ifami	DHW		head	1.3 UF IVI	2.3 UFIVI	Netront	h	10	Υ.Υ.Ç	201	0.035	0.0
	lv	w/Flectri		neau				u					
	'Y	r											
		Heating											
		Rate											

301	Mult	Flectric	Hot Water	Low flow shower	1 5 GPM	2 5 GDM	Time of	Showerhea	10	\$12.0	261	0.033	0.0
301	ifami	DHW	not water	head	T.J OFIN	2.3 GRIVI	Sale	d	10	0.21¢	201	0.055	0.0
	hv	w/Eloctri		liedu			Sale	u					
	iy	w/Electri											
		Hosting											
		Rate											
302	Singl	Flectric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	328	0.034	0.0
502	eFa	DHW		head	1.5 61 11	2.5 61 11	Install	d	10	<b>Q17.0</b>	520	0.031	0.0
	mily	w/Non-		neuu			mstan	ŭ					
	&Du	Flectric											
	plex	Heating											
	P	Rate											
303	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	238	0.025	0.0
	eFa	DHW		head				d					
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
304	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	238	0.025	0.0
	eFa	DHW		head				d					
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
	<u></u>	Rate								410.0			
305	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	238	0.025	0.0
	e⊦a	DHW		head			Sale	d					
	mily 8 Du	W/NON-											
	&Du play	Electric											
	piex	Pato											
306	Mult	Flectric	Hot Water	Low flow shower	1 5 GPM	2 5 GPM	Direct	Showerhea	10	\$17.0	359	0.046	0.0
300	ifami	DHW	not water	head	1.5 01 101	2.5 01 101	Install	d	10	Ş17.0	333	0.040	0.0
	lv	w/Non-		nedu			mstan	u					
	.,	Electric											
		Heating											
		Rate											
307	Mult	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	261	0.033	0.0
	ifami	DHW		head				d					
	ly	w/Non-											
	•	Electric											
		Heating											
		Rate											
308	Mult	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	261	0.033	0.0
	ifami	DHW		head			Sale	d					
	ly	w/Non-											
		Electric											
		Heating											
		Rate											

309	Singl	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	New	Showerhea	10	\$17.0	238	0.025	0.0
505	eFa	DHW		head	1.5 01 11	2.5 01 11	Constructi	d	10	<b>\$17.0</b>	230	0.025	0.0
	milv	w/Electri		neuu			on	ŭ					
	&Du	с. С					0.1						
	nlex	Heating											
	picx	Rate											
310	Mult	Flectric	Hot Water	I ow flow shower	1 5 GPM	2 5 GPM	New	Showerhea	10	\$17.0	261	0.033	0.0
510	ifami	DHW	not water	head	1.5 01 14	2.5 01 101	Constructi	h	10	φ17.0	201	0.055	0.0
	lv	w/Flectri		nedd			on	u					
	.,	c c					011						
		Heating											
		Rate											
311	Singl	Flectric	Hot Water	I ow flow shower	1 5 GPM	2 5 GPM	New	Showerhea	10	\$17.0	238	0.025	0.0
511	eFa	DHW	not water	head	1.5 01 11	2.5 01 11	Constructi	binowenie bi	10	<i>φ</i> 17.0	230	0.025	0.0
	milv	w/Non-		neuu			00	ŭ					
	&Du	Electric					on						
	nlex	Heating											
	press	Rate											
312	Mult	Electric	Hot Water	Low flow shower	1.5 GPM	2.5 GPM	New	Showerhea	10	\$17.0	261	0.033	0.0
	ifami	DHW		head			Constructi	d					
	ly	w/Non-					on						
		Electric											
		Heating											
		Rate											
313	Singl	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	258	0.027	0.0
	eFa	DHW		head			Install	d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate											
314	Singl	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	168	0.018	0.0
	eFa	DHW		head				d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate											
315	Singl	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	168	0.018	0.0
	eFa	DHW		head			Sale	d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate											
316	Mult	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	282	0.036	0.0
	ifami	DHW		head			Install	d					
	lv	w/Electri											
	.,												
	.,	С											
	- 7	c Heating											

317	Mult	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	184	0.023	0.0
	ifami	DHW		head				d					
	ly	w/Electri											
		с											
		Heating											
		Rate											
318	Mult	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	184	0.023	0.0
	ifami	DHW		head			Sale	d					
	ly	w/Electri											
		С											
		Heating											
		Rate											
319	Singl	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	258	0.027	0.0
	eFa	DHW		head			Install	d					
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
320	Singl	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	168	0.018	0.0
	eFa	DHW		head				d					
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
321	Singl	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	168	0.018	0.0
	eFa	DHW		head			Sale	d					
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
322	Mult	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	282	0.036	0.0
	ifami	DHW		head			Install	d					
	ly	w/Non-											
		Electric											
		Heating											
		Rate											
323	Mult	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	184	0.023	0.0
	ifami	DHW		head				d					
	ly	w/Non-											
		Electric											
		Heating											
		Rate											
324	Mult	Electric	Hot Water	Low flow shower	1.75 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	184	0.023	0.0
	ifami	DHW		head			Sale	d					
	ly	w/Non-											
	ly	w/Non- Electric											
	ly	w/Non- Electric Heating											

Appendix	<u>CD: Res</u>	idential N	Measure As	sumptions									
325	Singl	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	188	0.020	0.0
	eFa	DHW		head			Install	d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate											
326	Singl	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	98	0.010	0.0
	eFa	DHW		head				d					
	mily	w/Electri											
	&Du	С											
	plex	Heating											
		Rate											
327	Singl	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	98	0.010	0.0
	eFa	DHW		head			Sale	d					
	mily	w/Electri											
	&Du	C											
	plex	Heating											
220	<b>N A H</b>	Rate		Les flesselses	2.0014	2.5.0014	Discol	Channellan	40	647.0	200	0.026	
328	Wult	Electric	Hot Water	Low flow shower	2 GPINI	2.5 GPIM	Direct	Snowernea	10	\$17.0	206	0.026	0.0
	Itami	DHW w/Flootri		nead			Install	a					
	iy	w/Electri											
		L Hosting											
		Pata											
220	NAul+	Floctric	Hot Water	Low flow shower	2 CDM	2 E CDM	Potrofit	Showarhaa	10	¢17.0	107	0.014	0.0
329	ifami			Low now shower	2 GPIVI	2.5 GPIN	Retront	d	10	\$17.0	107	0.014	0.0
	liaiiii	w/Floctri		neau				u					
	iy	w/Liecui											
		Heating											
		Rate											
330	Mult	Flectric	Hot Water	low flow shower	2 GPM	2 5 GPM	Time of	Showerhea	10	\$12.0	107	0.014	0.0
550	ifami	DHW		head	2 01 11	2.5 01 11	Sale	h	10	<b>VIL</b> .0	107	0.011	0.0
	lv	w/Electri		neud			Suic	u					
	.,	C C											
		Heating											
		Rate											
331	Singl	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	188	0.020	0.0
	eFa	DHW		head			Install	d		·			
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											
332	Singl	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	98	0.010	0.0
	eFa	DHW		head				d					
	mily	w/Non-											
	&Du	Electric											
	plex	Heating											
		Rate											

Singl	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	98	0.010	0.0
eFa	DHW		head			Sale	d		+			
milv	w/Non-						-					
&Du	Flectric											
nlex	Heating											
picx	Rate											
Mult	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Direct	Showerhea	10	\$17.0	206	0.026	0.0
ifami	DHW		head			Install	d					
ly	w/Non-											
•	Electric											
	Heating											
	Rate											
Mult	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Retrofit	Showerhea	10	\$17.0	107	0.014	0.0
ifami	DHW		head				d					
ly	w/Non-											
	Electric											
	Heating											
	Rate											
Mult	Electric	Hot Water	Low flow shower	2 GPM	2.5 GPM	Time of	Showerhea	10	\$12.0	107	0.014	0.0
ifami	DHW		head			Sale	d					
ly	w/Non-											
	Electric											
	Heating											
	Rate											
All	Electric	Hot Water	Water Heater	50 gal: R-16	50 gal No	Retrofit	Home	5	\$27.0	225	0.026	0.0
	DHW		Tank Wrap		wrap (R-8)							
	w/Electri											
	С											
	Heating											
A 11	Rate		Mater Heater	50 mals D 10	50 ccl No	Direct	llama	-	627.0	225	0.020	0.0
All	Electric	Hot water	Water Heater	50 gal: R-16	50 gal NO	Direct	Home	5	\$27.0	225	0.026	0.0
	DHW w/Flootri		Tank wrap		wrap (R-8)	Install						
	w/Electri											
	Llaating											
	Пеаціну Рато											
ΔΠ	Flectric	Hot Water	Water Heater	50 gal: B-16	50 gal No	Retrofit	Home	5	\$27.0	225	0.026	0.0
7.01	DHW	not water	Tank Wran	50 gui il 10	wran (R-8)	Rectoric	Home	5	<i>Ş</i> 27.0	LLJ	0.020	0.0
	w/Non-				map (it o)							
	Flectric											
	Heating											
	nearing											
	Rate											
All	Rate	Hot Water	Water Heater	50 gal: B-16	50 gal No	Direct	Home	5	\$27.0	225	0.026	0.0
All	Rate Electric DHW	Hot Water	Water Heater Tank Wran	50 gal: R-16	50 gal No wrap (R-8)	Direct	Home	5	\$27.0	225	0.026	0.0
All	Rate Electric DHW w/Non-	Hot Water	Water Heater Tank Wrap	50 gal: R-16	50 gal No wrap (R-8)	Direct Install	Home	5	\$27.0	225	0.026	0.0
All	Rate Electric DHW w/Non- Electric	Hot Water	Water Heater Tank Wrap	50 gal: R-16	50 gal No wrap (R-8)	Direct Install	Home	5	\$27.0	225	0.026	0.0
All	Rate Electric DHW w/Non- Electric Heating	Hot Water	Water Heater Tank Wrap	50 gal: R-16	50 gal No wrap (R-8)	Direct Install	Home	5	\$27.0	225	0.026	0.0
_	Singl eFa mily &Du plex Mult ifami ly Mult ifami ly All All	Singl Electric eFa DHW mily w/Non- &Du Electric plex Heating Rate Mult Electric ifami DHW ly w/Non- Electric Heating Rate Mult Electric ifami DHW ly w/Non- Electric Heating Rate Mult Electric ifami DHW ly w/Non- Electric Heating Rate Mult Electric ifami DHW ly w/Non- Electric Heating Rate All Electric DHW w/Electri c Heating Rate All Electric DHW w/Electri c Heating Rate All Electric DHW w/Electri c Heating Rate All Electric DHW w/Electri c Heating Rate All Electric DHW w/Electri c Heating Rate All Electric DHW w/Son- Electric DHW w/Son- Electric DHW w/Son- Electric DHW w/Son- Electric DHW w/Son- Electric DHW w/Son- Electric DHW	Singl   Electric   Hot Water     eFa   DHW     mily   w/Non-     &Du   Electric     plex   Heating     Rate   Hot Water     ifami   DHW     ly   w/Non-     Electric   Hot Water     ifami   DHW     ly   w/Non-     Electric   Heating     Rate   Mult     Mult   Electric     Heating   Rate     All   Electric     Heating<	Singl Electric Hot Water Low flow shower   eFa DHW head   mily w/Non-   &Du Electric   plex Heating   Rate Low flow shower   Mult Electric   Heating Low flow shower   ifami DHW   ly w/Non-   Electric Hot Water   Iv w/Non-   Electric Hot Water   Iv w/Non-   Electric Hot Water   ly w/Non-   Electric Hot Water   Iv w/Non-   Electric Hot Water   ly w/Non-   Electric Hot Water   Mult Electric   Heating Rate   Mult Electric   Heating Rate   All Electric   Heating Rate   All Electric   Hot Water Water Heater   Tank Wrap	SinglElectricHot WaterLow flow shower head2 GPMeFaDHWhead2 GPMmilyw/Non-kad2 GPM&DuElectricHot WaterLow flow shower head2 GPMifamiDHWhead2 GPMifamiDHWfamily50 gal: R-16Tank WrapV/Electri50 gal: R-16CHeating Ratefank Wrap50 gal: R-16AllElectricHot WaterWater Heater Tank Wrap50 gal: R-16Heating RateAllElectricHot WaterS0 gal: R-16DHWMon-	Singl   Electric   Hot Water   Low flow shower   2 GPM   2.5 GPM     mily   w/Non-   &   head   2 GPM   2.5 GPM     mily   w/Non-   &   bead   2 GPM   2.5 GPM     plex   Heating   Rate   2 GPM   2.5 GPM   2.5 GPM     Mult   Electric   Hot Water   Low flow shower   2 GPM   2.5 GPM     Ifami   DHW   head   2 GPM   2.5 GPM   2.5 GPM     Ifami   DHW   head   2 GPM   2.5 GPM   2.5 GPM     Ifami   DHW   Hot Water   Low flow shower   2 GPM   2.5 GPM     Ifami   DHW   Hot Water   Low flow shower   2 GPM   2.5 GPM     Ifami   DHW   Hot Water   Low flow shower   2 GPM   2.5 GPM     Ifami   DHW   Hot Water   Low flow shower   2 GPM   2.5 GPM     Ifami   DHW   Hot Water   Low flow shower   2 GPM   2.5 GPM     Ifami   DHW   Tank Wrap   So gal: R-16   50 gal No   wrap (R-8)     w/Ele	Singl   Electric   Hot Water   Low flow shower   2 GPM   2.5 GPM   Time of     Sale   mily   w/Non-   Bead   2 GPM   2.5 GPM   Sale     Mult   Electric   head   2 GPM   2.5 GPM   Direct     plex   Heating   Rate	Singl Electric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Sale Showerhea   eFa DHW Head head 2 GPM 2.5 GPM Time of Sale Showerhea   wilv W/Non- &Du Electric Hot Water Low flow shower 2 GPM 2.5 GPM Direct Showerhea   Ifami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Direct Showerhea   Ig w/Non- Electric Hot Water Low flow shower 2 GPM 2.5 GPM Direct Showerhea   Mult Electric Hot Water Low flow shower 2 GPM 2.5 GPM Retrofit Showerhea   Ifami DHW head head 2 GPM 2.5 GPM Retrofit Showerhea   Ifami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea   Ifami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea   Ifami DHW Head Non Electric Head Sale d   Ifami DHW Tank Wrap So gal: R-16 S0 gal No Retrofit Home   VEl	Singl eFa DHW   Electric DHW   Hot Water head   Low flow shower head   2 GPM   2.5 GPM   Time of Sale   Showerhea d   10     Mult Plex   Electric plex   Hot Water Rate   Low flow shower   2 GPM   2.5 GPM   Direct   Showerhea   10     Mult   Electric plex   Hot Water   Low flow shower   2 GPM   2.5 GPM   Direct   Showerhea   10     Mult   Electric Heating Rate   Hot Water   Low flow shower   2 GPM   2.5 GPM   Direct   Showerhea   10     Mult   Electric Heating Rate   Hot Water   Low flow shower   2 GPM   2.5 GPM   Retrofit   Showerhea   10     Iv   w/Non- Electric Heating Rate   Hot Water   Low flow shower   2 GPM   2.5 GPM   Time of   Showerhea   10     Iv   w/Non- Electric Heating Rate   Hot Water   Low flow shower   2 GPM   2.5 GPM   Time of   Showerhea   10     All   Electric Heating Rate   Hot Water   Water Heater   50 gal: R-16   50 gal No wrap (R-8)   Retrofit   Home   5     All   Electric Heating Rate	Singl Electric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 10 \$12.0   Mily WNon- Bead Sale d d 0 \$12.0   Ber Heating Rate Showerhea 10 \$12.0   Mult Electric Hot Water Low flow shower 2 GPM 2.5 GPM Direct Showerhea 10 \$17.0   Haring Nult Electric Hot Water Low flow shower 2 GPM 2.5 GPM Direct Install d 10 \$17.0   Ifami DHW Non- Head Nult Electric Hot Water Low flow shower 2 GPM 2.5 GPM Retrofit Showerhea 10 \$17.0   Ifami DHW Non- Electric Hot Water Low flow shower 2 GPM 2.5 GPM Retrofit Showerhea 10 \$17.0   Ifami DHW Non- Electric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 10 \$12.0   Ifami DHW Ketric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 10 \$12.0<	Singl Electric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 10 \$12.0 98   eFa DHW Non- Electric Betaling additional state additional state 10 \$12.0 98   Rate Rate Low flow shower 2 GPM 2.5 GPM Direct Showerhea 10 \$17.0 206   If ami DHW Head 2 GPM 2.5 GPM Direct Showerhea 10 \$17.0 206   If ami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Direct Showerhea 10 \$17.0 206   If ami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Retrofit Showerhea 10 \$17.0 107   If ami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 10 \$12.0 107   If ami DHW Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 10 \$12.0 107   If ani With Electric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Showerhea 1	Single Electric eFa Het Water best Low flow shower head 2 GPM 2.5 GPM Time of Sale Showerhea 10 \$12.0 98 0.010   Mity Electric framing DHW head 10 \$12.0 98 0.010   Muty Electric framing Not Water Low flow shower 2 GPM 2.5 GPM Direct install Showerhea 10 \$17.0 206 0.026   If and if and DHW DHW Hot Water Low flow shower 2 GPM 2.5 GPM Direct install Showerhea 10 \$17.0 206 0.026   If and If and DHW DHW Hot Water Low flow shower 2 GPM 2.5 GPM Retrofit Showerhea 10 \$17.0 107 0.014   If and If and DHW DHW Hot Water Low flow shower 2 GPM 2.5 GPM Time of Sale Showerhea 10 \$17.0 107 0.014   If and If and DHW DHW Hot Water Low flow shower 2 GPM 2.5 GPM Time of Sale Showerhea 10 \$17.0 107 0.014   If and If and With Electric Hot Water Low flow shower 2 GPM 2.5 GPM Time of Sale Showerhea 10 \$12.0<

341	All	Electric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Retrofit	Home	5	\$27.0	157	0.018	0.0
		w/Electri				wiap (K-10)							
		C											
		Heating											
		Rate											
342	All	Electric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Retrofit	Home	5	\$27.0	255	0.029	0.0
		DHW		Tank Wrap		wrap (R-8)							
		w/Electri											
		Heating											
		Rate											
343	All	Electric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Direct	Home	5	\$27.0	157	0.018	0.0
		DHW		Tank Wrap		wrap (R-10)	Install						
		w/Electri											
		C											
		Rate											
344	All	Electric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Direct	Home	5	\$27.0	255	0.029	0.0
		DHW		Tank Wrap		wrap (R-8)	Install						
		w/Electri											
		C											
		Heating											
345	All	Flectric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Retrofit	Home	5	\$27.0	157	0.018	0.0
515	7.01	DHW	not water	Tank Wrap	50 gui il 10	wrap (R-10)	Retront	nome	5	<i>ų</i> 27.0	137	0.010	0.0
		w/Non-				/							
		Electric											
		Heating											
246	A 11	Rate	List Mater	Mater Heater	50 col: D 10	FO sel Ne	Detrefit	llama		627.0	255	0.020	0.0
346	All		Hot Water	Water Heater	50 gal: K-18	SU gal NO	Retrofit	Home	5	\$27.0	255	0.029	0.0
		w/Non-				wiap (n-o)							
		Electric											
		Heating											
		Rate											
347	All	Electric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Direct	Home	5	\$27.0	157	0.018	0.0
		DHW		Tank Wrap		wrap (R-10)	Install						
		W/NON- Electric											
		Heating											
		Rate											
348	All	Electric	Hot Water	Water Heater	50 gal: R-18	50 gal No	Direct	Home	5	\$27.0	255	0.029	0.0
		DHW		Tank Wrap		wrap (R-8)	Install						
		w/Non-											
		Electric											
		Heating											
		Kate											

349	All	Electric	Hot Water	Water Heater	50 gal: R-20	50 gal No	Retrofit	Home	5	\$27.0	115	0.013	0.0
		DHW		Tank Wrap		wrap (R-12)							
		w/Electri											
		С											
		Heating											
250	A 11	Rate	List Mator	Water Heater	EQ call D 20	EQ gal No	Dotrofit	llomo		627.0	190	0.021	0.0
350	All				50 gal: K-20	SU gal NO	Retront	попте	Э	\$27.0	180	0.021	0.0
		W/Floctri				wiah (k-10)							
		C C											
		Heating											
		Rate											
351	All	Electric	Hot Water	Water Heater	50 gal: R-20	50 gal No	Direct	Home	5	\$27.0	115	0.013	0.0
		DHW		Tank Wrap		wrap (R-12)	Install						
		w/Electri											
		С											
		Heating											
252	A 11	Rate	List Mator	Water Heater	EQ call D 20	EQ gal No	Direct	llomo		627.0	190	0.021	0.0
352	All		HOL Water	Tank Wran	50 gal: K-20	SU gai NU wrap (R-10)	Install	поше	Э	\$27.0	180	0.021	0.0
		w/Electri				wiap (N-10)	mstan						
		C C											
		Heating											
		Rate											
353	All	Electric	Hot Water	Water Heater	50 gal: R-20	50 gal No	Retrofit	Home	5	\$27.0	115	0.013	0.0
		DHW		Tank Wrap		wrap (R-12)							
		w/Non-											
		Electric											
		Heating											
254	A II	Floctric	Hot Wator	Water Heater	EQ gal: P 20	E0 gal No	Potrofit	Homo	F	627.0	190	0.021	0.0
554	All			Tank Wran	50 gal. N-20	50 gai NO wrap (R-10)	Retront	HOILE	5	\$27.0	100	0.021	0.0
		w/Non-				wiap (N-10)							
		Electric											
		Heating											
		Rate											
355	All	Electric	Hot Water	Water Heater	50 gal: R-20	50 gal No	Direct	Home	5	\$27.0	115	0.013	0.0
		DHW		Tank Wrap		wrap (R-12)	Install						
		w/Non-											
		Electric											
		Heating											
250	A 11	Rate	List Mater	Mater Heater	50 ccl: D 20		Dive et	110.000		627.0	100	0.021	0.0
356	All	Electric	Hot water	Water Heater	50 gai: R-20	50 gal No	Direct	Home	5	\$27.0	180	0.021	0.0
						wigh (v-10)	IIIStall						
		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\											
		Electric											
		Electric											

357	All	Electric	Hot Water	Water Heater	50 gal: R-22	50 gal No	Retrofit	Home	5	\$27.0	134	0.015	0.0
557		DHW	not water	Tank Wrap	50 gui. N 22	wrap (R-12)	netront	Home	5	<i>421.0</i>	134	0.015	0.0
		w/Electri				- F ( )							
		C											
		Heating											
		Rate											
358	All	Electric	Hot Water	Water Heater	50 gal: R-22	50 gal No	Direct	Home	5	\$27.0	134	0.015	0.0
		DHW		Tank Wrap		wrap (R-12)	Install						
		w/Electri											
		C											
		Pato											
359	All	Flectric	Hot Water	Water Heater	50 gal. B-22	50 gal No	Retrofit	Home	5	\$27.0	134	0.015	0.0
555		DHW	not water	Tank Wrap	50 gui. N 22	wrap (R-12)	netront	Home	5	<i>421.0</i>	134	0.015	0.0
		w/Non-											
		Electric											
		Heating											
		Rate											
360	All	Electric	Hot Water	Water Heater	50 gal: R-22	50 gal No	Direct	Home	5	\$27.0	134	0.015	0.0
		DHW		Tank Wrap		wrap (R-12)	Install						
		W/NON-											
		Heating											
		Rate											
361	All	Electric	Hot Water	Water Heater	120 degrees	≥ 130	Retrofit	Home	2	\$5.0	63	0.007	0.0
		DHW		Temp Setback	Ū	degrees							
		w/Electri											
		С											
		Heating											
2.52		Rate			100 1					65.0	62	0.007	
362	All	Electric	Hot Water	Water Heater	120 degrees	≥ 130	New	Home	2	\$5.0	63	0.007	0.0
		DHW w/Electri		Temp Setback		degrees	Constructi						
		c c					UII						
		Heating											
		Rate											
363	All	Electric	Hot Water	Water Heater	120 degrees	≥ 130	Time of	Home	2	\$5.0	63	0.007	0.0
		DHW		Temp Setback		degrees	Sale						
		w/Electri											
		С											
		Heating											
		Rate								4			
364	All	Electric	Hot Water	Water Heater	120 degrees	≥ 130	Retrofit	Home	2	Ş5.0	94	0.011	0.0
		DHW w/Non		Temp Setback		degrees							
		W/NUII- Flectric											
		Heating											
		Rate											
ppendix	D: Res	idential N	vleasure As	sumptions									
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365	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	New Constructi on	Home	2	\$5.0	94	0.011	0.0
366	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥130 degrees	Time of Sale	Home	2	\$5.0	94	0.011	0.0
367	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥130 degrees	Direct Install	Home	2	\$5.0	79	0.009	0.0
368	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥130 degrees	Direct Install	Home	2	\$5.0	79	0.009	0.0
369	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	Home	2	\$5.0	79	0.009	0.0
370	Mult ifami ly	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	Home	2	\$5.0	79	0.009	0.0
371	Mult ifami ly	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,518.0	1866	0.199	0.0
372	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,518.0	1899	0.199	0.0
373	Mult ifami ly	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,655.0	1892	0.217	0.0

374	Singl	Heat	HVAC	Air Source Heat	SEER 16	Existing air	Early	per ton	18	\$1,655.0	1928	0.217	0.0
	era	Pump		Pump		source neat	Replacem						
	8.Du					pump	ent						
	nlex												
375	Mult	Heat	HVAC	Air Source Heat	SEER 17	Existing air	Early	per ton	18	\$1,792.0	1914	0.232	0.0
	ifami	Pump		Pump		source heat	Replacem	-					
	ly					pump	ent						
376	Singl	Heat	HVAC	Air Source Heat	SEER 17	Existing air	Early	per ton	18	\$1,792.0	1953	0.232	0.0
	eFa	Pump		Pump		source heat	Replacem						
	mily					pump	ent						
	&Du												
277	plex	Hoat		Air Source Heat	CEED 10	Existing air	Farly	norton	10	¢1 020 0	1024	0.245	0.0
3//	ifami	Pump	HVAC		SEEK 18	EXISTING dir	Edity	perton	18	\$1,929.0	1934	0.245	0.0
	lv	Pullip		Pullip		numn	ent						
	'y					pump	Citt						
378	Singl	Heat	HVAC	Air Source Heat	SEER 18	Existing air	Early	per ton	18	\$1,929.0	1975	0.245	0.0
	eFa	Pump		Pump		source heat	Replacem						
	mily					pump	ent						
	&Du												
270	plex	Floatria		Air Course Lleat		Evicting	Forby	norton	10	¢1 F10 O	2617	0.000	0.0
379	ifami	Resistan	HVAC		SEEK 15	electric	Edily	perton	18	\$1,518.0	3017	0.000	0.0
	lv	re		rump		resistance no	ent						
	.,	Heat/No				AC/dual	cite						
		CAC				baseline =							
						heat pump							
380	Singl	Electric	HVAC	Air Source Heat	SEER 15	Existing	Early	per ton	18	\$1,518.0	3566	0.000	0.0
	eFa	Resistan		Pump		electric	Replacem						
	mily	ce				resistance no	ent						
	&Du	Heat/No				AC/dual							
	plex	CAC				baseline =							
381	Mult	Electric	HVAC	Air Source Heat	SEER 16	Existing	Early	per ton	18	\$1.655.0	3642	0.000	0.0
	ifami	Resistan		Pump		electric	Replacem			,,			
	ly	ce		·		resistance no	ent						
		Heat/No				AC/dual							
		CAC				baseline =							
						heat pump							
382	Singl	Electric	HVAC	Air Source Heat	SEER 16	Existing	Early	per ton	18	\$1,655.0	3594	0.000	0.0
	eFa	Resistan		Pump		electric	Replacem						
	mily & Du	ce Host/No				resistance no	ent						
	a Du nlev					haseline –							
	pier					heat numn							

ppenaix D	): Kesi	idential iv	leasure A	ssumptions									
383	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,792.0	3665	0.000	0.0
384	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,792.0	3619	0.000	0.0
385	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,929.0	3684	0.000	0.0
386	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,929.0	3642	0.000	0.0
387	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$119.0	54	0.035	0.0
388	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$119.0	48	0.035	0.0
389	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$119.0	54	0.035	0.0
390	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$119.0	48	0.035	0.0
391	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$119.0	54	0.035	0.0

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392	Mult ifami	AC/Elect ric	HVAC	Central Air Conditioning >	SEER 14.5	Federal minimum	New Constructi	per ton	18	\$119.0	48	0.035	0.0
	ly	Resistan ce Heat		14.5 SEER		SEER13 equipment	on						
393	Singl eFa mily &Du	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$119.0	54	0.035	0.0
394	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$119.0	48	0.035	0.0
395	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,001.6	212	0.143	0.0
396	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,001.6	188	0.143	0.0
397	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,001.6	212	0.143	0.0
398	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,001.6	188	0.143	0.0

Appendix	x D: Res	idential N	Aeasure A	ssumptions									
399	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$238.0	70	0.045	0.0
400	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$238.0	62	0.045	0.0
401	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$238.0	70	0.045	0.0
402	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$238.0	62	0.045	0.0
403	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$238.0	70	0.045	0.0
404	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$238.0	62	0.045	0.0
405	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$238.0	70	0.045	0.0
406	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$238.0	62	0.045	0.0
407	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,120.6	228	0.153	0.0
408	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC	Early Replacem ent	per ton	18	\$3,120.6	202	0.153	0.0

penui	<u>x D. Nes</u>			ssumptions		equipment to Federal minimum							
						SEER13 equipment							
409	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,120.6	228	0.153	0.0
410	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,120.6	202	0.153	0.0
411	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$357.0	99	0.062	0.0
412	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$357.0	88	0.062	0.0
413	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$357.0	99	0.062	0.0
414	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$357.0	88	0.062	0.0
415	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$357.0	99	0.062	0.0
416	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$357.0	88	0.062	0.0

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It is provide a table A constraints and the second

417	Singl	AC/Gas	HVAC	Central Air	SEER 16	Federal	New	per ton	18	\$357.0	99	0.062	0.0
	eFa	Heat		Conditioning >		minimum	Constructi	-					
	mily			14.5 SEER		SEER13	on						
	&Du					equipment							
	plex												
418	Mult	AC/Gas	HVAC	Central Air	SEER 16	Federal	New	per ton	18	\$357.0	88	0.062	0.0
	Itami	Heat		Conditioning >		minimum	Constructi						
	iy			14.5 SEEK		SEER13	on						
410	Cinal	AC/Floot		Control Air		Chifting	Forby	norton	10	62 220 C	257	0 171	0.0
419	Siligi	ric	TVAC		SEEK 10	baseline	Edily	perton	19	\$3,239.0	257	0.171	0.0
	milv	Resistan		14 5 SEER		from existing	ent						
	&Du	ce Heat		14.5 SEEN		AC	cite						
	plex	ee neue				equipment							
	P -					to Federal							
						minimum							
						SEER13							
						equipment							
420	Mult	AC/Elect	HVAC	Central Air	SEER 16	Shifting	Early	per ton	18	\$3,239.6	228	0.171	0.0
	ifami	ric		Conditioning >		baseline	Replacem						
	ly	Resistan		14.5 SEER		from existing	ent						
		ce Heat				AC							
						to Federal							
						minimum							
						SEER13							
						equipment							
421	Singl	AC/Gas	HVAC	Central Air	SEER 16	Shifting	Early	per ton	18	\$3,239.6	257	0.171	0.0
	eFa	Heat		Conditioning >		baseline	Replacem						
	mily			14.5 SEER		from existing	ent						
	&Du					AC							
	plex					equipment							
						to Federal							
						MINIMUM SEED12							
						equinment							
422	Mult	AC/Gas	HVAC	Central Air	SEER 16	Shifting	Early	per ton	18	\$3.239.6	228	0.171	0.0
	ifami	Heat		Conditioning >		baseline	Replacem	p =		+-/			
	ly			14.5 SEER		from existing	ent						
						AC							
						equipment							
						to Federal							
						minimum							
						SEER13							
422	C' a al	AC/51-11	111/40	Cashadata	CEED 47	equipment	<b>T</b> '		10	6476.0	124	0.070	0.0
423	Singi	AC/Elect	HVAC	Central Air	SEER 17	Federal	Lime of	per ton	18	\$476.0	124	0.078	0.0
	era milv	IIL Resistan		14 5 SEER		SEER12	Sale						
	&Du	ce Heat		I+.J JELI		equinment							
	plex					equipment							

424	Mult ifami	AC/Elect	HVAC	Central Air Conditioning >	SEER 17	Federal	Time of Sale	per ton	18	\$476.0	110	0.078	0.0
	ly	Resistan ce Heat		14.5 SEER		SEER13 equipment	Suic						
425	Singl eFa	AC/Gas Heat	HVAC	Central Air Conditioning >	SEER 17	Federal minimum	Time of Sale	per ton	18	\$476.0	124	0.078	0.0
	mily &Du			14.5 SEER		SEER13 equipment							
426	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13	Time of Sale	per ton	18	\$476.0	110	0.078	0.0
						equipment							
427	Singl eFa mily	AC/Elect ric Resistan	HVAC	Central Air Conditioning > 14 5 SEER	SEER 17	Federal minimum SEER13	New Constructi	per ton	18	Ş476.0	124	0.078	0.0
	&Du plex	ce Heat		14.5 JELK		equipment	on						
428	Mult ifami	AC/Elect ric	HVAC	Central Air Conditioning >	SEER 17	Federal minimum	New Constructi	per ton	18	\$476.0	110	0.078	0.0
	ly	Resistan ce Heat		14.5 SEER		SEER13 equipment	on						
429	Singl eFa	AC/Gas Heat	HVAC	Central Air Conditioning >	SEER 17	Federal minimum	New Constructi	per ton	18	\$476.0	124	0.078	0.0
	mily &Du			14.5 SEER		SEER13 equipment	on						
430	plex Mult	AC/Gas	HVAC	Central Air	SEER 17	Federal	New	per ton	18	\$476.0	110	0.078	0.0
	ifami ly	Heat		Conditioning > 14.5 SEER		minimum SEER13 equipment	Constructi on						
431	Singl eFa	AC/Elect ric	HVAC	Central Air Conditioning >	SEER 17	Shifting baseline	Early Replacem	per ton	18	\$3,358.6	282	0.186	0.0
	mily &Du	Resistan ce Heat		14.5 SEER		from existing AC	ent						
	plex					equipment to Federal							
						minimum SEER13							
432	Mult ifami	AC/Elect	HVAC	Central Air Conditioning >	SEER 17	Shifting	Early Replacem	per ton	18	\$3,358.6	250	0.186	0.0
	ly	Resistan ce Heat		14.5 SEER		from existing	ent						
						equipment to Federal							
						minimum SEER13							
						equipment							

433	Singl	AC/Gas	HVAC	Central Air	SEER 17	Shifting	Early	per ton	18	\$3,358.6	282	0.186	0.0
	era milv	Heat		14 5 SEER		from existing	Replacem						
	&Du			14.5 JELK		AC	ent						
	plex					equipment							
	P					to Federal							
						minimum							
						SEER13							
						equipment							
434	Mult	AC/Gas	HVAC	Central Air	SEER 17	Shifting	Early	per ton	18	\$3,358.6	250	0.186	0.0
	Ifami	Heat		Conditioning >		baseline	Replacem						
	iy			14.5 SEEK		from existing	ent						
						equinment							
						to Federal							
						minimum							
						SEER13							
						equipment							
435	Singl	AC/Elect	HVAC	Central Air	SEER 18	Federal	Time of	per ton	18	\$596.0	146	0.091	0.0
	eFa	ric		Conditioning >		minimum	Sale						
	mily	Resistan		14.5 SEER		SEER13							
	nley	се пеас				equipment							
436	Mult	AC/Elect	HVAC	Central Air	SEER 18	Federal	Time of	per ton	18	\$596.0	130	0.091	0.0
	ifami	ric		Conditioning >		minimum	Sale			,			
	ly	Resistan		14.5 SEER		SEER13							
		ce Heat				equipment							
437	Singl	AC/Gas	HVAC	Central Air	SEER 18	Federal	Time of	per ton	18	\$596.0	146	0.091	0.0
	eFa	Heat		Conditioning >		minimum	Sale						
	mily			14.5 SEER		SEER13							
	&Du ploy					equipment							
438	Mult	AC/Gas	HVAC	Central Air	SEER 18	Federal	Time of	per ton	18	\$596.0	130	0.091	0.0
	ifami	Heat		Conditioning >	0221120	minimum	Sale	perten	10	çosono	100	0.0001	0.0
	ly			14.5 SEER		SEER13							
						equipment							
439	Singl	AC/Elect	HVAC	Central Air	SEER 18	Federal	New	per ton	18	\$596.0	146	0.091	0.0
	eFa	ric		Conditioning >		minimum	Constructi						
	mily	Resistan		14.5 SEER		SEER13	on						
	&Du	ce Heat				equipment							
440	plex	AC/Flast		Control Air		Tedeval	New		10	éroc o	120	0.001	0.0
440	ifami	AC/Elect	HVAC		SEER 18	Federal	New	per ton	18	\$596.0	130	0.091	0.0
	lv	Resistan		14 5 SEER		SEER13	on						
	19	ce Heat		I NO DEEN		equipment	on						
441	Singl	AC/Gas	HVAC	Central Air	SEER 18	Federal	New	per ton	18	\$596.0	146	0.091	0.0
	eFa	Heat		Conditioning >		minimum	Constructi	P 1011	10	+0.0			0.0
	mily			14.5 SEER		SEER13	on						
	&Du					equipment							
	plex												

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442	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$596.0	130	0.091	0.0
443	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,478.6	304	0.199	0.0
444	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	270	0.199	0.0
445	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	304	0.199	0.0
446	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	270	0.199	0.0
447	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$715.0	166	0.102	0.0
448	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$715.0	147	0.102	0.0

Appendix	CD: Res	idential N	/leasure A	ssumptions									
449	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$715.0	166	0.102	0.0
450	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$715.0	147	0.102	0.0
451	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$715.0	166	0.102	0.0
452	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$715.0	147	0.102	0.0
453	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$715.0	166	0.102	0.0
454	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$715.0	147	0.102	0.0
455	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	324	0.210	0.0
456	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	288	0.210	0.0
457	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment	Early Replacem ent	per ton	18	\$3,431.0	324	0.210	0.0

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Appendi	CD: Res	idential N	/leasure A	ssumptions									
						to Federal minimum SEER13 equipment							
458	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	288	0.210	0.0
459	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$834.0	184	0.111	0.0
460	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$834.0	163	0.111	0.0
461	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$834.0	184	0.111	0.0
462	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$834.0	163	0.111	0.0
463	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$834.0	184	0.111	0.0
464	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$834.0	163	0.111	0.0
465	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$834.0	184	0.111	0.0
466	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$834.0	163	0.111	0.0

467	Singl	AC/Elect	HVAC	Central Air	SEER 20	Shifting	Early	per ton	18	\$3,431.0	342	0.219	0.0
	eFa	ric Desister		Conditioning >		baseline	Replacem						
	miiy &Du	ce Heat		14.5 SEEK		AC	ent						
	plex	centeur				equipment							
						to Federal							
						minimum							
						SEER13							
168	Mul+	AC/Elect	нулс	Control Air	SEED 20	equipment	Farly	norton	19	¢2 /21 0	204	0.210	0.0
408	ifami	ric	IIVAC	Conditioning >	JELN 20	baseline	Replacem	perton	10	<i>\$3,</i> 431.0	304	0.219	0.0
	ly	Resistan		14.5 SEER		from existing	ent						
		ce Heat				AC							
						equipment							
						to Federal							
						SEER13							
						equipment							
469	Singl	AC/Gas	HVAC	Central Air	SEER 20	Shifting	Early	per ton	18	\$3,431.0	342	0.219	0.0
	eFa	Heat		Conditioning >		baseline	Replacem						
	mily			14.5 SEER		from existing	ent						
	&Du ploy					AC							
	piex					to Federal							
						minimum							
						SEER13							
						equipment							
470	Mult	AC/Gas	HVAC	Central Air	SEER 20	Shifting	Early	per ton	18	\$3,431.0	304	0.219	0.0
	Itami	Heat		Londitioning >		baseline from ovisting	Replacem						
	iy			14.3 SELK		AC	ent						
						equipment							
						to Federal							
						minimum							
						SEER13							
471	Singl	AC/Flect	Ηνας	Central Air	SEER 21	Eederal	Time of	ner ton	18	\$908.0	200	0 119	0.0
471	eFa	ric	IIVAC	Conditioning >	JERZI	minimum	Sale	perton	10	<i>\$</i> 500.0	200	0.115	0.0
	mily	Resistan		14.5 SEER		SEER13							
	&Du	ce Heat				equipment							
	plex								10	4000.0			
472	Mult	AC/Elect	HVAC	Central Air	SEER 21	Federal	Time of	per ton	18	\$908.0	178	0.119	0.0
	irami Iv	ric Resistan		Lonaitioning >		minimum SEER13	Sale						
	۰y	ce Heat		THIS SEEN		equipment							
473	Singl	AC/Gas	HVAC	Central Air	SEER 21	Federal	Time of	per ton	18	\$908.0	200	0.119	0.0
	eFa	Heat		Conditioning >		minimum	Sale			+			
	mily			14.5 SEER		SEER13							
	&Du					equipment							
	plex												

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474	Mult	AC/Gas	HVAC	Central Air	SEER 21	Federal	Time of	per ton	18	\$908.0	178	0.119	0.0
	ifami	Heat		Conditioning >		minimum SEEP12	Sale						
	iy			14.5 SELK		equipment							
475	Singl	AC/Elect	HVAC	Central Air	SEER 21	Federal	New	per ton	18	\$908.0	200	0.119	0.0
	eFa	ric		Conditioning >		minimum	Constructi	·					
	mily	Resistan		14.5 SEER		SEER13	on						
	&Du	ce Heat				equipment							
	plex												
476	Mult	AC/Elect	HVAC	Central Air	SEER 21	Federal	New	per ton	18	\$908.0	178	0.119	0.0
	ifami	ric		Conditioning >		minimum	Constructi						
	iy	Resistan		14.5 SEER		SEER13	on						
477	Circal			Control Air	CEED 34	Equipment	New		10	¢000.0	200	0.110	0.0
477	Singi	AC/Gas	HVAC		SEEK 21	Federal	New	perton	18	\$908.0	200	0.119	0.0
	era milv	пеат		1/1 5 SEER		SEER13	on						
	&Du			14.5 JEEN		equinment	011						
	plex					equipment							
478	Mult	AC/Gas	HVAC	Central Air	SEER 21	Federal	New	per ton	18	\$908.0	178	0.119	0.0
	ifami	Heat		Conditioning >		minimum	Constructi	·					
	ly			14.5 SEER		SEER13	on						
						equipment							
479	Singl	AC/Elect	HVAC	Central Air	SEER 21	Shifting	Early	per ton	18	\$3,431.0	358	0.227	0.0
	eFa	ric		Conditioning >		baseline	Replacem						
	mily	Resistan		14.5 SEER		from existing	ent						
	&Du	ce Heat				AC							
	piex					equipment							
						minimum							
						SEER13							
						equipment							
480	Mult	AC/Elect	HVAC	Central Air	SEER 21	Shifting	Early	per ton	18	\$3,431.0	318	0.227	0.0
	ifami	ric		Conditioning >		baseline	Replacem						
	ly	Resistan		14.5 SEER		from existing	ent						
		ce Heat				AC							
						equipment							
						to Federal							
						minimum							
						SEER13							
481	Singl	AC/Gas	Ηνας	Central Air	SEER 21	Shifting	Farly	ner ton	18	\$3.431.0	358	0.227	0.0
401	eFa	Heat	IIVAC	Conditioning >	JEIN ZI	haseline	Replacem	perton	10	<i>J</i> J, <del>4</del> J1.0	550	0.227	0.0
	milv	incut		14.5 SEER		from existing	ent						
	&Du					AC							
	plex					equipment							
	•					to Federal							
						minimum							
						SEER13							
						equipment							

482	Mult ifami	AC/Gas Heat	HVAC	Central Air Conditioning >	SEER 21	Shifting baseline	Early Replacem	per ton	18	\$3,431.0	318	0.227	0.0
	ly	neut		14.5 SEER		from existing	ent						
	,					AC							
						equipment							
						to Federal							
						minimum							
						SEER13							
						equipment							
483	Singl	AC/Gas	HVAC	Duct Insulation	50% or more ducts	50% or more	Retrofit	per home	20	\$415.0	466	0.262	159.1
	eFa	Heat		and Sealing	inside envelope	ducts inside							
	mily				Connections sealed	envelope							
	&Du				with mastic  Ducts	Significant							
	plex				insulated to P8	outsido							
						envelone are							
						insulated to							
						R4 to R7							
484	Singl	Gas Heat	HVAC	Duct Insulation	50% or more ducts	50% or more	Retrofit	per home	20	\$415.0	146	0.000	159.1
	eFa	(No AC)		and Sealing	inside envelope	ducts inside		p		<i>•</i>			
	mily	· · ·		0	Connections sealed	envelope							
	&Du				with mastic  Ducts	Significant							
	plex				outside envelope are	leaks   Ducts							
					insulated to R8	outside							
						envelope are							
						insulated to							
	<u> </u>					R4 to R7							
485	Singl	AC/Elect	HVAC	Duct Insulation	50% or more ducts	50% or more	Retrofit	per home	20	\$415.0	3771	0.262	0.0
	e⊦a	ric Desisten		and Sealing	Inside envelope	ducts inside							
	R Du	co Hoat			with mastic Ducts	Significant							
	nlev	се пеас			outside envelope are	Joaks   Ducts							
	piex				insulated to R8	outside							
						envelope are							
						insulated to							
						R4 to R7							
486	Singl	Electric	HVAC	Duct Insulation	50% or more ducts	50% or more	Retrofit	per home	20	\$415.0	3451	0.000	0.0
	eFa	Resistan		and Sealing	inside envelope	ducts inside							
	mily	ce			Connections sealed	envelope							
	&Du	Heat/No			with mastic  Ducts	Significant							
	plex	CAC			outside envelope are	leaks   Ducts							
					insulated to R8	outside							
						envelope are							
						insulated to							
407	Circul	11	111/100	De states de l'est	<b>F00</b> (	R4 to R7	Datas (1		20	¢445.0	4050	0.262	
487	Singl	Heat	HVAC	Duct Insulation	50% or more ducts	50% or more	Retrofit	per nome	20	\$415.0	1950	0.262	0.0
	era	Pump		and Sealing	Connections sould								
	יוחא גווס &				with mastic I Ducte	Significant							
	nlex					leaks   Ducts							
	pick												

### **Appendix D: Residential Measure Assumptions** outside envelope are outside insulated to R8 envelope are insulated to R4 to R7 488 Singl AC/Gas HVAC **Duct Insulation** 50% or more ducts 50% or more New per home 20 \$204.3 260 0.143 92.0 eFa Heat and Sealing inside envelope | ducts inside Constructi mily Connections sealed envelope | on &Du with mastic |Ducts Significant plex outside envelope are leaks | Ducts insulated to R8 outside envelope are insulated to R4 to R7 HVAC 20 \$204.3 85 0.000 92.0 489 Gas Heat **Duct Insulation** 50% or more ducts 50% or more New per home Singl (No AC) inside envelope eFa and Sealing ducts inside Constructi mily Connections sealed envelope | on &Du with mastic |Ducts Significant plex outside envelope are leaks | Ducts insulated to R8 outside envelope are insulated to R4 to R7 490 Singl AC/Elect HVAC **Duct Insulation** 50% or more ducts 50% or more per home 20 \$204.3 2332 0.143 0.0 New ric Constructi eFa and Sealing inside envelope | ducts inside mily Resistan Connections sealed envelope | on &Du ce Heat with mastic |Ducts Significant plex outside envelope are leaks | Ducts insulated to R8 outside envelope are insulated to R4 to R7 491 Electric HVAC **Duct Insulation** 50% or more ducts 50% or more 20 \$204.3 2157 0.000 0.0 Singl New per home eFa Resistan and Sealing inside envelope | ducts inside Constructi mily ce Connections sealed envelope | on &Du Heat/No with mastic |Ducts Significant plex CAC outside envelope are leaks | Ducts insulated to R8 outside envelope are insulated to R4 to R7 492 Singl Heat HVAC **Duct Insulation** 50% or more ducts 50% or more New per home 20 \$204.3 1115 0.133 0.0 eFa Pump and Sealing inside envelope | ducts inside Constructi mily Connections sealed envelope | on &Du with mastic | Ducts Significant plex outside envelope are leaks | Ducts insulated to R8 outside envelope are insulated to R4 to R7

Appenaix	D: Res	idential iv	leasure A	ssumptions									
493	Mult ifami ly	AC/Gas Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	per home	20	\$126.0	135	0.085	45.7
494	Mult ifami ly	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	per home	20	\$126.0	42	0.000	45.7
495	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	per home	20	\$126.0	1216	0.085	0.0
496	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	per home	20	\$126.0	1124	0.000	0.0
497	Mult ifami ly	Heat Pump	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	per home	20	\$126.0	623	0.085	0.0
498	Mult ifami ly	AC/Gas Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts	90% or more ducts inside envelope   Significant leaks   Ducts	New Constructi on	per home	20	\$131.5	55	0.034	19.4

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penaix	D: Kes	idential iv	leasure A	ssumptions									
					outside envelope are insulated to R8	outside envelope are insulated to R4 to R7							
499	Mult ifami ly	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	per home	20	\$131.5	18	0.000	19.4
500	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	per home	20	\$131.5	548	0.034	0.0
501	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	per home	20	\$131.5	511	0.000	0.0
502	Mult ifami ly	Heat Pump	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connections sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	per home	20	\$131.5	260	0.032	0.0
503	All	AC/Gas Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	per home	20	\$97.0	732	0.215	0.0
504	All	AC/Gas Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Constructi on	per home	20	\$97.0	732	0.215	0.0

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505	All	AC/Elect	HVAC	Furnace Blower	Brushless permanent	non-BPM	Time of	per home	20	\$97.0	732	0.215	0.0
		ric Resistan ce Heat		Motor	magnet (BPM) blower motor	blower motor	Sale						
506	All	AC/Elect ric Resistan ce Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Constructi on	per home	20	\$97.0	732	0.215	0.0
507	All	Electric Resistan ce Heat/No CAC	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	per home	20	\$97.0	644	0.143	0.0
508	All	Electric Resistan ce Heat/No CAC	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Constructi on	per home	20	\$97.0	644	0.143	0.0
509	All	Heat Pump	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	per home	20	\$97.0	732	0.215	0.0
510	All	Heat Pump	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Constructi on	per home	20	\$97.0	732	0.215	0.0
511	All	Gas Heat (No AC)	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	per home	20	\$97.0	644	0.143	0.0
512	All	Gas Heat (No AC)	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Constructi on	per home	20	\$97.0	644	0.143	0.0
513	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	1047	0.097	0.0
514	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	1066	0.097	0.0
515	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	981	0.090	0.0

516	Singl eFa	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2,	New Constructi	per ton	25	\$2,021.0	999	0.090	0.0
	mily &Du plex					11.8 EER ASHP	on						
517	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4773	0.077	0.0
518	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4785	0.077	0.0
519	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4797	0.124	0.0
520	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4819	0.124	0.0
521	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2580	0.270	0.0
522	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2626	0.270	0.0
523	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5036	0.302	0.0
524	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5088	0.302	0.0

525	Mult	Heat	HVAC	Ground Source	ENERGY STAR Water	SEER 14,	Time of	per ton	25	\$2,021.0	957	0.042	0.0
	ifami ly	Pump		Heat Pump	to air - Closed Loop	HSPF 8.2 <i>,</i> 11.8 EER ASHP	Sale						
526	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	965	0.042	0.0
527	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	1047	0.097	0.0
528	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	1066	0.097	0.0
529	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4796	0.093	0.0
530	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4811	0.093	0.0
531	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4773	0.077	0.0
532	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4785	0.077	0.0
533	All	Electric Heating	HVAC	High Efficiency Bathroom Exhaust Fan	Continuous operation - 8.3 CFM/watt exhaust- only ventilation fan	3.1 CFM/watt exhaust-only ventilation fan	Time of Sale	per bathroom fan	19	\$43.5	89	0.010	0.0

534	Singl	Electric	HVAC	High Efficiency	Continuous	3.1	Retrofit	per	19	\$43.5	89	0.010	0.0
	eFa	Heating		Bathroom	operation - 8.3	CFM/watt		bathroom					
	mily			Exhaust Fan	CFM/watt exhaust-	exhaust-only		fan					
	&Du				only ventilation fan	ventilation							
	plex					fan							
535	Mult	Electric	HVAC	High Efficiency	Continuous	3.1	Retrofit	per	19	\$43.5	89	0.010	0.0
	ifami	Heating		Bathroom	operation - 8.3	CFM/watt		bathroom					
	ly			Exhaust Fan	CFM/watt exhaust-	exhaust-only		fan					
					only ventilation fan	ventilation							
E26	A	Electric		High Efficiency	Continuous	tan 2 1	Now	nor	10	¢12 г	80	0.010	0.0
220	All	Heating	IIVAC	Bathroom	operation - 8 3	CEM/watt	Constructi	hathroom	19	Ş43.J	65	0.010	0.0
		neating		Exhaust Fan	CEM/watt exhaust-	exhaust-only	on	fan					
				Exhlaust I an	only ventilation fan	ventilation	on	ian					
					only ventilation fait	fan							
537	All	Gas	HVAC	High Efficiency	Continuous	3.1	Time of	per	19	\$43.5	89	0.010	0.0
		Heating		Bathroom	operation - 8.3	CFM/watt	Sale	bathroom					
				Exhaust Fan	CFM/watt exhaust-	exhaust-only		fan					
					only ventilation fan	ventilation							
						fan				1			
538	Singl	Gas	HVAC	High Efficiency	Continuous	3.1	Retrofit	per	19	Ş43.5	89	0.010	0.0
	eFa	Heating		Bathroom	operation - 8.3	CFM/watt		bathroom					
	mily			Exhaust Fan	CFM/watt exhaust-	exhaust-only		fan					
	&DU ploy				only ventilation fan	for							
539	Mult	Gas	HVAC	High Efficiency	Continuous	3.1	Retrofit	ner	19	\$43.5	89	0.010	0.0
000	ifami	Heating		Bathroom	operation - 8.3	CFM/watt	netront	bathroom	10	φ ioio	00	0.010	0.0
	lv			Exhaust Fan	CFM/watt exhaust-	exhaust-only		fan					
	,				only ventilation fan	ventilation							
						fan							
540	All	Gas	HVAC	High Efficiency	Continuous	3.1	New	per	19	\$43.5	89	0.010	0.0
		Heating		Bathroom	operation - 8.3	CFM/watt	Constructi	bathroom					
				Exhaust Fan	CFM/watt exhaust-	exhaust-only	on	fan					
					only ventilation fan	ventilation							
F 4 1	Circal	Fleetsie		Due que un a bla	Due sue un a bla	fan	Detrefit		-	¢20.0	704	0.000	0.0
541	Singi	Electric	HVAC	Programmable	Programmable	NON-	Retrofit	per unit	5	\$30.0	/21	0.000	0.0
	era	пеация		mermostats	mermostats	Programmad							
	R Du					Thormostat							
	nlev					mermostat							
542	Mult	Flectric	HVAC	Programmable	Programmable	Non-	Retrofit	per unit	5	\$30.0	469	0.000	0.0
512	ifami	Heating	invite .	Thermostats	Thermostats	Programmab	netrone	per unit	5	<i>\$</i> 30.0	105	0.000	0.0
	lv					le							
	,					Thermostat							
543	Singl	Electric	HVAC	Programmable	Programmable	Non-	New	per unit	5	\$30.0	721	0.000	0.0
	eFa	Heating		Thermostats	Thermostats	Programmab	Constructi						
	mily	5				le	on						
	&Du					Thermostat							
	plex												

## Appendix D: Residential Measure Assumptions

544	Mult ifami ly	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	New Constructi on	per unit	5	\$30.0	469	0.000	0.0
545	Singl eFa mily &Du plex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$30.0	32	0.000	34.9
546	Mult ifami ly	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab Ie Thermostat	Retrofit	per unit	5	\$30.0	21	0.000	22.7
547	Singl eFa mily &Du plex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	New Constructi on	per unit	5	\$30.0	32	0.000	34.9
548	Mult ifami ly	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab Ie Thermostat	New Constructi on	per unit	5	\$30.0	21	0.000	22.7
549	Singl eFa mily &Du plex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$30.0	721	0.000	0.0
550	Mult ifami ly	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab Ie Thermostat	Time of Sale	per unit	5	\$30.0	469	0.000	0.0
551	Singl eFa mily &Du plex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$30.0	1288	0.000	0.0
552	Mult ifami ly	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$30.0	837	0.000	0.0
553	Singl eFa mily &Du plex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	New Constructi on	per unit	5	\$30.0	424	0.000	0.0
554	Mult ifami ly	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab Ie Thermostat	New Constructi on	per unit	5	\$30.0	276	0.000	0.0

pendix	D: Res	idential N	/leasure A	ssumptions									
555	Singl	Heat	HVAC	Programmable	Programmable	Non-	Retrofit	per unit	5	\$30.0	424	0.000	0.0
	era	Pump		Inermostats	inermostats	Programmad							
	8.Du					Thermostat							
	plex					mermostat							
56	Mult	Heat	HVAC	Programmable	Programmable	Non-	Retrofit	per unit	5	\$30.0	276	0.000	0.0
	ifami	Pump		Thermostats	Thermostats	Programmab							
	ly					le							
						Thermostat							
557	Singl	Gas	HVAC	Programmable	Programmable	Non-	Direct	per unit	5	\$30.0	57	0.000	34.9
	eFa	Heating		Thermostats	Thermostats	Programmab	Install						
	mily 8 Du					le Thormostat							
	aDu					mermostat							
558	Mult	Gas	HVAC	Programmable	Programmable	Non-	Direct	per unit	5	\$30.0	37	0.000	22.7
	ifami	Heating		Thermostats	Thermostats	Programmab	Install	per unit	5	çooro	0,	01000	
	ly					le							
						Thermostat							
59	Singl	Gas	HVAC	Programmable	Programmable	Non-	Time of	per unit	5	\$30.0	32	0.000	34.9
	eFa	Heating		Thermostats	Thermostats	Programmab	Sale						
	mily					le							
	&Du					Thermostat							
<u> </u>	plex	6		Due eve evene ble	Due sue au sue ble	Nee	Time of		-	¢20.0	21	0.000	22.7
60	ifami	Gas	HVAC	Thormostate	Thormostate	NON- Drogrammah	File of	per unit	5	\$30.0	21	0.000	22.7
	lv	пеаціну		mermostats	mermostats	Programmad Io	Sale						
	.,					Thermostat							
61	Singl	Heat	HVAC	Programmable	Programmable	Non-	Direct	per unit	5	\$30.0	758	0.000	0.0
	eFa	Pump		Thermostats	Thermostats	Programmab	Install	·		·			
	mily					le							
	&Du					Thermostat							
	plex								_	1			
62	Mult	Heat	HVAC	Programmable	Programmable	Non-	Direct	per unit	5	\$30.0	492	0.000	0.0
	Ifami	Pump		Thermostats	Thermostats	Programmab	Install						
	iy					IE Thermostat							
63	Singl	Heat	нулс	Programmable	Programmable	Non-	Time of	per unit	5	\$30.0	121	0.000	0.0
000	eFa	Pump	IIVAC	Thermostats	Thermostats	Programmab	Sale	per unit	5	<b>\$30.0</b>	424	0.000	0.0
	milv	. anip				le	eale						
	, &Du					Thermostat							
	plex												
564	Mult	Heat	HVAC	Programmable	Programmable	Non-	Time of	per unit	5	\$30.0	276	0.000	0.0
	ifami	Pump		Thermostats	Thermostats	Programmab	Sale						
	ly					le							
						Thermostat							
65	Singl	Electric	HVAC	Smart Wifi	Smart Wifi	Non-	Retrofit	per unit	5	\$225.0	1506	0.000	0.0
	eFa	Heating		Thermostats	Thermostats	Programmab							
	mily					le Thorrs estat							
						inermostat							

Bubs between     Bubs between     Bubs between     Bubs between     MVAC Immension between     Smart Wrft Thermostats     Nor- Thermostats     Retrofit Programmab (Thermostats     per unit (Thermostats     S     S225.0     973     0.000     0.0       567     Singl Programmab (Thermostats     Smart Wrft Thermostats     Smart Wrft Thermostats     Smart Wrft Thermostats     Smart Wrft Thermostats     Nor- Thermostats     Per unit Programmab (Constructi Thermostats     S     S225.0     3506     0.000     0.0       568     Mult     Electric fram (N)     HVAC     Smart Wrft Thermostats     Smart Wrft Thermostats     Nor- Programmab (Constructi Thermostats     Per unit     S     S225.0     979     0.000     0.0       569     Signif Mult     Gast Heating NP     HVAC     Smart Wrft Thermostats     Smart Wrft Thermostats     Nor- Thermostats     Nor- Thermostats     Nor- Thermostats     S     S225.0     67     0.000     72.9       570     Mult     Gast Heating NP     HVAC     Smart Wrft Thermostats     Nor- Thermostats     Nor- Thermostat     Por unit     S     S225.0     67     0.000     7	ppendix	x D: Kes	idential N	heasure A	ssumptions									
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mit   methodation   methodation <t< td=""><td>505</td><td>eFa</td><td>Heating</td><td>INAC</td><td>Thermostats</td><td>Thermostats</td><td>Programmah</td><td>Retront</td><td>per unit</td><td>5</td><td>JZZJ.0</td><td>07</td><td>0.000</td><td>72.5</td></t<>	505	eFa	Heating	INAC	Thermostats	Thermostats	Programmah	Retront	per unit	5	JZZJ.0	07	0.000	72.5
BDu plex   W   Gas   HVAC   Smart Wift Thermostats   Smart Wift Thermostats   Non- Programmab le Thermostats   Retrofit Programmab le Thermostat   per unit   5   \$225.0   44   0.000   47.4     571   Mult W   Gas Heating mily BDU   HVAC   Smart Wift Thermostats   Non- Thermostats   Non- Thermostats   Non- Programmab le Thermostats   New Per unit   5   \$225.0   67   0.000   72.9     573   Mult Heating Mily BDU   Gas Heating Heati		milv	Treating		mermostats	mermostats	le							
plex     visual state     HVAC for thermostatis     Smart Wift Thermostatis     Non- Thermostatis     Retrofit Thermostatis     per unit to thermostatis     \$ \$225.0     44     0.000     47.4       571     Singl ef a refa     Gas thermostatis     HVAC smart Wift Thermostatis     Smart Wift Thermostatis     Non- Thermostatis     New Programmab to construct lee Thermostatis     per unit     5     \$ \$225.0     67     0.000     72.9       571     Singl ef a refa     Gas theating     HVAC     Smart Wift Thermostatis     Smart Wift Thermostatis     Non- Thermostatis     New Programmab Construct lee Thermostati     per unit     5     \$ \$225.0     67     0.000     72.9       572     Mult     Gas training     HVAC     Smart Wift Thermostatis     Non- Thermostatis     New Programmab Thermostatis     Per unit     5     \$ \$225.0     44     0.000     47.4       573     Singl     Electric Heating     HVAC     Smart Wift Thermostatis     Non- Thermostatis     Time of Thermostati     per unit     5     \$ \$225.0     1506     0.000     0.0       574     Mult     Electric Iv		&Du					Thermostat							
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Iv <		ifami	Heating		Thermostats	Thermostats	Programmab							
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eFa mily wily &Du   Heating mily wily plex   Thermostats   Thermostats   Programmab is not plex   Constructi is not plex   on     572   Mult   Gas mily iv   HVAC   Smart Wifi   Smart Wifi   Non- Thermostats   Non- Programmab Programmab is not mily   Non- Programmab is not plex   Per unit   5   \$225.0   44   0.000   47.4     573   Singl   Electric Heating   HVAC   Smart Wifi   Smart Wifi   Non- Thermostats   Time of Programmab is   per unit   5   \$225.0   1506   0.000   0.0     573   Singl   Electric Heating   HVAC   Smart Wifi   Smart Wifi   Non- Thermostats   Time of Programmab is   per unit   5   \$225.0   1506   0.000   0.0     573   Singl   Electric Heating   HVAC   Smart Wifi   Smart Wifi   Non- Thermostats   Time of Programmab is   per unit   5   \$225.0   979   0.000   0.0     573   Singl   Electric Heating   HVAC   Smart Wifi   Smart Wifi   Non- Thermostats   Programmab is   Sale Thermostat   per unit   5   \$225.0   2690 </td <td>571</td> <td>Singl</td> <td>Gas</td> <td>HVAC</td> <td>Smart Wifi</td> <td>Smart Wifi</td> <td>Non-</td> <td>New</td> <td>per unit</td> <td>5</td> <td>\$225.0</td> <td>67</td> <td>0.000</td> <td>72.9</td>	571	Singl	Gas	HVAC	Smart Wifi	Smart Wifi	Non-	New	per unit	5	\$225.0	67	0.000	72.9
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abult   references and the second s		mily					le The way estat	on						
572   Mult ifami ly   Gas HVAC   HVAC   Smart Wifi Thermostats   Smart Wifi Thermostats   Non- Thermostats   New Programmab Ie   per unit   5   \$225.0   44   0.000   47.4     573   Singl   Electric Heating mily &Du   HVAC   Smart Wifi Smart Wifi   Non- Thermostats   Time of Programmab Ie   per unit   5   \$225.0   44   0.000   47.4     573   Singl   Electric Heating mily &Du   HVAC   Smart Wifi   Non- Thermostats   Time of Programmab Ie   per unit   5   \$225.0   1506   0.000   0.0     574   Mult   Electric Ifami   HVAC   Smart Wifi   Smart Wifi   Non- Thermostats   Time of Programmab Ie   per unit   5   \$225.0   979   0.000   0.0     574   Mult   Electric Ifami   HVAC   Smart Wifi   Non- Thermostats   Thermostats   Programmab Ie   Sale   per unit   5   \$225.0   979   0.000   0.0     575   Singl   Electric Fa   HVAC   Smart Wifi   Non- Thermostats   Non- Thermostat   Direct   per unit   5   \$		&Du nlev					inermostat							
11 minus   Heating   Heating   Thermostats   Thermostats   Programmab   Constructil   Programmab   Constructil   Non-   Thermostat   <	572	Mult	Gas	HVAC	Smart Wifi	Smart Wifi	Non-	New	per unit	5	\$225.0	44	0.000	47.4
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573   Singl eFa mily &Du plex   Electric Heating mily &Du plex   HVAC   Smart Wifi Thermostats   Smart Wifi Thermostats   Non- Thermostats   Time of Programmab le Thermostat   per unit   5   \$225.0   1506   0.000   0.0     574   Mult   Electric Ifami   HVAC   Smart Wifi Thermostats   Smart Wifi Thermostats   Non- Thermostats   Time of Programmab le Thermostat   per unit   5   \$225.0   979   0.000   0.0     574   Mult   Electric Heating   HVAC   Smart Wifi Thermostats   Non- Thermostats   Time of Programmab le Thermostats   per unit   5   \$225.0   979   0.000   0.0     575   Singl eFa Meating   Electric HVAC   HVAC   Smart Wifi Smart Wifi Thermostats   Non- Thermostats   Direct Programmab Install   per unit   5   \$225.0   2690   0.000   0.0     6Fa Meating   Heating Mily &Du   Thermostats   Thermostats   Thermostats   Programmab Install   Install   Final							Thermostat							
eFa mily &Du bex   Heating bex   Thermostats   Thermostats   Programmab le Thermostat   Sale be Thermostat     574   Mul fami fami fami be   Electric be   HVAC   Smart Wifi   Smart Wifi   Non-   Time of be thermostat   per unit   5   \$225.0   979   0.000   0.00   0.00     575   Singl eFa mily &Du   Electric termostat   HVAC   Smart Wifi   Smart Wifi   Non-   Direct termostat   per unit   5   \$225.0   979   0.000   0.00     575   Singl eFa mily &Du   Electric termostat   HVAC   Smart Wifi   Smart Wifi   Non-   Direct termostat   per unit   5   \$225.0   2690   0.000   0.0     eFa mily &Du   Heating termostat   Thermostats   Thermostats   Programmab termostat   Install   E   F   \$25.0   2690   0.000   0.0	573	Singl	Electric	HVAC	Smart Wifi	Smart Wifi	Non-	Time of	per unit	5	\$225.0	1506	0.000	0.0
mily   k		eFa	Heating		Thermostats	Thermostats	Programmab	Sale						
&Du plex   Solution   Substraine   Thermostate   Thermostate   Thermostate   Thermostate   Thermostate   Programmab   Sale   Per unit   5   \$225.0   979   0.000   0.00   0.00     ifami ly   Heating ly   Thermostates   Thermostates   Thermostates   Programmab le   Sale   Programmab   Sale		mily					le							
plex   State   HVAC   Smart Wifi   Smart Wifi   Non-   Time of Programmab le Thermostats   per unit   5   \$225.0   979   0.000   0.00     575   Jig   Electric   HVAC   Smart Wifi   Smart Wifi   Non-   Direct   per unit   5   \$225.0   979   0.000   0.00     575   Singl   Electric   HVAC   Smart Wifi   Smart Wifi   Non-   Direct   per unit   5   \$225.0   2690   0.000   0.00   0.0     6Fa   Heating mily   Thermostats   Thermostats   Programmab le   Install   Install   Frogrammab   Install   Frogrammab   Install   Frogrammab   Frogr		&Du					Thermostat							
574   Multic   Electric   HVAC   Smart With   Smart With   Smart With   Non-   Time of programmab   per unit   5   \$225.0   979   0.000   0.00     ifami   Heating   Thermostats   Thermostats   Programmab   Sale   Imme of   per unit   5   \$225.0   979   0.000   0.0     ly   V   Thermostats   Thermostats   Programmab   Sale   Imme of   per unit   5   \$225.0   979   0.000   0.0     ly   V   V   Thermostats   Programmab   Sale   Imme of   per unit   5   \$225.0   2690   0.000   0.0     eFa   Heating   Thermostats   Thermostats   Programmab   Install   Install   Imme of   \$225.0   2690   0.000   0.0     mily   K   V   Thermostats   Programmab   Install   Imme of   First   First <td< td=""><td>534</td><td>plex</td><td>El contra</td><td>10/40</td><td>Care di M/C</td><td></td><td>N</td><td><b>T</b>' (</td><td></td><td></td><td>6225.0</td><td>070</td><td>0.000</td><td>0.0</td></td<>	534	plex	El contra	10/40	Care di M/C		N	<b>T</b> ' (			6225.0	070	0.000	0.0
Intrinstatis Inermostatis Programmab Sale   ly Imermostatis Inermostatis Imermostatis Imermo	574	Mult	Electric	HVAC	Smart Wifi	Smart Wifi	Non-	lime of	per unit	5	\$225.0	979	0.000	0.0
Iv Thermostat   575 Singl Electric HVAC Smart Wifi Non- Direct per unit 5 \$225.0 2690 0.000 0.0   eFa Heating Thermostats Thermostats Programmab Install   mily Ie Intermostats Thermostat   & Du Thermostat Thermostat		Itami	Heating		Inermostats	Inermostats	Programmab	Sale						
575 Singl Electric HVAC Smart Wifi Smart Wifi Non- Direct per unit 5 \$225.0 2690 0.000 0.0 eFa Heating Thermostats Thermostats Programmab Install mily &Du Thermostat		iy					Thermostat							
eFa Heating Thermostats Thermostats Programmab Install mily &Du Thermostat	575	Singl	Flectric	Ηνδο	Smart Wifi	Smart Wifi	Non-	Direct	ner unit	5	\$225.0	2690	0.000	0.0
mily le &Du Thermostat	575	eFa	Heating	IIVAC	Thermostats	Thermostats	Programmah	Install	per unit	5	<i>7223.</i> 0	2050	0.000	0.0
&Du Thermostat		milv					le	matum						
		, &Du					Thermostat							
piex		plex												

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# Appendix D: Residential Measure Assumptions

576	Mult ifami ly	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$225.0	1748	0.000	0.0
577	Singl eFa mily &Du plex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	New Constructi on	per unit	5	\$225.0	1506	0.000	0.0
578	Mult ifami ly	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	New Constructi on	per unit	5	\$225.0	979	0.000	0.0
579	Singl eFa mily &Du plex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$225.0	67	0.000	72.9
580	Mult ifami ly	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$225.0	44	0.000	47.4
581	Singl eFa mily &Du plex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$225.0	120	0.000	130.1
582	Mult ifami ly	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$225.0	44	0.000	47.4
583	Singl eFa mily &Du plex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$225.0	67	0.000	72.9
584	Mult ifami ly	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$225.0	44	0.000	47.4
585	Singl eFa mily &Du plex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$225.0	1582	0.000	0.0
586	Mult ifami ly	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$225.0	1028	0.000	0.0

587	Singl	Heat	HVAC	Smart Wifi	Smart Wifi	Non-	Time of	per unit	5	\$225.0	886	0.000	0.0
	eFa	Pump		Thermostats	Thermostats	Programmab	Sale						
	mily					le							
	&Du					Thermostat							
	plex												
588	Mult	Heat	HVAC	Smart Wifi	Smart Wifi	Non-	Time of	per unit	5	\$225.0	576	0.000	0.0
	ifami	Pump		Thermostats	Thermostats	Programmab	Sale						
	ly					le							
						Thermostat							
589	Singl	Gas	Lighting	Omnidirectional	12.32 W LED	15W Post-	Direct	per lamp	1	\$0.9	17	0.002	0.0
	eFa	Heating		A-type LED	installed in year 2020	2020 EISA	Install						
	mily			lamps	representing bulbs	compliant							
	&Du				less than 1050	lamp							
	plex				lumens								
590	Singl	Electric	Lighting	Omnidirectional	12.32 W LED	15W Post-	Direct	per lamp	1	Ş0.9	14	0.002	0.0
	eFa	Heating		A-type LED	installed in year 2020	2020 EISA	Install						
	mily			lamps	representing bulbs	compliant							
	&Du				less than 1050	lamp							
504	piex	<b>6</b>	Lish its a	0	iumens	4514/ D1	D'anal		4	ćo o	47	0.000	0.0
591	iviuit	Gas	Lighting	Omnidirectional	12.32 W LED	15W Post-	Direct	per lamp	1	\$0.9	17	0.002	0.0
	Irami	Heating		A-type LED	Installed in year 2020	2020 EISA	Install						
	iy			lamps	representing builds	lamp							
						lamp							
592	Mult	Flectric	Lighting	Omnidirectional	12 32 W LED	15W/Post-	Direct	ner lamn	1	\$0.9	13	0.002	0.0
552	ifami	Heating	Lighting		installed in year 2020	2020 FISA	Install	periamp	-	<i>40.5</i>	15	0.002	0.0
	lv	neuting		lamns	representing hulbs	compliant	mstan						
	.,			lamps	less than 1050	lamp							
					lumens								
593	All	Gas	Lighting	Omnidirectional	12.32 W LED	15W Post-	Time of	per lamp	1	\$0.9	18	0.002	0.0
		Heating	0 0	A-type LED	installed in year 2020	2020 EISA	Sale						
				lamps	representing bulbs	compliant							
					less than 1050	lamp							
					lumens								
594	All	Electric	Lighting	Omnidirectional	12.32 W LED	15W Post-	Time of	per lamp	1	\$0.9	14	0.002	0.0
		Heating		A-type LED	installed in year 2020	2020 EISA	Sale						
				lamps	representing bulbs	compliant							
					less than 1050	lamp							
					lumens								
595	All	Gas	Lighting	Efficient light	12.32 W LED	15W Post-	Time of	per lamp	1	\$0.9	18	0.002	0.0
		Heating		bulbs	installed in year 2020	2020 EISA	Sale						
					representing bulbs	compliant							
					less than 1050	lamp							
					lumens								
596	All	Electric	Lighting	Efficient light	12.32 W LED	15W Post-	Time of	per lamp	1	\$0.9	14	0.002	0.0
		Heating		bulbs	installed in year 2020	2020 EISA	Sale						
					representing bulbs	compliant							
					iess than 1050	iamp							
					iumens								

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Appendix	D: Res	luential i	leasure A	ssumptions									
597	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps - OM	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$0.9	18	0.002	0.0
598	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps - OM	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$0.9	14	0.002	0.0
599	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2021 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	17	0.002	0.0
600	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2021 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	14	0.002	0.0
601	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2021 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	17	0.002	0.0
602	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2021 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	13	0.002	0.0
603	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2021 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.1	18	0.002	0.0
604	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2021 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.1	14	0.002	0.0
605	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2022 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	17	0.002	0.0
606	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2022 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	14	0.002	0.0

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ppenaix	D: Res	idential N	leasure A	sumptions									
607	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2022 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	17	0.002	0.0
608	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2022 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	13	0.002	0.0
609	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2022 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.4	18	0.002	0.0
610	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2022 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.4	14	0.002	0.0
611	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2020	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	26	0.003	0.0
612	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2020	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	20	0.003	0.0
613	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2020	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	26	0.003	0.0
614	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2020	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	20	0.003	0.0
615	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2020	28.2W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$0.9	26	0.003	0.0
616	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2020	28.2W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$0.9	21	0.003	0.0

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	Singl	Gas	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Direct	per lamp	1	\$1.1	26	0.003	0.0
	eFa	Heating		A-type LED	in year 2021	2020 EISA	Install						
	mily			lamps		compliant							
	&Du					lamp							
	plex									4			
618	Singl	Electric	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Direct	per lamp	1	Ş1.1	20	0.003	0.0
	eFa	Heating		A-type LED	in year 2021	2020 EISA	Install						
	mily			lamps		compliant							
	&Du nlov					lamp							
610	piex Mult	Gas	Lighting	Omnidiractional	22.1 W/LED installed	29 214/ Doct	Direct	norlamn	1	ć1 1	26	0.002	0.0
019	ifami	Ugas Heating	Lighting		in yoar 2021	20.200 FISA	Install	periamp	1	Ş1.1	20	0.005	0.0
	h	пеация		A-type LED	ili yedi 2021	compliant	IIIStall						
	'y			lamps		lamp							
620	Mult	Electric	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Direct	ner lamn	1	\$1.1	20	0.003	0.0
020	ifami	Heating	Lighting	A-type I FD	in year 2021	2020 FISA	Install	periamp	-	<i></i>	20	0.005	0.0
	lv	neuting		lamps		compliant	mstan						
	.,					lamp							
621	All	Gas	Lighting	Omnidirectional	23.1 W LED installed	28 2W Post-	Time of	ner lamn	1	\$1.1	26	0.003	0.0
011		Heating		A-type LED	in year 2021	2020 EISA	Sale	periomp	-	<i>ų</i> 212	20	0.000	0.0
		i i cuting		lamps		compliant	oure						
						lamp							
622	All	Electric	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Time of	per lamp	1	\$1.1	21	0.003	0.0
		Heating	0 0	A-type LED	in year 2021	2020 EISA	Sale						
				lamps		compliant							
						lamp							
623	Singl	Gas	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Direct	per lamp	1	\$1.4	26	0.003	0.0
	eFa	Heating		A-type LED	in year 2022	2020 EISA	Install						
	mily			lamps		compliant							
	&Du					lamp							
	plex												
624	Singl	Electric	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Direct	per lamp	1	\$1.4	20	0.003	0.0
	eFa	Heating		A-type LED	in year 2022	2020 EISA	Install						
	mily			lamps		compliant							
	&Du					lamp							
<u> </u>	plex	Cas	Linkting	Ommidian ational	22.1.W/JED installed	20 204/ De et	Direct		1	¢1 4	26	0.002	0.0
625	iviuit	Gas	Lighting	Omnidirectional	23.1 W LED Installed	28.2W Post-	Direct	per lamp	1	\$1.4	26	0.003	0.0
	Irami	Heating		A-type LED	in year 2022	2020 EISA	Install						
	iy			lamps		lamn							
626	N 4 l+	Flootric	Lighting	Omnidiractional	22.1 W/LED installed	28 2W/ Dest	Direct	norlamn	1	ć1 4	20	0.002	0.0
020	iviuit	Leating	Lighting		23.1 W LED INStalled		Direct	periamp	T	Ş1.4	20	0.003	0.0
	Irami	Heating		A-type LED	in year 2022	2020 EISA	Install						
	iy			lamps		lamn							
	A 11	Gar	Lighting	Omnidiractional	22 1 W/ LED installed	28 2\M/ Doct	Time of	norlamn	1	ć1 /	26	0 000	0.0
677	All	Gg2	LIGHTIN	Ommunectional		ZO.Z VV PUSI-	nine of	herigunh	T	Ş1.4	20	0.003	0.0
627		Heating		A type IED	in yoar 2022	2020 EICV	Sala						
627		Heating		A-type LED	in year 2022	2020 EISA	Sale						

628	All	Electric	Lighting	Omnidirectional	23.1 W LED installed	28.2W Post-	Time of	per lamp	1	\$1.4	21	0.003	0.0
		Heating		A-type LED lamps	in year 2022	2020 EISA compliant lamp	Sale						
631	Mult ifami ly	Gas Heating	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	High Performance T8/T5, Reduced Wattage T8/T5, and T8/T5 Fixtures and Lamps	2-Lamp 32W HPT8 with Low-BF Ballast	Time of Sale	per lamp	4	\$31.0	62	0.003	0.0
632	Mult ifami ly	Electric Heating	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	High Performance T8/T5, Reduced Wattage T8/T5, and T8/T5 Fixtures and Lamps	2-Lamp 32W HPT8 with Low-BF Ballast	Time of Sale	per lamp	4	\$31.0	54	0.003	0.0
633	All	Gas Heating	Lighting	LED Downlights	14 W LED	35W Incandescent /Halogen MR16/PAR1 6 pin-based lamps	Time of Sale	per lamp	2	-\$10.5	32	0.004	0.0
634	All	Gas Heating	Lighting	LED Downlights	14 W LED	35W Incandescent /Halogen MR16/PAR1 6 pin-based lamps	New Constructi on	per lamp	2	-\$10.5	32	0.004	0.0
635	All	Electric Heating	Lighting	LED Downlights	14 W LED	35W Incandescent /Halogen MR16/PAR1 6 pin-based lamps	Time of Sale	per lamp	2	-\$10.5	25	0.004	0.0
636	All	Electric Heating	Lighting	LED Downlights	14 W LED	35W Incandescent /Halogen MR16/PAR1 6 pin-based lamps	New Constructi on	per lamp	2	-\$10.5	25	0.004	0.0
637	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$3.6	23	0.002	0.0
638	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$3.6	18	0.002	0.0

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639	Mult	Gas	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$3.6	23	0.002	0.0
	ifami	Heating		Compact	in year 2016	compliant	Install						
	ly			Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
					lumens								
640	Mult	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$3.6	18	0.002	0.0
	ifami	Heating		Compact	in year 2016	compliant	Install						
	ly			Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
641	Δ١Ι	Gas	Lighting	ENERGY STAR	13.9 W/CEL installed	42 AW EISA	Time of	ner lamn	1	-\$1.4	25	0.003	0.0
041	711	Heating	Lighting	Compact	in year 2016	compliant	Sale	per la lip	-	<b>Υ</b> 1.4	25	0.005	0.0
				Fluorescent	representing bulbs	lamp	bale						
				Lamp (CFL)	less than 1050								
					lumens								
642	All	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Time of	per lamp	1	-\$1.4	20	0.003	0.0
		Heating		Compact	in year 2016	compliant	Sale						
				Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
6.40	c: 1				lumens	10 111 510 1	<u> </u>			6 4 F		0.000	
643	Singi	Gas	Lighting	ENERGY STAR	13.9 W CFL Installed	42.4W EISA	Direct	per lamp	1	\$4.5	23	0.002	0.0
	era	Heating		Compact	In year 2017	compliant	Install						
	& Du			Lamp (CEL)	less than 1050	lamp							
	plex			Europ (er E)	lumens								
644	Singl	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$4.5	18	0.002	0.0
	eFa	Heating	0 0	Compact	in year 2017	compliant	Install						
	mily			Fluorescent	representing bulbs	lamp							
	&Du			Lamp (CFL)	less than 1050								
	plex				lumens								
645	Mult	Gas	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$4.5	23	0.002	0.0
	ifami	Heating		Compact	in year 2017	compliant	Install						
	ly			Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
646	Mult	Flectric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W FISA	Direct	per lamp	1	\$4.5	18	0.002	0.0
010	ifami	Heating	2.8.11.1.8	Compact	in year 2017	compliant	Install	per lump	-	φ 1.5	10	0.002	0.0
	ly			Fluorescent	representing bulbs	lamp							
	•			Lamp (CFL)	less than 1050	·							
					lumens								
647	All	Gas	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Time of	per lamp	1	-\$0.5	25	0.003	0.0
		Heating		Compact	in year 2017	compliant	Sale						
				Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
648		Floatsia	Linkting		12.0 W/CEL installed		Time of	norlesse	1	ćo r	20	0.000	0.0
648	All	Electric	Lighting	ENERGY STAR	13.9 W CFL INSTALLED	42.4W EISA	Salo	per lamp	1	-\$0.5	20	0.003	0.0
		incating		Fluorescent	representing hulbs	lamn	Jaie						
				Lamp (CFL)	less than 1050	amp							
					lumens								

649	Singl	Gas	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$5.3	23	0.002	0.0
	eFa	Heating		Compact	in year 2018	compliant	Install						
	mily			Fluorescent	representing bulbs	lamp							
	&Du			Lamp (CFL)	less than 1050								
	plex				lumens								
550	Singl	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$5.3	18	0.002	0.0
	eFa	Heating		Compact	in year 2018	compliant	Install						
	mily			Fluorescent	representing bulbs	lamp							
	&Du			Lamp (CFL)	less than 1050								
CE1	plex	6	Lishting		lumens	42 414/ 516 4	Dive et		1	ćr o	22	0.002	0.0
651	iviuit	Gas	Lighting	ENERGY STAR	13.9 W CFL Installed	42.4W EISA	Direct	per lamp	1	\$5.3	23	0.002	0.0
	Irami	Heating		Eluoroscont	In year 2018	lamp	Install						
	iy			Lown (CEL)	loss than 1050	lamp							
					lumens								
552	Mult	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W FISA	Direct	per lamp	1	\$5.3	18	0.002	0.0
	ifami	Heating	0	Compact	in year 2018	compliant	Install	P.C. 19111P	-	<i>40.0</i>		0.002	0.0
	lv			Fluorescent	representing bulbs	lamp							
	,			Lamp (CFL)	less than 1050								
					lumens								
653	All	Gas	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Time of	per lamp	1	\$0.3	25	0.003	0.0
		Heating		Compact	in year 2018	compliant	Sale						
				Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
					lumens					1			
654	All	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Time of	per lamp	1	Ş0.3	20	0.003	0.0
		Heating		Compact	in year 2018	compliant	Sale						
				Fluorescent	representing builds	lamp							
				Lamp (CFL)	less than 1050								
655	Singl	Gas	Lighting	ENERGY STAR	13.9 W/CEL installed	12 1W/ FISA	Direct	ner lamn	1	\$6.0	23	0.002	0.0
777	eFa	Heating	Lighting	Compact	in year 2019	compliant	Install	perianip	I	<b>Ş</b> 0.0	23	0.002	0.0
	milv	neuting		Eluorescent	representing bulbs	lamp	mstan						
	&Du			Lamp (CFL)	less than 1050	lamp							
	plex			20p (0. 2)	lumens								
656	Singl	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$6.0	18	0.002	0.0
	eFa	Heating	0 0	Compact	in year 2019	compliant	Install						
	mily			Fluorescent	representing bulbs	lamp							
	&Du			Lamp (CFL)	less than 1050								
	plex				lumens								
657	Mult	Gas	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$6.0	23	0.002	0.0
	ifami	Heating		Compact	in year 2019	compliant	Install						
	ly			Fluorescent	representing bulbs	lamp							
				Lamp (CFL)	less than 1050								
					lumens					4.5.5			
b58	Mult	Electric	Lighting	ENERGY STAR	13.9 W CFL installed	42.4W EISA	Direct	per lamp	1	\$6.0	18	0.002	0.0
	ito i			I CARTAGA CT		COMPRISIT	INCTOR						
	ifami	Heating		Eluoroscont	roprocenting hulbs	lamn	mstan						
	ifami Iy	неатіпд		Fluorescent	representing bulbs	lamp	mstan						

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659	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	\$1.0	25	0.003	0.0
660	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	\$1.0	20	0.003	0.0
661	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$6.5	23	0.002	0.0
662	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$6.5	18	0.002	0.0
663	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$6.5	23	0.002	0.0
664	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$6.5	18	0.002	0.0
665	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	\$1.5	25	0.003	0.0
666	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	\$1.5	20	0.003	0.0
667	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	New Constructi on	per lamp	20	\$20.6	69	0.000	0.0
668	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent	13.9 W CFL installed in year 2016 representing bulbs	42.4W EISA compliant lamp -	Time of Sale	per lamp	20	\$20.6	69	0.000	0.0

It is provide a table A constraints and the second

## Appendix D: Residential Measure Assumptions

				Lamp (CFL) Fixture	less than 1050 lumens	Exterior Hardwired							
669	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$20.6	69	0.000	0.0
670	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$20.6	69	0.000	0.0
671	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$24.4	69	0.000	0.0
672	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$24.4	69	0.000	0.0
673	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$24.4	69	0.000	0.0
674	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$24.4	69	0.000	0.0
675	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$27.6	69	0.000	0.0
676	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent	13.9 W CFL installed in year 2018 representing bulbs	42.4W EISA compliant lamp -	Time of Sale	per lamp	20	\$27.6	69	0.000	0.0

## Appendix D: Residential Measure Assumptions

				Lamp (CFL) Fixture	less than 1050 lumens	Exterior Hardwired							
677	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$27.6	69	0.000	0.0
678	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$27.6	69	0.000	0.0
679	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.2	69	0.000	0.0
680	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.2	69	0.000	0.0
681	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.2	69	0.000	0.0
682	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.2	69	0.000	0.0
683	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.6	69	0.000	0.0
684	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.6	69	0.000	0.0
685	All	Gas	Lighting	Exterior	13.9 W CFL installed	42.4W EISA	New	per lamp	20	\$30.6	69	0.000	0.0
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		Heating		Hardwired Lighting Fixtures	in year 2020 representing bulbs less than 1050 lumens	compliant lamp - Exterior Hardwired	Constructi on						
686	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.6	69	0.000	0.0
687	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.3	45	0.004	0.0
688	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.3	45	0.004	0.0
689	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.3	35	0.004	0.0
690	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.3	35	0.004	0.0
691	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.9	45	0.004	0.0
692	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.9	45	0.004	0.0
693	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.9	35	0.004	0.0

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694	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.9	35	0.004	0.0
695	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.4	45	0.004	0.0
696	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.4	45	0.004	0.0
697	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.4	35	0.004	0.0
698	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.4	35	0.004	0.0
699	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.8	45	0.004	0.0
700	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.8	45	0.004	0.0
701	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.8	35	0.004	0.0
702	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2019 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.8	35	0.004	0.0

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703	All	Gas	Lighting	Interior	13.9 W CFL installed	42.4W EISA	New	per lamp	20	\$31.9	45	0.004	0.0
		Heating		Hardwired Lighting Fixtures	in year 2020 representing bulbs less than 1050 lumens	compliant lamp - Interior Hardwired	Constructi on						
704	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.9	45	0.004	0.0
705	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.9	35	0.004	0.0
706	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.9	35	0.004	0.0
707	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	MF Common Area Default Value W CFL installed in year representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	2	\$3.1	158	0.010	0.0
708	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	MF Common Area Default Value W CFL installed in year representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	2	\$3.1	158	0.010	0.0
709	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	MF Common Area Default Value W CFL installed in year representing bulbs less than 1050 lumens	43W EISA compliant lamp	Retrofit	per lamp	2	\$3.1	158	0.010	0.0
710	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	MF Common Area Default Value W CFL installed in year representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	2	\$3.1	136	0.010	0.0
711	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	MF Common Area Default Value W CFL installed in year representing bulbs	43W EISA compliant lamp	New Constructi on	per lamp	2	\$3.1	136	0.010	0.0

4	Appendix D: Residential Measure Assumptions	
		less than 1050
		lumens

					luillens								
712	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	MF Common Area Default Value W CFL installed in year representing bulbs less than 1050 lumens	43W EISA compliant lamp	Retrofit	per lamp	2	\$3.1	136	0.010	0.0
713	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2016 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$30.3	46	0.004	0.0
714	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2016 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$30.3	46	0.004	0.0
715	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2016 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$30.3	36	0.004	0.0
716	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2016 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$30.3	36	0.004	0.0
717	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2017 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$30.9	46	0.004	0.0
718	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2017 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$30.9	46	0.004	0.0
719	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2017 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$30.9	36	0.004	0.0

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720	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2017 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$30.9	36	0.004	0.0
721	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2018 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$31.4	46	0.004	0.0
722	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2018 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$31.4	46	0.004	0.0
723	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2018 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$31.4	36	0.004	0.0
724	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2018 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$31.4	36	0.004	0.0
725	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2019 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$31.8	46	0.004	0.0
726	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2019 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$31.8	46	0.004	0.0
727	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2019 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$31.8	36	0.004	0.0
728	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2019 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$31.8	36	0.004	0.0

729	All	Gas	Lighting	Interior	14 W CFL installed in	43W EISA	New	per lamp	20	\$31.9	46	0.004	0.0
		Heating		Hardwired Lighting Fixtures	year 2020 representing bulbs less than 1050 lumens	compliant lamp	Constructi on						
730	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2020 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$31.9	46	0.004	0.0
731	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2020 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	per lamp	20	\$31.9	36	0.004	0.0
732	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	14 W CFL installed in year 2020 representing bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	per lamp	20	\$31.9	36	0.004	0.0
733	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2020	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	30	0.003	0.0
734	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2020	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	24	0.003	0.0
735	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2020	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	30	0.003	0.0
736	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2020	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	23	0.003	0.0
737	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2020	45.4W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$0.9	31	0.003	0.0
738	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2020	45.4W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$0.9	24	0.003	0.0

739	Singl eFa	Gas Heating	Lighting	Omnidirectional A-type LED	37.2 W LED installed in year 2021	45.4W Post- 2020 EISA	Direct Install	per lamp	1	\$1.1	30	0.003	0.0
	mily &Du			lamps		compliant lamp							
740	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2021	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	24	0.003	0.0
741	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2021	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	30	0.003	0.0
742	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2021	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	23	0.003	0.0
743	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2021	45.4W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.1	31	0.003	0.0
744	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2021	45.4W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.1	24	0.003	0.0
745	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2022	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	30	0.003	0.0
746	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2022	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	24	0.003	0.0
747	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2022	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	30	0.003	0.0
748	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2022	45.4W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	23	0.003	0.0
749	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2022	45.4W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.4	31	0.003	0.0

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750	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2022	45.4W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.4	24	0.003	0.0
751	All	Gas Heating	Lighting	LED Downlights	13 W LED	45W Incandescent /Halogen Tracklight	Time of Sale	per lamp	2	-\$8.4	28	0.003	0.0
752	All	Gas Heating	Lighting	LED Downlights	13 W LED	45W Incandescent /Halogen Tracklight	New Constructi on	per lamp	2	-\$8.4	28	0.003	0.0
753	All	Electric Heating	Lighting	LED Downlights	13 W LED	45W Incandescent /Halogen Tracklight	Time of Sale	per lamp	2	-\$8.4	22	0.003	0.0
754	All	Electric Heating	Lighting	LED Downlights	13 W LED	45W Incandescent /Halogen Tracklight	New Constructi on	per lamp	2	-\$8.4	22	0.003	0.0
755	All	Gas Heating	Lighting	LED Downlights	14 W LED	50W Incandescent /Halogen Recessed Downlight	Time of Sale	per lamp	2	\$0.1	34	0.004	0.0
756	All	Gas Heating	Lighting	LED Downlights - OM	14 W LED	50W Incandescent /Halogen Recessed Downlight	Time of Sale	per lamp	2	\$0.1	34	0.004	0.0
757	All	Gas Heating	Lighting	LED Downlights	14 W LED	50W Incandescent /Halogen Recessed Downlight	New Constructi on	per lamp	2	\$0.1	34	0.004	0.0
758	All	Electric Heating	Lighting	LED Downlights	14 W LED	50W Incandescent /Halogen Recessed Downlight	Time of Sale	per lamp	2	\$0.1	27	0.004	0.0
759	All	Electric Heating	Lighting	LED Downlights - OM	14 W LED	50W Incandescent /Halogen Recessed Downlight	Time of Sale	per lamp	2	\$0.1	27	0.004	0.0
760	All	Electric Heating	Lighting	LED Downlights	14 W LED	50W Incandescent /Halogen	New Constructi on	per lamp	2	\$0.1	27	0.004	0.0

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						Recessed Downlight							
761	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	27	0.003	0.0
762	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	21	0.003	0.0
763	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	26	0.003	0.0
764	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	20	0.003	0.0
765	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Time of Sale	per lamp	1	-\$1.2	29	0.003	0.0
766	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Time of Sale	per lamp	1	-\$1.2	23	0.003	0.0
767	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	27	0.003	0.0
768	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	21	0.003	0.0
769	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	26	0.003	0.0
770	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	20	0.003	0.0

771	All	Gas	Lighting	ENERGY STAR	20 W CFL installed in	53W EISA	Time of	per lamp	1	-\$0.3	29	0.003	0.0
		Heating		Compact Fluorescent Lamp (CFL)	year 2017	compliant lamp	Sale			·			
772	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Time of Sale	per lamp	1	-\$0.3	23	0.003	0.0
773	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	27	0.003	0.0
774	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	21	0.003	0.0
775	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	26	0.003	0.0
776	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	20	0.003	0.0
777	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Time of Sale	per lamp	1	\$0.5	29	0.003	0.0
778	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Time of Sale	per lamp	1	\$0.5	23	0.003	0.0
779	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	27	0.003	0.0
780	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	21	0.003	0.0
781	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	26	0.003	0.0

Appendix	k D: Res	idential N	Measure A	ssumptions									
782	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	20	0.003	0.0
783	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Time of Sale	per lamp	1	\$1.2	29	0.003	0.0
784	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Time of Sale	per lamp	1	\$1.2	23	0.003	0.0
785	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	27	0.003	0.0
786	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	21	0.003	0.0
787	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	26	0.003	0.0
788	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	20	0.003	0.0
789	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Time of Sale	per lamp	1	\$1.7	29	0.003	0.0
790	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Time of Sale	per lamp	1	\$1.7	23	0.003	0.0
791	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2016	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$20.6	80	0.000	0.0
792	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$20.6	80	0.000	0.0

793	All	Gas Heating	Lighting	Exterior Hardwired	20 W CFL installed in year 2016	53W EISA	New	per lamp	20	\$20.6	80	0.000	0.0
		neuting		Lighting Fixtures	year 2010	lamp - Exterior Hardwired	on						
794	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$20.6	80	0.000	0.0
795	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2017	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$24.4	80	0.000	0.0
796	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2017	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$24.4	80	0.000	0.0
797	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2017	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$24.4	80	0.000	0.0
798	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2017	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$24.4	80	0.000	0.0
799	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2018	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$27.6	80	0.000	0.0
800	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$27.6	80	0.000	0.0
801	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2018	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$27.6	80	0.000	0.0

\*Residential applicability factors were developed only for measures included in the potential analyses.

ppendix	D: Res	sidential N	Aeasure A	ssumptions									
802	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$27.6	80	0.000	0.0
803	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.2	80	0.000	0.0
804	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.2	80	0.000	0.0
805	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.2	80	0.000	0.0
806	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.2	80	0.000	0.0
807	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.6	80	0.000	0.0
808	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.6	80	0.000	0.0
809	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.6	80	0.000	0.0
810	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.6	80	0.000	0.0

ppendix	D: Res	sidential N	Vleasure A	ssumptions									
811	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.3	52	0.005	0.0
812	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.3	52	0.005	0.0
813	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.3	41	0.005	0.0
814	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.3	41	0.005	0.0
815	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2017	53W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.9	52	0.005	0.0
816	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2017	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.9	52	0.005	0.0
817	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2017	53W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.9	41	0.005	0.0
818	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2017	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.9	41	0.005	0.0

819	All	Gas	Lighting	Interior	20 W CFL installed in	53W EISA	New	per lamp	20	\$31.4	52	0.005	0.0
		Heating		Hardwired	year 2018	compliant	Constructi						
				Compact		lamp -	on						
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture						40.1.1			
820	All	Gas	Lighting	Interior	20 W CFL installed in	53W EISA	Time of	per lamp	20	Ş31.4	52	0.005	0.0
		Heating		Hardwired	year 2018	compliant	Sale						
				Compact		lamp -							
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
021	A 11	Floctric	Lighting	Fixture	20 W CEL installed in		Now	norlamn	20	¢21 /	41	0.005	0.0
821	All	Heating	Lighting	Hardwired	20 W CFL INSIdileu III Voar 2018	compliant	Constructi	periamp	20	\$31.4	41	0.005	0.0
		neating		Compact	year 2010	lamn -	on						
				Fluorescent		Interior	UII						
				Lamp (CEL)		Hardwired							
				Fixture		narawirea							
822	All	Electric	Lighting	Interior	20 W CFL installed in	53W EISA	Time of	per lamp	20	\$31.4	41	0.005	0.0
		Heating	0 0	Hardwired	year 2018	compliant	Sale						
		-		Compact		lamp -							
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture									
823	All	Gas	Lighting	Interior	20 W CFL installed in	53W EISA	New	per lamp	20	\$31.8	52	0.005	0.0
		Heating		Hardwired	year 2019	compliant	Constructi						
				Compact		lamp -	on						
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
821	A11	Gas	Lighting	Interior	20 W CEL installed in	52\M/ EISA	Time of	norlamn	20	¢21.9	52	0.005	0.0
024	All	Heating	Lighting	Hardwirod	20 W CI L INStalleu III	compliant	Salo	periamp	20	Ş31.0	52	0.005	0.0
		Heating		Compact	year 2019	lamn -	Jale						
				Fluorescent		Interior							
				Lamn (CEL)		Hardwired							
				Fixture		naruwireu							
825	All	Electric	Lighting	Interior	20 W CFL installed in	53W EISA	New	per lamp	20	\$31.8	41	0.005	0.0
		Heating	0 0	Hardwired	year 2019	compliant	Constructi	P P.					
		0		Compact		lamp -	on						
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture									
826	All	Electric	Lighting	Interior	20 W CFL installed in	53W EISA	Time of	per lamp	20	\$31.8	41	0.005	0.0
		Heating		Hardwired	year 2019	compliant	Sale						
				Compact		lamp -							
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture									

827	All	Gas	Lighting	Interior	20 W CFL installed in	53W EISA	New	per lamp	20	\$31.9	52	0.005	0.0
		Heating		Hardwired	year 2020	compliant	Constructi						
				Compact		lamp -	on						
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture									
828	All	Gas	Lighting	Interior	20 W CFL installed in	53W EISA	Time of	per lamp	20	\$31.9	52	0.005	0.0
		Heating		Hardwired	year 2020	compliant	Sale						
				Compact		lamp -							
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture									
829	All	Electric	Lighting	Interior	20 W CFL installed in	53W EISA	New	per lamp	20	\$31.9	41	0.005	0.0
		Heating		Hardwired	year 2020	compliant	Constructi						
				Compact		lamp -	on						
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
830	ΔΠ	Flectric	Lighting	Interior	20 W CEL installed in	53W/ FISA	Time of	ner lamn	20	\$31.9	<i>A</i> 1	0.005	0.0
050	711	Heating	Lighting	Hardwired	vear 2020	compliant	Sale	per lump	20	Ş31.5	41	0.005	0.0
		B		Compact	700. 2020	lamp -	Care						
				Fluorescent		Interior							
				Lamp (CFL)		Hardwired							
				Fixture									
831	All	Gas	Lighting	ENERGY STAR	15W CFL Generic	60W	Time of	per lamp	1	-\$10.3	40	0.004	0.0
		Heating		Specialty	Specialty Lamp	Incandescent	Sale						
				Compact		Generic							
				Fluorescent		Specialty							
				Lamp (CFL)		Lamp							
832	Singl	Gas	Lighting	ENERGY STAR	15W CFL Generic	60W	Direct	per lamp	1	-\$1.8	39	0.004	0.0
	eFa	Heating		Specialty	Specialty Lamp	Incandescent	Install						
	mily			Compact		Generic							
	&Du			Fluorescent		Specialty							
	plex			Lamp (CFL)		Lamp				4. 0			
833	Mult	Gas	Lighting	ENERGY STAR	15W CFL Generic	60W	Direct	per lamp	1	-\$1.8	38	0.004	0.0
	ifami	Heating		Specialty	Specialty Lamp	Incandescent	Install						
	iy			Compact		Generic							
				Fluorescent		Specialty							
927	A11	Gas	Lighting		15W/CEL Conoric	Lamp 60W	Now	norlamn	1	\$10.2	40	0.004	0.0
0.04		Heating	Lighting	Specialty	Specialty Lamp	Incandescent	Constructi	periamp	1	-910.5	40	0.004	0.0
		neuting		Compact	Specially Lamp	Generic	on						
				Fluorescent		Specialty	on						
				Lamp (CEL)		Lamp							
835	All	Electric	Lighting	ENERGY STAR	15W CEL Generic	60W	Time of	per lamp	1	-\$10.3	31	0.004	0.0
		Heating		Specialty	Specialty Lamp	Incandescent	Sale	н м	-	+ = 0.0			0.0
				Compact	h	Generic							
				Fluorescent		Specialty							
				Lamp (CFL)		Lamp .							

Appendix	D: Res	idential N	/leasure A	ssumptions									
836	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Direct Install	per lamp	1	-\$1.8	31	0.004	0.0
837	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Direct Install	per lamp	1	-\$1.8	30	0.004	0.0
838	All	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	New Constructi on	per lamp	1	-\$10.3	31	0.004	0.0
839	All	Gas Heating	Lighting	LED Downlights	21 W LED	67W Incandescent /Halogen PAR30 screw-in lamps	Time of Sale	per lamp	2	-\$8.0	39	0.004	0.0
840	All	Gas Heating	Lighting	LED Downlights	21 W LED	67W Incandescent /Halogen PAR30 screw-in lamps	New Constructi on	per lamp	2	-\$8.0	39	0.004	0.0
841	All	Electric Heating	Lighting	LED Downlights	21 W LED	67W Incandescent /Halogen PAR30 screw-in lamps	Time of Sale	per lamp	2	-\$8.0	31	0.004	0.0
842	All	Electric Heating	Lighting	LED Downlights	21 W LED	67W Incandescent /Halogen PAR30 screw-in lamps	New Constructi on	per lamp	2	-\$8.0	31	0.004	0.0
843	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	38	0.004	0.0
844	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	30	0.004	0.0

ppendix	D: Res	Idential N	/leasure As	ssumptions		7014/ 516 4	D'ss at		4	ć i c	20	0.004	0.0
845	ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL Installed In year 2016	compliant lamp	Install	per lamp	1	\$4.6	38	0.004	0.0
846	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	per lamp	1	\$4.6	29	0.004	0.0
847	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Time of Sale	per lamp	1	-\$1.2	41	0.004	0.0
848	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Time of Sale	per lamp	1	-\$1.2	32	0.004	0.0
849	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	38	0.004	0.0
850	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	30	0.004	0.0
851	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	38	0.004	0.0
852	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	per lamp	1	\$5.5	29	0.004	0.0
853	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Time of Sale	per lamp	1	-\$0.3	41	0.004	0.0
854	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Time of Sale	per lamp	1	-\$0.3	32	0.004	0.0
855	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	38	0.004	0.0

Appendix	c D: Res	idential N	Aeasure A	ssumptions									
856	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	30	0.004	0.0
857	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	38	0.004	0.0
858	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	per lamp	1	\$6.3	29	0.004	0.0
859	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Time of Sale	per lamp	1	\$0.5	41	0.004	0.0
860	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Time of Sale	per lamp	1	\$0.5	32	0.004	0.0
861	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	38	0.004	0.0
862	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	30	0.004	0.0
863	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	38	0.004	0.0
864	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.0	29	0.004	0.0
865	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Time of Sale	per lamp	1	\$1.2	41	0.004	0.0
866	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Time of Sale	per lamp	1	\$1.2	32	0.004	0.0

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867	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	38	0.004	0.0
868	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	30	0.004	0.0
869	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	38	0.004	0.0
870	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	per lamp	1	\$7.5	29	0.004	0.0
871	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Time of Sale	per lamp	1	\$1.7	41	0.004	0.0
872	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Time of Sale	per lamp	1	\$1.7	32	0.004	0.0
873	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$20.6	114	0.000	0.0
874	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$20.6	114	0.000	0.0
875	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$20.6	114	0.000	0.0
876	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$20.6	114	0.000	0.0

## **Appendix D: Residential Measure Assumptions** 877 All 20 114 0.000 Electric Lighting Exterior 25 W CFL installed in 72W EISA New per lamp \$24.4 0.0 Heating Hardwired year 2017 compliant Constructi **Lighting Fixtures** lamp on Exterior Hardwired 878 All Electric Lighting Exterior 25 W CFL installed in 72W EISA Time of per lamp 20 \$24.4 114 0.000 0.0 Heating Hardwired year 2017 compliant Sale Compact lamp -Fluorescent Exterior Lamp (CFL) Hardwired Fixture 879 All Gas 25 W CFL installed in 72W EISA 20 \$24.4 114 Lighting Exterior New per lamp 0.000 0.0 Heating Hardwired year 2017 compliant Constructi Lighting Fixtures lamp on Exterior Hardwired 880 All Gas Lighting Exterior 25 W CFL installed in 72W EISA Time of per lamp 20 \$24.4 114 0.000 0.0 Hardwired Heating year 2017 compliant Sale Compact lamp -Fluorescent Exterior Lamp (CFL) Hardwired Fixture 881 All Electric Lighting Exterior 25 W CFL installed in 72W EISA New 20 \$27.6 114 0.000 0.0 per lamp year 2018 Heating Hardwired compliant Constructi Lighting Fixtures lamp on Exterior Hardwired 882 All Electric Lighting 25 W CFL installed in 72W EISA 20 \$27.6 114 0.000 0.0 Exterior Time of per lamp Heating Hardwired year 2018 compliant Sale Compact lamp -Exterior Fluorescent Lamp (CFL) Hardwired Fixture 883 All Gas 25 W CFL installed in 72W EISA 20 \$27.6 114 0.000 0.0 Lighting Exterior New per lamp Heating Hardwired year 2018 compliant Constructi Lighting Fixtures lamp on Exterior Hardwired 884 All 25 W CFL installed in 20 \$27.6 114 0.000 0.0 Gas Lighting Exterior 72W EISA Time of per lamp Heating Hardwired year 2018 compliant Sale Compact lamp -Fluorescent Exterior Lamp (CFL) Hardwired Fixture 885 All Electric 25 W CFL installed in 72W EISA New 20 \$30.2 114 0.000 0.0 Lighting Exterior per lamp year 2019 Heating Hardwired compliant Constructi Lighting Fixtures lamp on Exterior Hardwired

ppendix	D: Res	sidential N	Aeasure A	ssumptions									
886	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2019	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.2	114	0.000	0.0
887	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2019	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.2	114	0.000	0.0
888	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2019	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.2	114	0.000	0.0
889	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2020	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.6	114	0.000	0.0
890	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2020	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.6	114	0.000	0.0
891	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2020	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	per lamp	20	\$30.6	114	0.000	0.0
892	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2020	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	per lamp	20	\$30.6	114	0.000	0.0
893	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.3	74	0.007	0.0
894	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent	25 W CFL installed in year 2016	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.3	74	0.007	0.0

				Lamp (CFL) Fixture									
895	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.3	58	0.007	0.0
896	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.3	58	0.007	0.0
897	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2017	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.9	74	0.007	0.0
898	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2017	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.9	74	0.007	0.0
899	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2017	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$30.9	58	0.007	0.0
900	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2017	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$30.9	58	0.007	0.0
901	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2018	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.4	74	0.007	0.0
902	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent	25 W CFL installed in year 2018	72W EISA compliant lamp -	Time of Sale	per lamp	20	\$31.4	74	0.007	0.0

Appendix	D: Res	sidential N	/leasure A	ssumptions									
				Lamp (CFL) Fixture		Interior Hardwired							
903	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2018	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.4	58	0.007	0.0
904	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2018	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.4	58	0.007	0.0
905	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2019	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.8	74	0.007	0.0
906	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2019	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.8	74	0.007	0.0
907	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2019	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.8	58	0.007	0.0
908	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2019	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.8	58	0.007	0.0
909	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2020	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.9	74	0.007	0.0
910	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent	25 W CFL installed in year 2020	72W EISA compliant lamp -	Time of Sale	per lamp	20	\$31.9	74	0.007	0.0

Appendix	k D: Res	idential N	Aeasure A	ssumptions									
				Lamp (CFL) Fixture		Interior Hardwired							
911	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2020	72W EISA compliant lamp - Interior Hardwired	New Constructi on	per lamp	20	\$31.9	58	0.007	0.0
912	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2020	72W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.9	58	0.007	0.0
913	Mult ifami ly	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Time of Sale	per exit sign	1	-\$28.5	82	0.010	0.0
914	Mult ifami ly	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Retrofit	per exit sign	1	-\$21.5	82	0.010	0.0
915	Mult ifami ly	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	New Constructi on	per exit sign	1	-\$28.5	82	0.010	0.0
916	Mult ifami ly	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Time of Sale	per exit sign	1	-\$28.5	64	0.010	0.0
917	Mult ifami ly	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Retrofit	per exit sign	1	-\$21.5	64	0.010	0.0
918	Mult ifami ly	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	New Constructi on	per exit sign	1	-\$28.5	64	0.010	0.0
919	Mult ifami ly	Gas Heating	Lighting	Home Energy Audit & Retrofit Multifamily: Common Area	0	Home Energy Audit & Retrofit Multifamily: Common Area	Direct Install	per building	25	\$100.0	0	0.000	0.0

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920	Mult ifami ly	Electric Heating	Lighting	Home Energy Audit & Retrofit Multifamily: Common Area	0	Home Energy Audit & Retrofit Multifamily: Common Area	Direct Install	per building	25	\$100.0	0	0.000	0.0
921	All	Gas Heating	Lighting	ENERGY STAR Torchiere - OM	Energy Star Torchiere	Incandescent /Halogen Torchiere	Time of Sale	per torchiere	2	-\$15.9	116	0.009	0.0
922	All	Gas Heating	Lighting	ENERGY STAR Torchiere	Energy Star Torchiere	Incandescent /Halogen Torchiere	New Constructi on	per torchiere	2	-\$15.9	116	0.009	0.0
923	All	Electric Heating	Lighting	ENERGY STAR Torchiere - OM	Energy Star Torchiere	Incandescent /Halogen Torchiere	Time of Sale	per torchiere	2	-\$15.9	90	0.009	0.0
924	All	Electric Heating	Lighting	ENERGY STAR Torchiere	Energy Star Torchiere	Incandescent /Halogen Torchiere	New Constructi on	per torchiere	2	-\$15.9	90	0.009	0.0
925	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2016 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	17	0.002	0.0
926	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2016 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	14	0.002	0.0
927	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2016 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	17	0.002	0.0

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928	Mult	Electric	Lighting	Omnidirectional	12.32 W LED	Pre 2020	Direct	per lamp	1	\$1.7	13	0.002	0.0
	ifami ly	Heating		A-type LED lamps	installed in year 2016 representing bulbs less than 1050 lumens	lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Install						
929	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2016 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.7	18	0.002	0.0
930	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2016 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.7	14	0.002	0.0
931	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	17	0.002	0.0
932	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	14	0.002	0.0
933	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	17	0.002	0.0

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Appendix	<u>k D: Res</u>	idential N	/leasure A	ssumptions									
934	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	13	0.002	0.0
935	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	18	0.002	0.0
936	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	14	0.002	0.0
937	All	Gas Heating	Lighting	Efficient light bulbs	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	18	0.002	0.0
938	All	Electric Heating	Lighting	Efficient light bulbs	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	14	0.002	0.0
939	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps - OM	12.32 W LED installed in year 2017 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	18	0.002	0.0

940	<u></u>	Flectric	Lighting	Omnidirectional	12 32 W LED	Pre 2020	Time of	ner lamn	1	\$2.0	1/	0.002	0.0
540	All	Heating	Lighting	A-type LED lamps - OM	installed in year 2017 representing bulbs less than 1050 lumens	lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Sale	регинтр	Ţ	Ş2.U	14	0.002	0.0
941	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2018 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	17	0.002	0.0
942	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2018 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	14	0.002	0.0
943	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2018 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	17	0.002	0.0
944	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2018 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	13	0.002	0.0
945	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2018 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.3	18	0.002	0.0

946	All	Electric	Lighting	Omnidirectional	12.32 W LED	Pre 2020	Time of	per lamp	1	\$2.3	14	0.002	0.0
		Heating	2.3	A-type LED lamps	installed in year 2018 representing bulbs less than 1050 lumens	lamp of 32.3W; switching to 15W EISA	Sale	ра:р		72.2			
						compliant							
047	Singl	Gar	Lighting	Omnidiractional	12 22 W/ LED	lamp Bro 2020	Direct	norlamn	1	ćηε	17	0.002	0.0
547	eFa	Heating	Lighting	A-type LED	installed in year 2019	lamp of	Install	periamp	I	<i>γ</i> 2. <i>3</i>	17	0.002	0.0
	mily			lamps	representing bulbs	32.3W;							
	&Du				less than 1050	switching to							
	plex				lumens	15W EISA							
						compliant							
						lamp							
948	Singl	Electric	Lighting	Omnidirectional	12.32 W LED	Pre 2020	Direct	per lamp	1	\$2.5	14	0.002	0.0
	mily	Treating		lamps	representing bulbs	32.3W;	mstan						
	&Du				less than 1050	switching to							
	plex				lumens	15W EISA							
						post-2020 compliant							
						lamp							
949	Mult	Gas	Lighting	Omnidirectional	12.32 W LED	Pre 2020	Direct	per lamp	1	\$2.5	17	0.002	0.0
	ifami	Heating		A-type LED Jamps	installed in year 2019	lamp of 32 3.W.	Install						
	'y			iump5	less than 1050	switching to							
					lumens	15W EISA							
						post-2020							
						lamp							
950	Mult	Electric	Lighting	Omnidirectional	12.32 W LED	Pre 2020	Direct	per lamp	1	\$2.5	13	0.002	0.0
	ifami	Heating		A-type LED	installed in year 2019	lamp of	Install						
	ly			lamps	representing bulbs	32.3W; switching to							
					lumens	15W EISA							
						post-2020							
						compliant							
951	All	Gas	Lighting	Omnidirectional	12.32 W LED	Pre 2020	Time of	per lamp	1	\$2.5	18	0.002	0.0
		Heating	0 0	A-type LED	installed in year 2019	lamp of	Sale			·			
				lamps	representing bulbs	32.3W;							
					less than 1050	switching to							
					lumens	post-2020							
						compliant							
						lamp							

Appendix	CD: Res	idential N	/leasure A	ssumptions									
952	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2019 representing bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.5	14	0.002	0.0
953	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	26	0.003	0.0
954	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	20	0.003	0.0
955	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	26	0.003	0.0
956	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	20	0.003	0.0
957	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.7	26	0.003	0.0

Appendix	k D: Res	idential N	/leasure A	ssumptions									
958	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.7	21	0.003	0.0
959	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	26	0.003	0.0
960	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	20	0.003	0.0
961	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	26	0.003	0.0
962	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.0	20	0.003	0.0
963	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	26	0.003	0.0

Appendix	k D: Res	idential N	/leasure A	ssumptions									
964	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.0	21	0.003	0.0
965	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	26	0.003	0.0
966	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	20	0.003	0.0
967	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	26	0.003	0.0
968	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.3	20	0.003	0.0
969	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.3	26	0.003	0.0

Appendix	k D: Res	idential N	/leasure A	ssumptions									
970	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.3	21	0.003	0.0
971	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.5	26	0.003	0.0
972	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.5	20	0.003	0.0
973	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.5	26	0.003	0.0
974	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$2.5	20	0.003	0.0
975	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$2.5	26	0.003	0.0

076		Eloctric	Lighting	Omnidirectional	22 1 W/ LED installed	Dro 2020	Time of	norlamn	1	¢2 Ε	21	0 000	0.0
976	All	Heating	Lighting	A-type LED lamps	in year 2019	lamp of 53W; switching to 28.2W EISA post-2020 compliant lamp	Sale	per lannp	I	Ş2.5	21	0.003	0.0
977	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	30	0.003	0.0
978	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	24	0.003	0.0
979	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	30	0.003	0.0
980	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$1.7	23	0.003	0.0
981	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.7	31	0.003	0.0

Appendix	k D: Res	idential N	/leasure A	ssumptions									
982	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.7	24	0.003	0.0
983	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	-\$0.3	30	0.003	0.0
984	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	-\$0.3	24	0.003	0.0
985	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	-\$0.3	30	0.003	0.0
986	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	-\$0.3	23	0.003	0.0
987	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	-\$0.3	31	0.003	0.0
Appendix	k D: Res	idential N	/leasure A	ssumptions									
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988	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	-\$0.3	24	0.003	0.0
989	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.0	30	0.003	0.0
990	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.0	24	0.003	0.0
991	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.0	30	0.003	0.0
992	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.0	23	0.003	0.0
993	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$0.0	31	0.003	0.0

ppendix	D: Res	idential N	/leasure A	ssumptions									
994	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$0.0	24	0.003	0.0
995	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.2	30	0.003	0.0
996	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.2	24	0.003	0.0
997	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.2	30	0.003	0.0
998	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Direct Install	per lamp	1	\$0.2	23	0.003	0.0
999	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$510.6	2701	0.282	0.0

ppenaix	D: Res	idential iv	leasure P	ssumptions									
1000	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$510.6	2356	0.000	0.0
1001	Singl eFa mily &Du plex	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$510.6	1549	0.262	0.0
1002	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$510.6	345	0.282	100.5
1003	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$510.6	0	0.000	100.5
1004	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$315.0	1525	0.196	0.0
1005	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$315.0	684	0.000	0.0
1006	Mult ifami ly	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$315.0	1509	0.182	0.0

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Appendix	D. Res	idential iv	leasure A	ssumptions									
1007	Mult ifami ly	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$315.0	213	0.196	63.9
1008	Mult ifami ly	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	per home	15	\$315.0	0	0.000	63.9
1009	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$426.9	2749	0.321	0.0
1010	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$426.9	2356	0.000	0.0
1011	Singl eFa mily &Du plex	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$426.9	1707	0.321	0.0
1012	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$426.9	393	0.321	114.8
1013	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$426.9	0	0.000	114.8
1014	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$263.3	1554	0.223	0.0
1015	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$263.3	732	0.000	0.0

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1016	Mult ifami	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope	Retrofit	per home	15	\$263.3	1554	0.223	0.0
	ly					with Normal Exposure							
1017	Mult	AC/Gas	Shell	Air Sealing	Sealed Envelope with	Leaky	Retrofit	per home	15	\$263.3	243	0.223	63.9
	ifami	Heat			Normal Exposure	Envelope							
	iy					Exposure							
1018	Mult	Gas Heat	Shell	Air Sealing	Sealed Envelope with	Leaky	Retrofit	per home	15	\$263.3	0	0.000	63.9
	ifami	(No AC)			Normal Exposure	Envelope							
	ly					with Normal Exposure							
1019	Singl	AC/Elect	Shell	Basement	Conditioned	Conditioned	Retrofit	per home	25	\$3,701.3	7926	0.220	0.0
	eFa	ric		Sidewall	basement with code	Space No							
	mily	Resistan		Insulation	level - R13 Cavity	Insulation							
	&Du	ce Heat			Insulation above and								
1020	plex Singl	Electric	Sholl	Pasamont	below grade	Conditioned	Potrofit	por homo	25	¢2 701 2	7657	0.000	0.0
1020	eFa	Resistan	Shell	Sidewall	hasement with code	Space No	Relioni	per nome	25	\$5,701.5	/05/	0.000	0.0
	milv	ce		Insulation	level - R13 Cavity	Insulation							
	, &Du	Heat/No			Insulation above and								
	plex	CAC			below grade								
1021	Singl	Heat	Shell	Basement	Conditioned	Conditioned	Retrofit	per home	25	\$3,701.3	4539	0.220	0.0
	eFa	Pump		Sidewall	basement with code	Space No							
	mily			Insulation	level - R13 Cavity	Insulation							
	&DU ploy				Insulation above and								
1022	Singl	AC/Gas	Shall	Basement	Conditioned	Conditioned	Retrofit	ner home	25	\$3 701 3	612	0 220	373.0
1022	eFa	Heat	Jileii	Sidewall	basement with code	Space No	Retront	per nome	25	<i>43,70</i> 1.5	012	0.220	575.0
	mily			Insulation	level - R13 Cavity	Insulation							
	&Du				Insulation above and								
	plex				below grade								
1023	Singl	Gas Heat	Shell	Basement	Conditioned	Conditioned	Retrofit	per home	25	\$3,701.3	343	0.000	373.0
	eFa	(No AC)		Sidewall	basement with code	Space No							
	mily			Insulation	level - R13 Cavity	Insulation							
	&Du nlev				Insulation above and								
1024	Mult	AC/Flect	Shell	Basement	Conditioned	Conditioned	Retrofit	ner home	25	\$1 811 7	3880	0 121	0.0
1021	ifami	ric	Shen	Sidewall	basement with code	Space No	netrone	per nome	23	<i><i><i>q</i>1,011.7</i></i>	5000	0.121	0.0
	ly	Resistan		Insulation	level - R13 Cavity	Insulation							
		ce Heat			Insulation above and								
1025	N 4 I+	Flastaia	Chall	Deservent	below grade	Canaditianad	Detrefit		25	ć1 011 7	2740	0.000	0.0
1025	iviuit	Electric	Shell	Sidewall	Conditioned	Conditioned	Retrotit	per nome	25	\$1,811.7	3748	0.000	0.0
	lv	CP		Insulation	level - R13 Cavity	Insulation							
	'1	Heat/No			Insulation above and								
		CAC			below grade								

1026	Mult	Heat	Shell	Basement	Conditioned	Conditioned	Retrofit	per home	25	\$1,811.7	2222	0.121	0.0
	ifami	Pump		Sidewall	basement with code	Space No		·					
	ly			Insulation	level - R13 Cavity	Insulation							
					Insulation above and								
					below grade								
1027	Mult	AC/Gas	Shell	Basement	Conditioned	Conditioned	Retrofit	per home	25	\$1,811.7	299	0.121	182.6
	ifami	Heat		Sidewall	basement with code	Space No							
	ly			Insulation	level - R13 Cavity	Insulation							
					Insulation above and								
1028	Mult	Gas Heat	Shell	Basement	Conditioned	Conditioned	Retrofit	per home	25	\$1,811,7	168	0.000	182.6
1010	ifami	(No AC)	U.I.C.I	Sidewall	basement with code	Space No		per nome		<i><i>q1)01111</i></i>	100	0.000	10110
	ly	( /		Insulation	level - R13 Cavity	Insulation							
					Insulation above and								
					below grade								
1029	Singl	AC/Elect	Shell	Basement	Crawlspace with	Crawlspace	Retrofit	per home	25	\$925.3	3940	0.073	0.0
	eFa	ric		Sidewall	code level - R13	No Insulation							
	mily	Resistan		Insulation	Cavity Insulation								
	&Du ploy	ce Heat			above and below								
1030	Singl	Electric	Shell	Basement	Crawlsnace with	Crawlsnace	Retrofit	ner home	25	\$925.3	3850	0.000	0.0
1050	eFa	Resistan	Sheh	Sidewall	code level - R13	No Insulation	Rectoric	per nome	25	<i>Ş525.5</i>	5656	0.000	0.0
	milv	ce		Insulation	Cavity Insulation	No insulation							
	, &Du	Heat/No			above and below								
	plex	CAC			grade								
1031	Singl	Heat	Shell	Basement	Crawlspace with	Crawlspace	Retrofit	per home	25	\$925.3	2237	0.073	0.0
	eFa	Pump		Sidewall	code level - R13	No Insulation							
	mily			Insulation	Cavity Insulation								
	&Du				above and below								
1022	plex	10/000	Chall	Deservent	grade Gravilana an with	Crevelana en	Detrefit		25	60 <b>25</b> 2	262	0.072	107 5
1032	Singi	AC/Gas	Shell	Basement	Crawispace with	Crawispace	Retrofit	per nome	25	\$925.3	262	0.073	187.5
	era milv	пеаг		Insulation	Coue level - R13	NO INSUIACIÓN							
	&Du			moulation	above and below								
	plex				grade								
1033	Singl	Gas Heat	Shell	Basement	Crawlspace with	Crawlspace	Retrofit	per home	25	\$925.3	173	0.000	187.5
	eFa	(No AC)		Sidewall	code level - R13	No Insulation							
	mily			Insulation	Cavity Insulation								
	&Du				above and below								
	plex				grade								
1034	Mult	AC/Elect	Shell	Basement	Crawlspace with	Crawlspace	Retrofit	per home	25	\$452.9	1928	0.040	0.0
	ifami	ric		Sidewall	code level - R13	No Insulation							
	ly	Resistan		Insulation	Cavity Insulation								
		ce Heat			above and below								
1035	Mult	Floctric	Shall	Basement	Crawlspace with	Crawlsnace	Retrofit	ner home	25	\$152 Q	1885	0.000	0.0
1032	ifami	Resistan	JIEII	Sidewall	code level - R13	No Insulation	Neuvil	Per nome	25	Ş4J2.3	1003	0.000	0.0
	ly	ce		Insulation	Cavity Insulation								
	,	Heat/No			above and below								
		CAC			grade								

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ppendix	D: Res	laential iv	leasure P	Assumptions						4.75.0			
1036	Mult	Heat	Shell	Basement	Crawlspace with	Crawlspace	Retrofit	per home	25	\$452.9	1095	0.040	0.0
	ifami	Pump		Sidewall	code level - R13	No Insulation							
	ly			Insulation	Cavity Insulation								
					above and below								
1027	N 4 l+	AC/Cas	Chall	Decement	grade Grawlenges with	Crowlenses	Dotrofit	norhomo	25	¢452.0	100	0.040	01.0
1037	ifami	AC/Gas	Shell	Sidowall	crawispace with	Via Insulation	Retront	pernome	25	\$452.9	128	0.040	91.8
	lidiiii ly	пеаг		Insulation	Covity Insulation	NO INSUIACIÓN							
	iy			insulation	above and below								
					grade								
1038	Mult	Gas Heat	Shell	Basement	Crawlspace with	Crawlspace	Retrofit	per home	25	\$452.9	84	0.000	91.8
	ifami	(No AC)		Sidewall	code level - R13	No Insulation							
	ly	, ,		Insulation	Cavity Insulation								
	,				above and below								
					grade								
1039	Singl	Heat	Shell	Basement	UnConditioned	Uncondition	Retrofit	per home	25	\$3,701.3	2661	0.073	0.0
	eFa	Pump		Sidewall	basement with code	ed Space No							
	mily			Insulation	level - R13 Cavity	Insulation							
	&Du				Insulation above and								
	plex				below grade								
1040	Singl	AC/Gas	Shell	Basement	UnConditioned	Uncondition	Retrofit	per home	25	\$3,701.3	296	0.073	224.6
	eFa	Heat		Sidewall	basement with code	ed Space No							
	mily			Insulation	level - R13 Cavity	Insulation							
	&Du				Insulation above and								
1011	plex	Castlast	Ch all	Deserves	below grade	the second states of	Data (1	and because	25	62 704 2	207	0.000	224.6
1041	Singi	Gas Heat	Shell	Basement	Unconditioned	Uncondition	Retrofit	per nome	25	\$3,701.3	207	0.000	224.6
	era	(NO AC)		Sidewall	basement with code	ed Space No							
	ווווא גיים צ			insulation	level - RIS Cavily	Insulation							
	nlev				helow grade								
10/12	Mult	AC/Elect	Shell	Bacament	UnConditioned	Uncondition	Retrofit	ner home	25	\$1 811 7	2301	0.040	0.0
1042	ifami	ric	Jiich	Sidewall	basement with code	ed Space No	Rectoric	per nome	25	<i>Ş1,011.7</i>	2301	0.040	0.0
	lv	Resistan		Insulation	level - R13 Cavity	Insulation							
	.,	ce Heat		moundion	Insulation above and	modulion							
					below grade								
1043	Mult	Electric	Shell	Basement	UnConditioned	Uncondition	Retrofit	per home	25	\$1,811.7	2257	0.000	0.0
	ifami	Resistan		Sidewall	basement with code	ed Space No		·					
	ly	ce		Insulation	level - R13 Cavity	Insulation							
		Heat/No			Insulation above and								
		CAC			below grade								
1044	Mult	Heat	Shell	Basement	UnConditioned	Uncondition	Retrofit	per home	25	\$1,811.7	1303	0.040	0.0
	ifami	Pump		Sidewall	basement with code	ed Space No							
	ly			Insulation	level - R13 Cavity	Insulation							
					Insulation above and								
					below grade								
1045	Mult	AC/Gas	Shell	Basement	UnConditioned	Uncondition	Retrofit	per home	25	\$1,811.7	145	0.040	109.9
	itami	Heat		Sidewall	basement with code	ed Space No							
	ly			Insulation	level - R13 Cavity	insulation							
					Insulation above and								
					below grade								

ppendi	CD: Res	idential N	leasure A	ssumptions									
1046	Mult ifami ly	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Uncondition ed Space No Insulation	Retrofit	per home	25	\$1,811.7	101	0.000	109.9
1047	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Basement Sidewall Insulation	UnConditioned space with code level - R13 Cavity Insulation above and below grade	Uncondition ed Space No Insulation	Retrofit	per home	25	\$3,701.3	4701	0.073	0.0
1048	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Basement Sidewall Insulation	UnConditioned space with code level - R13 Cavity Insulation above and below grade	Uncondition ed Space No Insulation	Retrofit	per home	25	\$3,701.3	4611	0.000	0.0
1049	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$2,024.6	5033	0.094	0.0
1050	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$2,024.6	4919	0.000	0.0
1051	Singl eFa mily &Du plex	Heat Pump	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$2,024.6	2858	0.094	0.0
1052	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$2,024.6	335	0.094	239.8
1053	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$2,024.6	221	0.000	239.8
1054	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	4824	0.101	0.0
1055	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	4714	0.000	0.0

1056	Mult	Heat	Shell	Floor insulation	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	2739	0.101	0.0
	ly	Pump		crawlspace									
)57	Mult	AC/Gas	Shell	Floor insulation	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	321	0.101	229.8
	ifami Iv	Heat		above crawlspace									
050	.,	Castlast	Ch all			too letter	Datas		25	<u> </u>	211	0.000	220.0
058	ifami	Gas Heat (No AC)	Shell	above	R30 Floor Insulation	no insulation	Retrofit	per nome	25	\$1,940.4	211	0.000	229.8
	ly	. ,		crawlspace									
059	Singl	Heat	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$1,738.3	289	0.023	0.0
	eFa milv	Pump		Ceiling/Attic	Insulation + R5 Sheathing	Cavity Insulation	Constructi on						
	&Du			moducion	Sheating	modución	on						
060	plex Singl	AC/Flect	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$1,738,3	497	0.023	0.0
	eFa	ric	<b>U</b>	Ceiling/Attic	Insulation + R5	Cavity	Constructi	perme	20	<i>\\\\\</i>	101	0.010	010
	mily	Resistan		Insulation	Sheathing	Insulation	on						
	&Du plex	ce Heat											
061	Singl	Electric	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$1,738.3	469	0.000	0.0
	eFa milv	Resistan		Ceiling/Attic	Insulation + R5 Sheathing	Cavity	Constructi						
	&Du	Heat/No		insulation	Sheathing	insulation	on						
	plex	CAC											
062	Singl	AC/Gas Heat	Shell	Wall and Ceiling/Attic	R19 Wall Cavity	R19 Wall Cavity	New Constructi	per home	25	\$1,738.3	28	0.023	22.9
	mily	neut		Insulation	Sheathing	Insulation	on						
	&Du												
.063	Singl	Gas Heat	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$1,738.3	21	0.000	22.9
	eFa	(No AC)		Ceiling/Attic	Insulation + R5	Cavity	Constructi						
	mily &Du			Insulation	Sheathing	Insulation	on						
	plex												
.064	Mult	Heat	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$522.5	87	0.008	0.0
	ifami Iv	Pump		Ceiling/Attic	Insulation + R5 Sheathing	Cavity	Constructi						
	'y			modulion	Sheating	modulion	UII						
.065	Mult	AC/Elect	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$522.5	149	0.008	0.0
	ifami	ric Resistan		Ceiling/Attic	Insulation + R5 Sheathing	Cavity	Constructi						
	'y	ce Heat		modulion	Sheating	modulion	UII						
.066	Mult	Electric	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$522.5	141	0.000	0.0
	ifami	Resistan		Ceiling/Attic	Insulation + R5	Cavity	Constructi						
	iy	Le		IIISulduUII	Sileating	IIISUIALIUII	UII						

Appendix	k D: Res	idential N	leasure A	Assumptions									
		Heat/No											
		CAC											
1067	Mult	AC/Gas	Sholl	Walland	P10 Wall Cavity	P10 Wall	Now	por homo	25	¢522 5	0	0.008	6.0
1007	ifami	AC/Gas	Shell	Coiling/Attic	Inculation + P5	Cavity	Constructi	per nome	25	Ş522.5	0	0.008	0.9
	lv	neat		Insulation	Sheathing	Insulation	on						
	'y			insulation	Sheathing	modulion	on						
1068	Mult	Gas Heat	Shell	Wall and	R19 Wall Cavity	R19 Wall	New	per home	25	\$522.5	6	0.000	6.9
	ifami	(No AC)		Ceiling/Attic	Insulation + R5	Cavity	Constructi						
	ly			Insulation	Sheathing	Insulation	on						
1069	Singl	Heat	Shell	Wall and	R19 Wall Insulation	Uninsulated	Retrofit	per home	25	\$3,608.8	2964	0.231	0.0
	e⊦a	Pump		Ceiling/Attic		external wall							
	mily 8 Du			Insulation									
	nlex												
1070	Singl	AC/Elect	Shell	Wall and	R19 Wall Insulation	Uninsulated	Retrofit	per home	25	\$3,608.8	5092	0.231	0.0
	eFa	ric		Ceiling/Attic		external wall							
	mily	Resistan		Insulation									
	&Du	ce Heat											
	plex												
1071	Singl	Electric	Shell	Wall and	R19 Wall Insulation	Uninsulated	Retrofit	per home	25	\$3,608.8	4810	0.000	0.0
	eFa	Resistan		Ceiling/Attic		external wall							
	mily	ce		Insulation									
	&Du nlev	Heat/NO											
1072	Singl	AC/Gas	Shell	Wall and	R19 Wall Insulation	Uninsulated	Retrofit	per home	25	\$3,608,8	282	0.231	234.3
10/2	eFa	Heat	Shen	Ceiling/Attic		external wall	netrone	per nome	25	\$3,000.0	202	0.231	25115
	mily			Insulation									
	&Du												
	plex												
1073	Singl	Gas Heat	Shell	Wall and	<b>R19 Wall Insulation</b>	Uninsulated	Retrofit	per home	25	\$3,608.8	216	0.000	234.3
	eFa	(No AC)		Ceiling/Attic		external wall							
	mily			Insulation									
	&Du												
1074	piex	Heat	Shall	Walland	P10 Wall Insulation	Uninculated	Potrofit	norhomo	25	¢1 094 9	901	62 747	0.0
1074	ifami	Pump	Shell		K19 Wall Insulation	external wall	Kelioni	per nome	25	\$1,064.6	691	02.747	0.0
	lv	rump		Insulation		external wall							
	.,			modulion									
1075	Mult	AC/Elect	Shell	Wall and	R19 Wall Insulation	Uninsulated	Retrofit	per home	25	\$1,084.8	1531	62.747	0.0
	ifami	ric		Ceiling/Attic		external wall		·					
	ly	Resistan		Insulation									
		ce Heat											
1076	Mult	Electric	Shell	Wall and	<b>R19 Wall Insulation</b>	Uninsulated	Retrofit	per home	25	\$1,084.8	1446	62.747	0.0
	ifami	Resistan		Ceiling/Attic		external wall							
	ly	ce		Insulation									

Appendix	k D: Res	idential N	leasure A	ssumptions									
		Heat/No CAC											
1077	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$1,084.8	85	62.747	70.4
1078	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$1,084.8	65	62.747	70.4
1079	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	3530	0.238	0.0
1080	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	6100	0.238	0.0
1081	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	5809	0.000	0.0
1082	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	291	0.238	282.9
1083	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	260	0.000	282.9
1084	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	798	0.054	0.0
1085	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	1379	0.054	0.0

ppendix	D: Res	idential N	leasure A	ssumptions									
1086	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	1313	0.000	0.0
1087	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	66	0.054	64.0
1088	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	59	0.000	64.0
1089	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,433.0	271	0.018	0.0
1090	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,433.0	468	0.018	0.0
1091	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,433.0	445	0.000	0.0
1092	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,433.0	22	0.018	21.7
1093	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,433.0	20	0.000	21.7
1094	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	3352	203.959	0.0
1095	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	5791	203.959	0.0

Appendi	k D: Res	idential N	Aeasure A	ssumptions									
1096	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	5516	203.959	0.0
1097	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	276	203.959	268.7
1098	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	247	203.959	268.7
1099	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	765	46.498	0.0
1100	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	1321	46.498	0.0
1101	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	1258	46.498	0.0
1102	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	63	46.498	61.3
1103	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	56	46.498	61.3
1104	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,373.4	259	15.769	0.0
1105	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,373.4	448	15.769	0.0
1106	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,373.4	427	15.769	0.0

Appendix	<u>D:</u> Res	idential N	<u>leasure</u> A	ssumptions									
1107	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,373.4	21	15.769	20.8
1108	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,373.4	19	15.769	20.8
1109	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,392.7	3647	0.246	0.0
1110	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,392.7	6301	0.246	0.0
1111	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,392.7	6001	0.000	0.0
1112	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,392.7	300	0.246	292.3
1113	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,392.7	269	0.000	292.3
1114	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	915	0.061	0.0
1115	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	1580	0.061	0.0
1116	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	1505	0.000	0.0

Appendix	D: Res	idential N	leasure A	ssumptions									
1117	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	75	0.061	73.3
1118	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,024.6	67	0.000	73.3
1119	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	387	0.026	0.0
1120	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	669	0.026	0.0
1121	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	638	0.000	0.0
1122	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	32	0.026	31.1
1123	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,656.5	29	0.000	31.1
1124	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$972.9	117	0.008	0.0
1125	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$972.9	202	0.008	0.0
1126	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$972.9	192	0.000	0.0

ppendix	D: Res	idential N	/leasure A	ssumptions		10, inches of	Dotrofit	norhere	25	6072.0	10	0.000	0.4
1127	eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$972.9	10	0.008	9.4
1128	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$972.9	9	0.000	9.4
1129	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,293.2	3464	210.767	0.0
1130	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,293.2	5985	210.767	0.0
1131	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,293.2	5700	210.767	0.0
1132	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,293.2	285	210.767	277.6
1133	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	per home	25	\$2,293.2	255	210.767	277.6
1134	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	877	53.305	0.0
1135	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	1515	53.305	0.0
1136	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	1443	53.305	0.0
1137	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	72	53.305	70.3

Appendix	D: Res	idential N	leasure A	ssumptions									
1138	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,940.4	65	53.305	70.3
1139	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	371	22.576	0.0
1140	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	642	22.576	0.0
1141	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	611	22.576	0.0
1142	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	31	22.576	29.8
1143	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	per home	25	\$1,587.6	27	22.576	29.8
1144	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$932.4	112	6.808	0.0
1145	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$932.4	193	6.808	0.0
1146	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$932.4	184	6.808	0.0
1147	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$932.4	9	6.808	9.0
1148	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	per home	25	\$932.4	8	6.808	9.0

Appendix	D: Res	idential N	leasure A	ssumptions									
1149	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$972.9	74	0.005	0.0
1150	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$972.9	128	0.005	0.0
1151	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$972.9	122	0.000	0.0
1152	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$972.9	6	0.005	5.9
1153	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$973.0	5	0.000	5.9
1154	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$932.0	71	4.311	0.0
1155	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$932.0	123	4.311	0.0
1156	Mult ifami ly	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$932.0	117	4.311	0.0
1157	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$932.4	6	4.311	5.7
1158	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Constructi on	per home	25	\$932.0	5	4.311	5.7

ppendix	D: Res	idential l	Vieasure As	sumptions									
1159	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	AC unit	12	\$40.0	8	0.011	0.0
1160	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	New Constructi on	AC unit	12	\$40.0	8	0.011	0.0
1161	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	AC unit	12	\$40.0	8	0.011	0.0
1162	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditioner	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	New Constructi on	AC unit	12	\$40.0	8	0.011	0.0
1163	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,518.0	4323	0.232	0.0
1164	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,518.0	4361	0.232	0.0
1165	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,655.0	4348	0.249	0.0

1166	Singl	AC/Elect	HVAC	Air Source Heat	SEER 16	Existing	Early	per ton	18	\$1,655.0	4390	0.249	0.0
	eFa	ric		Pump		electric	Replacem						
	mily	Resistan				resistance	ent						
	&Du	ce Heat				with AC/dual							
	plex					baseline =							
						heat pump							
1167	Mult	AC/Elect	HVAC	Air Source Heat	SEER 17	Existing	Early	per ton	18	\$1,792.0	4371	0.264	0.0
	ifami	ric		Pump		electric	Replacem						
	iy	Resistan				resistance	ent						
		се пеас				with AC/dual							
						baseline –							
1168	Singl	AC/Flect	HVAC	Air Source Heat	SEER 17	Existing	Farly	ner ton	18	\$1 792 0	4415	0 264	0.0
1100	eFa	ric	iiiiiie	Pump	JEEN I	electric	Replacem	perton	10	<i>\\\\\\\\\\\\\</i>	1115	0.201	0.0
	mily	Resistan		·		resistance	ent						
	&Du	ce Heat				with AC/dual							
	plex					baseline =							
						heat pump							
1169	Mult	AC/Elect	HVAC	Air Source Heat	SEER 18	Existing	Early	per ton	18	\$1,929.0	4390	0.277	0.0
	ifami	ric		Pump		electric	Replacem						
	ly	Resistan				resistance	ent						
		ce Heat				with AC/dual							
						baseline =							
1170	Cinal	AC/Floot		Air Course Heat		neat pump	Forbe	norton	10	¢1 020 0	4427	0.277	0.0
1170	Singi	AC/Elect	HVAC	Air Source Heat	SEEK 18	electric	Early	per ton	18	\$1,929.0	4437	0.277	0.0
	era milv	Resistan		Pullip		resistance	ont						
	&Du	ce Heat				with AC/dual	ent						
	plex	de neue				baseline =							
	P -					heat pump							
1171	Mult	Heat	HVAC	Air Source Heat	SEER 15	Federal	New	per ton	18	\$137.0	268	0.019	0.0
	ifami	Pump		Pump		minimum	Constructi						
	ly					SEER14 and	on						
						HSPF 8.2							
						equipment							
1172	Singl	Heat	HVAC	Air Source Heat	SEER 15	Federal	New	per ton	18	\$137.0	272	0.019	0.0
	eFa	Pump		Pump		minimum	Constructi						
	mily					SEER14 and	on						
	&DU play					HSPF 8.2							
1172	Mult	Host	HVAC	Air Source Heat	SEED 16	Eodoral	Now	nor ton	19	¢127.0	204	0.027	0.0
11/5	ifami	Pump	HVAC	All Source near	SEEK 10	minimum	Constructi	perton	10	\$157.0	294	0.057	0.0
	lv	Fump		Fullip		SEER14 and	on						
	iy					HSPF 8 2	on						
						equipment							
1174	Singl	Heat	HVAC	Air Source Heat	SEER 16	Federal	New	per ton	18	\$137.0	300	0.037	0.0
	eFa	Pump		Pump		minimum	Constructi						
	mily	•		-		SEER14 and	on						
	&Du					HSPF 8.2							
	plex					equipment							

1175	Mult	Heat	HVAC	Air Source Heat	SEER 17	Federal	New	per ton	18	\$137.0	316	0.052	0.0
	ifami	Pump		Pump		minimum	Constructi						
	ly					SEER14 and	on						
						HSPF 8.2							
						equipment							
1176	Singl	Heat	HVAC	Air Source Heat	SEER 17	Federal	New	per ton	18	\$137.0	326	0.052	0.0
	eFa	Pump		Pump		minimum	Constructi						
	mily					SEER14 and	on						
	&Du					HSPF 8.2							
1177	Mult	Hoat	нулс	Air Sourco Hoot	CEED 19	Endoral	Now	nor ton	19	¢127.0	226	0.065	0.0
11//	ifami	Dump	IIVAC	Pump	JLLN 10	minimum	Constructi	perton	10	\$137.0	330	0.005	0.0
	lv	rump		rump		SEER14 and	on						
	'y					HSPF 8.2	on						
						equipment							
1178	Singl	Heat	HVAC	Air Source Heat	SEER 18	Federal	New	per ton	18	\$137.0	348	0.065	0.0
	eFa	Pump		Pump		minimum	Constructi						
	mily					SEER14 and	on						
	&Du					HSPF 8.2							
	plex					equipment							
1179	Mult	Heat	HVAC	Air Source Heat	SEER 15	Federal	Time of	per ton	18	\$137.0	268	0.019	0.0
	ifami	Pump		Pump		minimum	Sale						
	ly					SEER14 and							
						HSPF 8.2							
1100	Cinal	Heat		Air Course Lleat		Endoral	Time of	norton	10	¢127.0	272	0.010	0.0
1180	Singi	Dump	HVAC		SEEK 15	rederal	Salo	perton	18	\$137.0	272	0.019	0.0
	milv	Fump		Fullip		SEER14 and	Sale						
	&Du					HSPE 8 2							
	plex					equipment							
1181	Mult	Heat	HVAC	Air Source Heat	SEER 16	Federal	Time of	per ton	18	\$137.0	294	0.037	0.0
	ifami	Pump		Pump		minimum	Sale			·			
	ly	·		·		SEER14 and							
						HSPF 8.2							
						equipment							
1182	Singl	Heat	HVAC	Air Source Heat	SEER 16	Federal	Time of	per ton	18	\$137.0	300	0.037	0.0
	eFa	Pump		Pump		minimum	Sale						
	mily					SEER14 and							
	&Du					HSPF 8.2							
4400	plex				0000 47	equipment			10	6407.0	246	0.050	
1183	Mult	Heat	HVAC	Air Source Heat	SEER 17	Federal	Lime of	per ton	18	\$137.0	316	0.052	0.0
	Irami	Pump		Pump		minimum	Sale						
	iy												
						equinment							
1184	Singl	Heat	Ηνας	Air Source Heat	SEER 17	Federal	Time of	ner ton	18	\$137.0	326	0.052	0.0
1104	eFa	Pump	TTVAC	Pump	JEEN 17	minimum	Sale		10	4137.U	520	0.052	0.0
	mily	· •···P				SEER14 and							
	, &Du					HSPF 8.2							

1185	Mult ifami	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum	Time of Sale	per ton	18	\$137.0	336	0.065	0.0
	ly					SEER14 and HSPF 8.2 equipment							
1186	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	348	0.065	0.0
1187	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2555	0.222	0.0
1188	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2592	0.222	0.0
1189	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5011	0.254	0.0
1190	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5054	0.254	0.0
1191	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	1178	0.044	0.0
1192	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	1186	0.044	0.0
1193	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	957	0.042	0.0
1194	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	965	0.042	0.0

ppenaix	D: Res	lidential iv	leasure A	ssumptions									
1195	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	5082	0.132	0.0
1196	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	5105	0.132	0.0
1197	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4796	0.093	0.0
1198	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4811	0.093	0.0
1199	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2579	0.238	0.0
1200	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2619	0.238	0.0
1201	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5035	0.270	0.0
1202	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5081	0.270	0.0
1203	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	691	0.058	0.0

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Appendix	CD: Res	idential N	/leasure A	ssumptions									
1204	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	702	0.058	0.0
1205	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	1178	0.044	0.0
1206	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	1186	0.044	0.0
1207	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4485	0.078	0.0
1208	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4497	0.078	0.0
1209	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	5082	0.132	0.0
1210	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	5105	0.132	0.0
1211	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2864	0.277	0.0
1212	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2913	0.277	0.0

<pre>\ppendix</pre>	D: Res	idential N	/leasure A	ssumptions									
1213	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5321	0.309	0.0
1214	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	5374	0.309	0.0
1215	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	981	0.090	0.0
1216	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	per ton	25	\$2,021.0	999	0.090	0.0
1217	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	691	0.058	0.0
1218	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	per ton	25	\$2,021.0	702	0.058	0.0
1219	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4797	0.124	0.0
1220	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	per ton	25	\$1,100.0	4819	0.124	0.0
1221	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric resistance heating	New Constructi on	per ton	25	\$1,100.0	4485	0.078	0.0
1222	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric	New Constructi on	per ton	25	\$1,100.0	4497	0.078	0.0

Appendix	D: Res	idential N	/leasure A	ssumptions									
						resistance heating							
1223	Mult ifami ly	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2267	0.224	0.0
1224	Singl eFa mily &Du plex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing air source heat pump	Early Replacem ent	per ton	25	\$3,957.0	2305	0.224	0.0
1225	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	4724	0.256	0.0
1226	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing AC, electric heating	Early Replacem ent	per ton	25	\$3,957.0	4766	0.256	0.0
1227	Singl eFa mily &Du plex	Heat Pump	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	per unit	18	\$3,750.0	2085	0.036	0.0
1228	Mult ifami ly	Heat Pump	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	per unit	18	\$3,750.0	1355	0.023	0.0
1229	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	per unit	18	\$3,750.0	4588	0.000	0.0
1230	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	per unit	18	\$3,750.0	2982	0.000	0.0
1231	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	per unit	18	\$3,750.0	5098	0.322	0.0

1232	Mult ifami	AC/Elect ric Resistan	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance	Retrofit	per unit	18	\$3,750.0	3314	0.209	0.0
	'y	ce Heat			instance in noncy	heating with PTAC/PTHP							
1233	Singl eFa mily &Du	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with	Retrofit	per unit	18	\$3,750.0	5128	0.376	0.0
1001	plex	10/51		<b>D</b> 11 11 1		room AC	D 1 (1)		10	40.750.0	2222		
1234	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1.5-I on Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	per unit	18	\$3,750.0	3333	0.244	0.0
1235	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVH P < 65kBtu/hr	Retrofit	per unit	18	\$3,750.0	5008	0.134	0.0
1236	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVH P < 65kBtu/hr	Retrofit	per unit	18	\$3,750.0	3255	0.087	0.0
1237	Singl eFa mily &Du plex	Heat Pump	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump	Existing ducted ASHP	Retrofit	per unit	18	\$3,000.0	272	0.019	0.0
1238	Singl eFa mily &Du plex	Heat Pump	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	per unit	18	\$3,000.0	1407	0.024	0.0
1239	Mult ifami ly	Heat Pump	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	per unit	18	\$3,000.0	915	0.015	0.0
1240	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	per unit	18	\$3,000.0	3099	0.000	0.0

1241	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	per unit	18	\$3,000.0	2014	0.000	0.0
1242	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	per unit	18	\$3,000.0	3439	0.215	0.0
1243	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	per unit	18	\$3,000.0	2236	0.140	0.0
1244	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	per unit	18	\$3,000.0	3459	0.251	0.0
1245	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	per unit	18	\$3,000.0	2248	0.163	0.0
1246	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVH P < 65kBtu/hr	Retrofit	per unit	18	\$3,000.0	3379	0.089	0.0
1247	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVH P < 65kBtu/hr	Retrofit	per unit	18	\$3,000.0	2196	0.058	0.0
1248	Singl eFa mily &Du plex	Heat Pump	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	per unit	18	\$4,500.0	2195	0.048	0.0
1249	Mult ifami ly	Heat Pump	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	per unit	18	\$4,500.0	1427	0.031	0.0

Appendix	D: Res	idential N	Aeasure As	sumptions									
1250	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	per unit	18	\$4,500.0	4740	0.000	0.0
1251	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	per unit	18	\$4,500.0	3081	0.000	0.0
1252	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	per unit	18	\$4,500.0	5422	0.430	0.0
1253	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	per unit	18	\$4,500.0	3524	0.279	0.0
1254	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	per unit	18	\$4,500.0	5460	0.501	0.0
1255	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	per unit	18	\$4,500.0	3549	0.326	0.0
1256	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVH P < 65kBtu/hr	Retrofit	per unit	18	\$4,500.0	5300	0.179	0.0
1257	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVH P < 65kBtu/hr	Retrofit	per unit	18	\$4,500.0	3445	0.116	0.0
1258	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Time of Sale	per unit	13	\$1,000.0	1961	0.093	0.0

**ICF** International

1259	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	New	per unit	13	\$1,000.0	1961	0.093	0.0
	eFa	DHW		Water Heaters	Heater EF 2.0	Water	Constructi						
	mily	w/Electri				Heater	on						
	&Du	с											
	plex	Heating											
		Rate											
1260	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Retrofit	per unit	13	\$1,575.0	1961	0.093	0.0
	eFa	DHW		Water Heaters	Heater EF 2.0	Water							
	mily	w/Electri				Heater							
	&Du	С											
	plex	Heating											
		Rate											
1261	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Time of	per unit	13	\$1,000.0	1344	0.064	0.0
	ifami	DHW		Water Heaters	Heater EF 2.0	Water	Sale						
	ly	w/Electri				Heater							
		С											
		Heating											
		Rate											
1262	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	New	per unit	13	\$1,000.0	1344	0.064	0.0
	itami	DHW		Water Heaters	Heater EF 2.0	Water	Constructi						
	ly	w/Electri				Heater	on						
		c											
		Heating											
1969		Rate				<b>EL</b>	<b>D i i i</b>		40	64 ETE 0	1011	0.004	
1263	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Retrofit	per unit	13	\$1,575.0	1344	0.064	0.0
	Itami	DHW /Ele etri		Water Heaters	Heater EF 2.0	water							
	iy	W/Electri				Heater							
		C											
		Pata											
1264	Singl	Floctric	Hot Water	Hoat Dump	Heat Dump Water	Electric	Time of	por unit	12	¢1 000 0	2270	0 109	0.0
1204	oFo		HUL WALEI	Matar Hastars	Heat Pullip Water	Electric Water	Salo	per unit	15	\$1,000.0	22/9	0.108	0.0
	era milv	W/Non-		Waler Healers		Heater	Sale						
	8.Du	Flectric				Heater							
	nlov	Heating											
	piex	Rate											
1265	Singl	Flectric	Hot Water	Heat Pump	Heat Pumn Water	Flectric	New	ner unit	13	\$1,000,0	2279	0 108	0.0
1205	eFa	DHW	not water	Water Heaters	Heater FF 2 0	Water	Constructi	per unit	15	Ŷ1,000.0	2275	0.100	0.0
	milv	w/Non-		Water fielders		Heater	on						
	&Du	Flectric				neuter	on						
	nlex	Heating											
	pien	Rate											
1266	Singl	Flectric	Hot Water	Heat Pump	Heat Pump Water	Flectric	Retrofit	per unit	13	\$1,575.0	2279	0.108	0.0
-200	eFa	DHW		Water Heaters	Heater EF 2.0	Water	netront	per unic	10	Ŷ1,373.0	22,5	0.100	0.0
	milv	w/Non-				Heater							
	&Du	Electric											
	plex	Heating											
		Rate											

1267	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Time of	per unit	13	\$1,000.0	1604	0.076	0.0
	ifami	DHW		Water Heaters	Heater EF 2.0	Water	Sale						
	ly	w/Non-				Heater							
		Electric											
		Heating											
1268	Mul+	Floctric	Hot Wator	Host Dump	Host Pump Water	Eloctric	Now	por unit	12	\$1 000 0	1604	0.076	0.0
1200	ifami	DHW	not water	Water Heaters	Heater FE 2 0	Water	Constructi	per unit	15	\$1,000.0	1004	0.070	0.0
	lv	w/Non-		Water fieaters		Heater	on						
	'y	Flectric				neater	on						
		Heating											
		Rate											
1269	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Retrofit	per unit	13	\$1,575.0	1604	0.076	0.0
	ifami	DHW		Water Heaters	Heater EF 2.0	Water							
	ly	w/Non-				Heater							
		Electric											
		Heating											
		Rate								4			
1270	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Time of	per unit	13	\$1,134.0	2229	0.106	0.0
	e⊦a	DHW		Water Heaters	Heater EF 2.35	Water	Sale						
	mily 8 Du	W/Electri				Heater							
	&Du ploy	C											
	piex	Rate											
1271	Singl	Flectric	Hot Water	Heat Pump	Heat Pump Water	Flectric	New	per unit	13	\$1,134,0	2229	0.106	0.0
12/1	eFa	DHW	not water	Water Heaters	Heater FE 2.35	Water	Constructi	per une	10	<i>\</i> <b>1</b> ,15 1.0	LLLJ	0.100	0.0
	milv	w/Electri				Heater	on						
	&Du	С											
	plex	Heating											
	-	Rate											
1272	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Retrofit	per unit	13	\$1,703.0	2229	0.106	0.0
	eFa	DHW		Water Heaters	Heater EF 2.35	Water							
	mily	w/Electri				Heater							
	&Du	С											
	plex	Heating											
		Rate											
1273	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Time of	per unit	13	\$1,134.0	1524	0.072	0.0
	Ifami	DHW		Water Heaters	Heater EF 2.35	Water	Sale						
	iy	w/Electri				Heater							
		L											
		Pato											
127/	Mult	Flectric	Hot Wator	Heat Pump	Heat Pump Wator	Floctric	Νοω	ner unit	13	\$1 134 0	152/	0.072	0.0
12/4	ifami	DHW	not water	Water Heaters	Heater FF 2 35	Water	Constructi	per unit	12	γ1,104.U	1324	0.072	0.0
	lv	w/Flectri		water neaters		Heater	n						
	·y	с.				incutci	011						
		Heating											
		Rate											

1275	Mult ifami	Electric DHW	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water	Retrofit	per unit	13	\$1,703.0	1524	0.072	0.0
	lv	w/Flectri				Heater							
	.,	С											
		Heating											
		Rate											
1276	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Time of	per unit	13	\$1,134.0	2593	0.123	0.0
	eFa	DHW		Water Heaters	Heater EF 2.35	Water	Sale			. ,			
	mily	w/Non-				Heater							
	&Du	Electric											
	plex	Heating											
		Rate											
1277	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	New	per unit	13	\$1,134.0	2593	0.123	0.0
	eFa	DHW		Water Heaters	Heater EF 2.35	Water	Constructi						
	mily	w/Non-				Heater	on						
	&Du	Electric											
	plex	Heating											
		Rate											
1278	Singl	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Retrofit	per unit	13	\$1,703.0	2593	0.123	0.0
	eFa	DHW		Water Heaters	Heater EF 2.35	Water							
	mily	w/Non-				Heater							
	&Du	Electric											
	plex	Heating											
		Rate											
1279	Mult	Electric	Hot Water	Heat Pump	Heat Pump Water	Electric	Time of	per unit	13	\$1,134.0	1822	0.086	0.0
	ifami	DHW		Water Heaters	Heater EF 2.35	Water	Sale						
	ly	w/Non-				Heater							
		Electric											
		Heating											
1200	N 4 I.t.	Kate	List Mater	Liest Duran	Llast Duran Matan	Clastria	New		10	¢1 124 0	1022	0.090	0.0
1280	iviuit	Electric	Hot water	Heat Pump	Heat Pump Water	Electric	New	perunit	13	\$1,134.0	1822	0.086	0.0
	Itami	DHW w/Non		water Heaters	Heater EF 2.35	Water	Constructi						
	iy	W/NUII-				пеацеі	011						
		Hosting											
		Rato											
1281	Mult	Floctric	Hot Water	Heat Pump	Heat Pump Water	Floctric	Retrofit	ner unit	13	\$1 703 0	1877	0.086	0.0
1201	ifami		not water	Water Heaters	Heater FE 2 35	Water	Retront	per unit	15	\$1,703.0	1022	0.080	0.0
	lv	w/Non-		water neaters	ficater Er 2.55	Heater							
	• • •	Flectric				ricuter							
		Heating											
		Rate											
1282	Singl	Gas	Other	Residential	1.93% Energy-Lise	Legacy	Retrofit	per home	1	\$1.0	181	0.008	0.0
1202	eFa	Heating	Calci	Mailed Home	Reduction	Program	netront	per nome	-	Υ <b>1.</b> 0	101	0.000	0.0
	milv			Energy Report		Participants -							
	&Du			(HER)		currently							
	plex			、·=··/		receiving							

ppendix	<u>(D: Res</u>	idential N	<u>Aleasure</u> A	ssumptions									
1283	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participants - currently receiving HER	Retrofit	per home	1	\$1.0	83	0.004	0.0
1284	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participants - currently receiving HER	Retrofit	per home	1	\$1.0	419	0.018	0.0
1285	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participants - currently receiving HER	Retrofit	per home	1	\$1.0	196	0.008	0.0
1286	Singl eFa mily &Du plex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - first year	Retrofit	per home	1	\$1.0	181	0.008	0.0
1287	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - first year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1288	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - first year	Retrofit	per home	1	\$1.0	419	0.018	0.0
1289	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - first year	Retrofit	per home	1	\$1.0	196	0.008	0.0
1290	Singl eFa mily &Du plex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	per home	1	\$1.0	181	0.008	0.0

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ppenaix	D: Res	idential N	leasure A	ssumptions									
1291	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1292	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	per home	1	\$1.0	419	0.018	0.0
1293	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	per home	1	\$1.0	196	0.008	0.0
1294	Singl eFa mily &Du plex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	per home	1	\$1.0	181	0.008	0.0
1295	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1296	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	per home	1	\$1.0	419	0.018	0.0
1297	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	per home	1	\$1.0	196	0.008	0.0
1298	Singl eFa mily &Du plex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	per home	1	\$1.0	181	0.008	0.0

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ppenaix	D: Res	idential iv	leasure A	ssumptions									
1299	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1300	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	per home	1	\$1.0	419	0.018	0.0
1301	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	per home	1	\$1.0	196	0.008	0.0
1302	Singl eFa mily &Du plex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	per home	1	\$1.0	181	0.008	0.0
1303	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1304	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	per home	1	\$1.0	419	0.018	0.0
1305	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	per home	1	\$1.0	196	0.008	0.0
1306	Singl eFa mily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of	Expansion Program Participant in 2023 -	Retrofit	per home	1	\$1.0	181	0.008	0.0

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ppendix	D: Res	idential N	/leasure A	ssumptions									
	&Du plex				Expansion Participant in 2023	remaining customers- second year							
1307	Mult ifami ly	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1308	Singl eFa mily &Du plex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	per home	1	\$1.0	419	0.018	0.0
1309	Mult ifami ly	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole-house Energy- Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	per home	1	\$1.0	196	0.008	0.0
1310	Singl eFa mily &Du plex	Gas Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	Legacy Program Participants - currently enrolled in C3 platform w/eHER	Retrofit	per home	1	\$1.0	189	0.000	0.0
1311	Mult ifami ly	Gas Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	Legacy Program Participants - currently opt-in C3 platform w/eHER	Retrofit	per home	1	\$1.0	87	0.000	0.0
1312	Singl eFa mily &Du plex	Electric Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	Legacy Program Participants - currently opt-in C3 platform w/eHER	Retrofit	per home	1	\$1.0	439	0.000	0.0
1313	Mult ifami ly	Electric Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	Legacy Program Participants - currently	Retrofit	per home	1	\$1.0	205	0.000	0.0
•				·		opt-in C3 platform w/eHER							
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1314	Singl eFa mily &Du plex	Gas Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	per home	1	\$1.0	356	0.000	0.0
1315	Mult ifami ly	Gas Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	per home	1	\$1.0	164	0.000	0.0
1316	Singl eFa mily &Du plex	Electric Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	per home	1	\$1.0	825	0.000	0.0
1317	Mult ifami ly	Electric Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	per home	1	\$1.0	386	0.000	0.0
1318	Singl eFa mily &Du plex	Gas Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - Year 4th and after	Retrofit	per home	1	\$1.0	189	0.000	0.0
1319	Mult ifami ly	Gas Heating	Other	Residential Web- based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - Year 4th and after	Retrofit	per home	1	\$1.0	87	0.000	0.0

1320	Singl	Electric	Other	Residential Web-	Energy-Use	New	Retrofit	per home	1	\$1.0	439	0.000	0.0
	e⊦a milv	Heating		with eHER	Reduction	enroll to							
	&Du					Web-based							
	plex					Platform							
						with eHER -							
						Year 4th and							
1321	Mult	Flectric	Other	Residential Web-	Energy-Lise	New	Retrofit	ner home	1	\$1.0	205	0.000	0.0
1921	ifami	Heating	other	based Platform	Reduction	Customers	Retront	per nome	1	φ1.0	205	0.000	0.0
	ly	U		with eHER		enroll to							
						Web-based							
						Platform							
						With eHER - Voar 4th and							
						after							
1322	All	Gas	Other	Smart WiFi	Smart WiFi	Non-	Retrofit	per home	5	\$225.0	234	0.188	0.0
		Heating		Thermostat	Thermostat	programmab							
						le Thormostat							
1222	A II	Cas	Other	Connected	Connected homes -	Homowing	Dotrofit	norunit	-	622F 0	F 2 9	0.100	0.0
1323	All	Gas Heating	Other	homes - Old	Smart WiFi	web-based	Retront	perunit	5	\$225.0	538	0.188	0.0
		Treating		Remove	Thermostat + Web-	plattform							
					based platform with	and non-							
					eHER	programmab							
						le Thursday							
1324	Singl	Flectric	Other	Connected	Connected homes =	Home w/no	Retrofit	ner unit	5	\$225.0	1945	0.000	0.0
1524	eFa	Heating	other	homes	Smart WiFi	web-based	Retront	per unit	5	<i><b>J</b>223.0</i>	1545	0.000	0.0
	mily				Thermostat + Web-	plattform							
	&Du				based platform with	and non-							
	plex				eHER	programmab							
						le Thormostat							
1325	Mult	Flectric	Other	Connected	Connected homes =	Home w/no	Retrofit	per unit	5	\$225.0	1184	0.000	0.0
1525	ifami	Heating	other	homes	Smart WiFi	web-based	Retront	per unit	5	<i><b>J</b>223.0</i>	1104	0.000	0.0
	ly	U			Thermostat + Web-	plattform							
					based platform with	and non-							
					eHER	programmab							
						le Thormostat							
1326	Singl	Flectric	Other	Connected	Connected homes =	Home w/no	Retrofit	ner unit	5	\$225.0	1945	0.000	0.0
1520	eFa	Heating	other	homes	Smart WiFi	web-based	Retront	per unit	5	<i><b>J</b>223.0</i>	1545	0.000	0.0
	mily	U			Thermostat + Web-	plattform							
	&Du				based platform with	and non-							
	plex				eHER	programmab							
						le Thormostat							
						mermostat							

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чррепиіх	D: Res	luential N	neasure A	ssumptions									
1327	Mult ifami ly	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1184	0.000	0.0
1328	Singl eFa mily &Du plex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	256	0.000	72.9
1329	Mult ifami ly	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	131	0.000	47.4
1330	Singl eFa mily &Du plex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	256	0.000	72.9
1331	Mult ifami ly	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	131	0.000	47.4
1332	Singl eFa mily &Du plex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1945	0.000	0.0
1333	Mult ifami ly	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1184	0.000	0.0

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1994	eFa	ricat	other	CONNECLEU						JEE.J.V	1.16.1	0.000	
	0.0	Pump		homes	Smart WiFi	web-based	Rectoric	per unit	5	+			0.0
	milv	i unip		nomes	Thermostat + Web-	plattform							
	&Du				based platform with	and non-							
	nlex				eHFR	programmab							
	pren				CHER	le							
						Thermostat							
1335	Mult	Heat	Other	Connected	Connected homes =	Home w/no	Retrofit	per unit	5	\$225.0	781	0.000	0.0
	ifami	Pump		homes	Smart WiFi	web-based							
	ly				Thermostat + Web-	plattform							
					based platform with	and non-							
					eHER	programmab							
						le							
1226	C' a al	11	Other	Constant	Considerable service	Thermostat	Data Ci			6225.0	4225	0.000	0.0
1330	Singi	Heat	Other	Connected	Connected nomes =	Home w/no	Retront	per unit	5	\$225.0	1325	0.000	0.0
	era	Pullip		nomes	Thormostat + W/ob	web-based							
	8.Du				hased platform with	and non-							
	nlex				eHFR	programmah							
	рісл				CHER	le							
						Thermostat							
1337	Mult	Heat	Other	Connected	Connected homes =	Home w/no	Retrofit	per unit	5	\$225.0	781	0.000	0.0
	ifami	Pump		homes	Smart WiFi	web-based							
	ly				Thermostat + Web-	plattform							
					based platform with	and non-							
					eHER	programmab							
						le							
						Thermostat			_				
1338	Singl	Gas	Other	Connected	Connected homes =	Home w/no	Retrofit	per unit	5	Ş225.0	67	0.000	72.9
	e⊦a	Heating		homes	Smart WiFi	web-based							
	mily 8 Du				Inermostat + web-	plattform							
	aDu					anu non-							
	piex				EIILIN								
						Thermostat							
1339	Mult	Gas	Other	Connected	Connected homes =	Home w/no	Retrofit	per unit	5	\$225.0	44	0.000	47.4
	ifami	Heating		homes	Smart WiFi	web-based		·		·			
	ly				Thermostat + Web-	plattform							
					based platform with	and non-							
					eHER	programmab							
						le							
						Thermostat			_				
1340	Singl	Heat	Other	Connected	Connected homes =	Home w/no	Retrofit	per unit	5	Ş225.0	1325	0.000	0.0
	eFa	Pump		homes	Smart WiFi	web-based							
	mily 8 Du				inermostat + Web-	plattform							
	aDu					anu non-							
	piex					hingi guungn le							
						Thermostat							

ppenuix	D: Res	iuentiai N	leasure A	ssumptions									
1341	Mult ifami ly	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based plattform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	781	0.000	0.0
1342	Singl eFa mily &Du plex	Gas Heating	Other	Home Energy Audit & Retrofit Single Family: Tier 2	Home Energy Audit & Retrofit Single Family: Tier 2	Home Energy Audit & Retrofit Single Family: Tier 2	Retrofit	per home	1	\$1.0	0	0.000	0.0
1343	Mult ifami ly	Gas Heating	Other	Home Energy Audit & Retrofit Multifamily: Tier 1	0	Home Energy Audit & Retrofit Multifamily: Tier 1	Direct Install	per home	25	\$100.0	0	0.000	0.0
1344	Singl eFa mily &Du plex	Electric Heating	Other	Home Energy Audit & Retrofit Single Family: Tier 2	Home Energy Audit & Retrofit Single Family: Tier 2	Home Energy Audit & Retrofit Single Family: Tier 2	Retrofit	per home	1	\$1.0	0	0.000	0.0
1345	Mult ifami ly	Electric Heating	Other	Home Energy Audit & Retrofit Multifamily: Tier 1	0	Home Energy Audit & Retrofit Multifamily: Tier 1	Direct Install	per home	25	\$100.0	0	0.000	0.0
1346	All	Gas Heating	Other	Low-Income Residential Retrofit Program - LI Post2015 savings	Program Level Average Upgrades	Low-Income Residential Retrofit Program - LI Post2015 savings	Retrofit	per program	12	\$6,035,63 5.3	3608526	2046.600	0.0
1347	All	Electric Heating	Other	Low-Income Residential Retrofit Program - LI Post2015 savings	Program Level Average Upgrades	Low-Income Residential Retrofit Program - LI Post2015 savings	Retrofit	per program	12	\$6,035,63 5.3	3608526	2046.600	0.0
1348	All	Gas Heating	Other	Public Housing Authority Efficient Living - PHAEL Post2015 savings	Program Level Average Upgrades	Public Housing Authority Efficient Living - PHAEL Post2015 savings	Retrofit	per home	13	\$373,052. 8	1865264	325.280	0.0

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Appendix	D. Res	suential N	leasure A	ssumptions									
1349	All	Electric Heating	Other	Public Housing Authority Efficient Living - PHAEL Post2015 savings	Program Level Average Upgrades	Public Housing Authority Efficient Living - PHAEL Post2015 savings	Retrofit	per home	13	\$373,052. 8	1865264	325.280	0.0
1350	All	Gas Heating	Other	EE Affordable Housing Construction - EEAHC Post2015 savings	Program Level Average Upgrades	EE Affordable Housing Construction - EEAHC Post2015 savings	New Constructi on	per home	12	\$311,922. 6	1559613	231.210	0.0
1351	All	Electric Heating	Other	EE Affordable Housing Construction - EEAHC Post2015 savings	Program Level Average Upgrades	EE Affordable Housing Construction - EEAHC Post2015 savings	New Constructi on	per home	12	\$311,922. 6	1559613	231.210	0.0
1352	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.8	31	0.003	0.0
1353	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post-2020 compliant lamp	Time of Sale	per lamp	1	\$1.8	24	0.003	0.0
1354	All	Gas Heating	Other	Pool Pumps	Single Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	per building	10	\$85.0	694	0.357	0.0
1355	All	Electric Heating	Other	Pool Pumps	Single Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	per building	10	\$85.0	694	0.357	0.0
1356	All	Gas Heating	Other	Pool Pumps	Two Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	per building	10	\$579.0	1081	0.796	0.0

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1357	All	Electric Heating	Other	Pool Pumps	Two Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	per building	10	\$579.0	1081	0.796	0.0
1358	All	Gas Heating	Other	Pool Pumps	VFD on Swimming Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	per building	10	\$425.0	1543	0.528	0.0
1359	All	Electric Heating	Other	Pool Pumps	VFD on Swimming Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	per building	10	\$425.0	1543	0.528	0.0
1360	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (21- 30")	ENERGY STAR 6.0 TV + 20% (21-30")	ENERGY STAR 4.0 TV + 20% (21- 30")	Time of Sale	per unit	6	\$1.0	48	0.012	0.0
1361	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (31- 40")	ENERGY STAR 6.0 TV + 20% (31-40")	ENERGY STAR 4.0 TV + 20% (31- 40")	Time of Sale	per unit	6	\$1.0	72	0.019	0.0
1362	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (41- 50")	ENERGY STAR 6.0 TV + 20% (41-50")	ENERGY STAR 4.0 TV + 20% (41- 50")	Time of Sale	per unit	6	\$1.0	107	0.027	0.0
1363	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (51- 60")	ENERGY STAR 6.0 TV + 20% (51-60")	ENERGY STAR 4.0 TV + 20% (51- 60")	Time of Sale	per unit	6	\$1.0	163	0.041	0.0
1364	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 4.0 TV + 20% (>60")	Time of Sale	per unit	6	\$1.0	257	0.065	0.0
1365	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (21- 30")	ENERGY STAR 6.0 TV + 35% (21-30")	ENERGY STAR 4.0 TV + 35% (21- 30")	Time of Sale	per unit	6	\$1.0	49	0.012	0.0
1366	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (31- 40")	ENERGY STAR 6.0 TV + 35% (31-40")	ENERGY STAR 4.0 TV + 35% (31- 40")	Time of Sale	per unit	6	\$1.0	73	0.019	0.0
1367	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (41- 50")	ENERGY STAR 6.0 TV + 35% (41-50")	ENERGY STAR 4.0 TV + 35% (41- 50")	Time of Sale	per unit	6	\$1.0	108	0.027	0.0
1368	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (51- 60")	ENERGY STAR 6.0 TV + 35% (51-60")	ENERGY STAR 4.0 TV + 35% (51- 60")	Time of Sale	per unit	6	\$1.0	164	0.041	0.0

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Appendix	D: Res	sidential	Measure As	ssumptions									
1369	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 4.0 TV + 35% (>60")	Time of Sale	per unit	6	\$1.0	258	0.065	0.0
1370	All	Electric Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	Time of Sale	per unit	5	\$1.0	19	0.002	0.0
1371	All	Electric Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	Time of Sale	per unit	5	\$1.0	30	0.004	0.0
1372	All	Electric Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	Time of Sale	per unit	5	\$1.0	40	0.005	0.0
1373	All	Electric Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional PC	Time of Sale	per unit	4	\$1.0	77	0.012	0.0
1374	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (21- 30")	ENERGY STAR 6.0 TV + 20% (21-30")	ENERGY STAR 4.0 TV + 20% (21- 30")	Time of Sale	per unit	6	\$1.0	48	0.012	0.0
1375	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (31- 40")	ENERGY STAR 6.0 TV + 20% (31-40")	ENERGY STAR 4.0 TV + 20% (31- 40")	Time of Sale	per unit	6	\$1.0	72	0.019	0.0
1376	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (41- 50")	ENERGY STAR 6.0 TV + 20% (41-50")	ENERGY STAR 4.0 TV + 20% (41- 50")	Time of Sale	per unit	6	\$1.0	107	0.027	0.0
1377	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (51- 60")	ENERGY STAR 6.0 TV + 20% (51-60")	ENERGY STAR 4.0 TV + 20% (51- 60")	Time of Sale	per unit	6	\$1.0	163	0.041	0.0
1378	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 4.0 TV + 20% (>60")	Time of Sale	per unit	6	\$1.0	257	0.065	0.0
1379	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (21- 30")	ENERGY STAR 6.0 TV + 35% (21-30")	ENERGY STAR 4.0 TV + 35% (21- 30")	Time of Sale	per unit	6	\$1.0	49	0.012	0.0
1380	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (31- 40")	ENERGY STAR 6.0 TV + 35% (31-40")	ENERGY STAR 4.0 TV + 35% (31- 40")	Time of Sale	per unit	6	\$1.0	73	0.019	0.0

Appendix	D: Res	sidential I	Measure As	sumptions									
1381	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (41- 50")	ENERGY STAR 6.0 TV + 35% (41-50")	ENERGY STAR 4.0 TV + 35% (41- 50")	Time of Sale	per unit	6	\$1.0	108	0.027	0.0
1382	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (51- 60")	ENERGY STAR 6.0 TV + 35% (51-60")	ENERGY STAR 4.0 TV + 35% (51- 60")	Time of Sale	per unit	6	\$1.0	164	0.041	0.0
1383	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 4.0 TV + 35% (>60")	Time of Sale	per unit	6	\$1.0	258	0.065	0.0
1384	All	Gas Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	Time of Sale	per unit	5	\$1.0	19	0.002	0.0
1385	All	Gas Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	Time of Sale	per unit	5	\$1.0	30	0.004	0.0
1386	All	Gas Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	Time of Sale	per unit	5	\$1.0	40	0.005	0.0
1387	All	Gas Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional PC	Time of Sale	per unit	4	\$1.0	77	0.012	0.0
1388	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (21- 30")	ENERGY STAR 6.0 TV + 20% (21-30")	ENERGY STAR 4.0 TV + 20% (21- 30")	New Constructi on	per unit	6	\$1.0	48	0.012	0.0
1389	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (31- 40")	ENERGY STAR 6.0 TV + 20% (31-40")	ENERGY STAR 4.0 TV + 20% (31- 40")	New Constructi on	per unit	6	\$1.0	72	0.019	0.0
1390	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (41- 50")	ENERGY STAR 6.0 TV + 20% (41-50")	ENERGY STAR 4.0 TV + 20% (41- 50")	New Constructi on	per unit	6	\$1.0	107	0.027	0.0
1391	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (51- 60")	ENERGY STAR 6.0 TV + 20% (51-60")	ENERGY STAR 4.0 TV + 20% (51- 60")	New Constructi on	per unit	6	\$1.0	163	0.041	0.0
1392	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 4.0 TV + 20% (>60")	New Constructi on	per unit	6	\$1.0	257	0.065	0.0

Appendix	D: Res	idential I	Measure As	ssumptions									
1393	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (21- 30")	ENERGY STAR 6.0 TV + 35% (21-30")	ENERGY STAR 4.0 TV + 35% (21- 30")	New Constructi on	per unit	6	\$1.0	49	0.012	0.0
1394	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (31- 40")	ENERGY STAR 6.0 TV + 35% (31-40")	ENERGY STAR 4.0 TV + 35% (31- 40")	New Constructi on	per unit	6	\$1.0	73	0.019	0.0
1395	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (41- 50")	ENERGY STAR 6.0 TV + 35% (41-50")	ENERGY STAR 4.0 TV + 35% (41- 50")	New Constructi on	per unit	6	\$1.0	108	0.027	0.0
1396	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (51- 60")	ENERGY STAR 6.0 TV + 35% (51-60")	ENERGY STAR 4.0 TV + 35% (51- 60")	New Constructi on	per unit	6	\$1.0	164	0.041	0.0
1397	All	Electric Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 4.0 TV + 35% (>60")	New Constructi on	per unit	6	\$1.0	258	0.065	0.0
1398	All	Electric Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	New Constructi on	per unit	5	\$1.0	19	0.002	0.0
1399	All	Electric Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	New Constructi on	per unit	5	\$1.0	30	0.004	0.0
1400	All	Electric Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	New Constructi on	per unit	5	\$1.0	40	0.005	0.0
1401	All	Electric Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional PC	New Constructi on	per unit	4	\$1.0	77	0.012	0.0
1402	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (21- 30")	ENERGY STAR 6.0 TV + 20% (21-30")	ENERGY STAR 4.0 TV + 20% (21- 30")	New Constructi on	per unit	6	\$1.0	48	0.012	0.0
1403	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (31- 40")	ENERGY STAR 6.0 TV + 20% (31-40")	ENERGY STAR 4.0 TV + 20% (31- 40")	New Constructi on	per unit	6	\$1.0	72	0.019	0.0
1404	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (41- 50")	ENERGY STAR 6.0 TV + 20% (41-50")	ENERGY STAR 4.0 TV + 20% (41- 50")	New Constructi on	per unit	6	\$1.0	107	0.027	0.0

1405	All	Gas	Consumer	ENERGY STAR 6.0	ENERGY STAR 6.0 TV	ENERGY	New	per unit	6	\$1.0	163	0.041	0.0
		Heating	Electronics	TV + 20% (51- 60")	+ 20% (51-60")	STAR 4.0 TV + 20% (51- 60")	Constructi on	<b>F</b>	-				
1406	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 4.0 TV + 20% (>60")	New Constructi on	per unit	6	\$1.0	257	0.065	0.0
1407	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (21- 30")	ENERGY STAR 6.0 TV + 35% (21-30")	ENERGY STAR 4.0 TV + 35% (21- 30")	New Constructi on	per unit	6	\$1.0	49	0.012	0.0
1408	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (31- 40")	ENERGY STAR 6.0 TV + 35% (31-40")	ENERGY STAR 4.0 TV + 35% (31- 40")	New Constructi on	per unit	6	\$1.0	73	0.019	0.0
1409	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (41- 50")	ENERGY STAR 6.0 TV + 35% (41-50")	ENERGY STAR 4.0 TV + 35% (41- 50")	New Constructi on	per unit	6	\$1.0	108	0.027	0.0
1410	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (51- 60")	ENERGY STAR 6.0 TV + 35% (51-60")	ENERGY STAR 4.0 TV + 35% (51- 60")	New Constructi on	per unit	6	\$1.0	164	0.041	0.0
1411	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 4.0 TV + 35% (>60")	New Constructi on	per unit	6	\$1.0	258	0.065	0.0
1412	All	Gas Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	New Constructi on	per unit	5	\$1.0	19	0.002	0.0
1413	All	Gas Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	New Constructi on	per unit	5	\$1.0	30	0.004	0.0
1414	All	Gas Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	New Constructi on	per unit	5	\$1.0	40	0.005	0.0
1415	All	Gas Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional PC	New Constructi on	per unit	4	\$1.0	77	0.012	0.0
1416	Singl eFa mily	AC/Elect ric Resistan ce Heat	HVAC	AC Tune-up w/iManifold device	SEER 10	Central Air Conditioning Unit	Retrofit	per home	2	\$100.0	103	0.053	0.0

Appendi	x D: Res	idential N	leasure A	ssumptions									
	&Du												
	plex												
1417	Singl	AC/Gas	HVAC	AC Tune-up	SEER 10	Central Air	Retrofit	per home	2	\$100.0	103	0.053	0.0
	eFa	Heat		w/iManifold		Conditioning							
	mily			device		Unit							
	&Du												
	plex												
1418	Mult	AC/Elect	HVAC	AC Tune-up	SEER 10	Central Air	Retrofit	per home	2	\$100.0	46	0.027	0.0
	ifami	ric		w/iManifold		Conditioning							
	ly	Resistan		device		Unit							
		ce Heat											
1419	Mult	AC/Gas	HVAC	AC Tune-up	SEER 10	Central Air	Retrofit	per home	2	\$100.0	46	0.027	0.0
	ifami	Heat		w/iManifold		Conditioning							
	ly			device		Unit							

Appendix	D: Residen	tial Assump	tions											
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	Time of Sale	0.64	No	No	6%	30%	100%	IL TRM
2	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	New Constructi on	0.64	No	No	6%	30%	100%	IL TRM
3	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	Time of Sale	0.64	No	No	94%	30%	100%	IL TRM
4	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement only	ENERGY STAR V 2.0 casement only	New Constructi on	0.64	No	No	94%	30%	100%	IL TRM
5	All	AC/Electric Resistance Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement only	average existing room air conditione r casement only	Early Replaceme nt	0.41	No	No	3%	30%	100%	IL TRM
6	All	AC/Gas Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement only	average existing room air conditione r	Early Replaceme nt	0.41	No	No	69%	30%	100%	IL TRM

#### Appendix D: Residential Measure Assumptions Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 7 All Electric Appliances CEE Tier 1 CEE Tier 1 ENERGY Time of 0.54 No No 6% 30% 100% IL TRM Heating and STAR V 2.0 Sale and ENERGY ENERGY casement-STAR V3.0 STAR V3.0 slider Room Air casement-Conditione slider r All 100% 8 Electric Appliances CEE Tier 1 CEE Tier 1 ENERGY New 0.54 No No 6% 30% IL TRM Heating and and STAR V 2.0 Constructi ENERGY ENERGY casementon STAR V3.0 STAR V3.0 slider Room Air casement-Conditione slider r 9 All Electric Appliances CEE Tier 2 CEE Tier 2 ENERGY Time of 1.17 Yes No 6% 30% 100% IL TRM Heating Room Air with STAR V 2.0 Sale Conditione reverse with cycle < reverse r 14000 cycle < Btu/h 14000 Btu/h 10 All Electric Appliances CEE Tier 2 CEE Tier 2 ENERGY New 1.17 Yes No 6% 30% 100% IL TRM Heating STAR V 2.0 Constructi Room Air with Conditione with reverse on r cycle < reverse 14000 cycle < Btu/h 14000 Btu/h 11 All Gas CEE Tier 1 0.54 No No 94% 30% 100% Appliances CEE Tier 1 ENERGY Time of IL TRM Heating Sale and and STAR V 2.0 ENERGY ENERGY casement-STAR V3.0 STAR V3.0 slider Room Air casement-Conditione slider r 12 All Gas CEE Tier 1 CEE Tier 1 ENERGY New 0.54 No No 94% 30% 100% IL TRM Appliances Heating and and STAR V 2.0 Constructi ENERGY ENERGY casementon STAR V3.0 STAR V3.0 slider Room Air casement-Conditione slider r

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
13	All	AC/Electric Resistance Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement- slider	average existing room air conditione r casement- slider	Early Replaceme nt	0.53	No	No	3%	30%	100%	IL TRM
14	All	AC/Gas Heat	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 casement- slider	average existing room air conditione r casement only	Early Replaceme nt	0.53	No	No	69%	30%	100%	IL TRM
15	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	0.75	No	No	6%	30%	100%	IL TRM
16	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	New Constructi on	0.75	No	No	6%	30%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
17	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	0.75	No	No	94%	30%	100%	IL TRM
18	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 with louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with louvered sides and reverse cycle < 14000 Btu/h	New Constructi on	0.75	No	No	94%	30%	100%	IL TRM
19	All	Gas Heating	Appliances	CEE Tier 2 Room Air Conditione r	CEE Tier 2 with reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with reverse cycle < 14000 Btu/h	Time of Sale	1.17	Yes	No	94%	30%	100%	IL TRM
20	All	Gas Heating	Appliances	CEE Tier 2 Room Air Conditione r	CEE Tier 2 with reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 with reverse cycle < 14000 Btu/h	New Constructi on	1.17	Yes	No	94%	30%	100%	IL TRM
21	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cle aner	ENERGY STAR Air Purifier/Cle aner CADR 101-150	Conventio nal unit	Time of Sale	4.01	Yes	Yes	6%	36%	98%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 22 All Electric Appliances ENERGY ENERGY Conventio Time of 4.01 #N/A Yes 6% 36% 98% IL TRM STAR Air STAR Air Heating nal unit Sale Purifier/Cle Purifier/Cle aner - RPP aner CADR 101-150 23 All ENERGY ENERGY 4.01 Yes 6% 36% 98% Electric Appliances New Yes IL TRM Conventio Heating STAR Air Constructi STAR Air nal unit Purifier/Cle Purifier/Cle on aner CADR aner 101-150 24 All Gas Appliances ENERGY ENERGY Conventio Time of 4.01 Yes Yes 94% 36% 98% IL TRM Heating STAR Air STAR Air nal unit Sale Purifier/Cle Purifier/Cle aner CADR aner 101-150 25 All Gas Appliances ENERGY ENERGY Time of 4.01 #N/A Yes 94% 36% 98% IL TRM Conventio STAR Air STAR Air Heating nal unit Sale Purifier/Cle Purifier/Cle aner - RPP aner CADR 101-150 26 All Gas ENERGY ENERGY New 4.01 #N/A Yes 94% 36% 98% Appliances Conventio IL TRM STAR Air STAR Air Heating nal unit Constructi Purifier/Cle Purifier/Cle on aner aner CADR 101-150 Appliances 68% 27 All Electric ENERGY ENERGY minimum New 2.23 Yes Yes 11% 80% IL TRM DHW STAR and STAR federal Constructi w/Electric CEE Tier 2 Clothes standard on and 3 Washer Clothes Heating Clothes Washer Rate (Electric Washers dryer) (Electric dryer) 28 All Electric Appliances ENERGY ENERGY minimum Time of 2.23 Yes Yes 11% 80% 68% IL TRM DHW STAR and federal Sale STAR w/Electric CEE Tier 2 Clothes standard Heating and 3 Washer Clothes (Electric Rate Clothes Washer Washers dryer) (Electric dryer)

## Appendix D: Residential Measure Assumptions

#### Measure Measure Applicabilit Included in Included in Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector End Use Name Definition Definition re TRC Analysis Analysis Type\* Feasibility\* Rate\* Туре Type 29 All Electric Appliances ENERGY ENERGY New 2.23 Yes 2% 80% 68% IL TRM minimum Yes DHW STAR and STAR federal Constructi w/Non-CEE Tier 2 Clothes standard on Electric and 3 Washer Clothes Heating Clothes (Electric Washer Rate Washers dryer) (Electric dryer) 30 All 2.23 2% 80% 68% Appliances ENERGY ENERGY Time of Yes Yes IL TRM Electric minimum DHW STAR and STAR federal Sale w/Non-CEE Tier 2 Clothes standard Electric and 3 Washer Clothes Heating Clothes (Electric Washer Washers Rate (Electric dryer) dryer) 31 All ENERGY ENERGY New 1.33 Yes Yes 86% 80% 68% IL TRM Gas Water Appliances minimum Heater STAR and STAR federal Constructi CEE Tier 2 Clothes standard on and 3 Washer Clothes Clothes (Electric Washer Washers (Electric dryer) dryer) 32 All Gas Water Appliances ENERGY ENERGY minimum New 1.33 Yes Yes 86% 80% 68% IL TRM Heater STAR and federal Constructi STAR CEE Tier 2 Clothes standard on and 3 Washer Clothes Clothes (Electric Washer Washers dryer) (Electric dryer) 33 All ENERGY 1.33 Yes Yes 86% 80% 68% Gas Water Appliances ENERGY Time of IL TRM minimum STAR and Sale Heater STAR federal CEE Tier 2 Clothes standard and 3 Clothes Washer Clothes (Electric Washer Washers (Electric dryer) dryer) 34 All Gas Water ENERGY ENERGY Time of 1.33 Yes Yes 86% 80% 68% IL TRM Appliances minimum Heater STAR and STAR federal Sale CEE Tier 2 Clothes standard and 3 Washer Clothes Clothes (Electric Washer Washers dryer) (Electric dryer)

#### Appendix D: Residential Measure Assumptions

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector End Use Name Definition Definition re TRC Analysis Analysis Type\* Feasibility\* Rate\* Туре Type 35 All Electric Appliances ENERGY ENERGY New 1.53 Yes 11% 80% 68% IL TRM minimum Yes DHW STAR and STAR federal Constructi w/Electric CEE Tier 2 Clothes standard on Heating and 3 Washer Clothes Rate Clothes (gas dryer) Washer Washers (gas dryer) All ENERGY 1.53 Yes Yes 11% 80% 68% 36 Electric ENERGY Time of IL TRM Appliances minimum DHW STAR federal Sale STAR and w/Electric CEE Tier 2 Clothes standard Heating and 3 Washer Clothes Rate Clothes (gas dryer) Washer Washers (gas dryer) 37 All 2% Appliances ENERGY ENERGY 1.53 No 80% 68% IL TRM Electric minimum New Yes DHW STAR and STAR federal Constructi Clothes w/Non-CEE Tier 2 standard on Electric and 3 Washer Clothes Heating Clothes (gas dryer) Washer Washers Rate (gas dryer) 1.53 2% 68% 38 All ENERGY ENERGY Time of No Yes 80% Electric Appliances minimum IL TRM DHW STAR and STAR federal Sale w/Non-CEE Tier 2 Clothes standard Electric and 3 Washer Clothes Clothes Heating (gas dryer) Washer Rate Washers (gas dryer) 39 All Gas Water Appliances ENERGY ENERGY minimum New 0.63 No No 86% 80% 68% IL TRM Heater STAR and STAR federal Constructi CEE Tier 2 Clothes standard on and 3 Washer Clothes Clothes Washer (gas dryer) Washers (gas dryer) 40 All ENERGY ENERGY 0.63 86% 80% 68% Gas Water Appliances minimum New No No IL TRM Heater STAR and STAR federal Constructi CEE Tier 2 Clothes standard on and 3 Washer Clothes Clothes (gas dryer) Washer Washers (gas dryer) 41 All 0.63 86% 80% 68% IL TRM Gas Water Appliances ENERGY ENERGY minimum Time of Yes No STAR and STAR Heater federal Sale CEE Tier 2 Clothes standard and 3 Washer Clothes Clothes (gas dryer) Washer Washers (gas dryer)

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
42	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	0.63	Yes	No	86%	80%	68%	IL TRM
43	All	Electric DHW w/Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	New Constructi on	1.02	Yes	No	11%	80%	68%	IL TRM
44	All	Electric DHW w/Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	Time of Sale	1.02	Yes	No	11%	80%	68%	IL TRM
45	All	Electric DHW w/Non- Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	Time of Sale	1.02	No	No	2%	80%	68%	IL TRM
46	All	Electric DHW w/Non- Electric Heating Rate	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	New Constructi on	1.02	No	No	2%	80%	68%	IL TRM
47	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	New Constructi on	0.53	No	No	86%	80%	68%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector End Use Name Definition Definition re TRC Analysis Analysis Type\* Feasibility\* Rate\* Туре Type 48 All Gas Water Appliances ENERGY ENERGY New 0.53 No No 86% 80% 68% IL TRM minimum Heater STAR and STAR Most federal Constructi CEE Tier 2 Efficient standard on and 3 Clothes Clothes Clothes Washer Washer Washers (Electric (Electric dryer) dryer) 68% 49 All Gas Water Appliances ENERGY ENERGY Time of 0.53 No No 86% 80% IL TRM minimum Heater STAR and STAR Most federal Sale CEE Tier 2 Efficient standard and 3 Clothes Clothes Clothes Washer Washer Washers (Electric (Electric dryer) dryer) 50 All ENERGY ENERGY Time of 0.53 No No 86% 80% 68% IL TRM Gas Water Appliances minimum Heater STAR and STAR Most federal Sale CEE Tier 2 Efficient standard and 3 Clothes Clothes Clothes Washer Washer Washers (Electric (Electric dryer) dryer) 51 All Electric Appliances ENERGY ENERGY minimum New 0.71 No No 11% 80% 68% IL TRM DHW STAR and federal STAR Most Constructi w/Electric CEE Tier 2 Efficient standard on Heating and 3 Clothes Clothes Clothes Washer Rate Washer Washers (gas dryer) (gas dryer) 52 All 0.71 11% 80% 68% Electric Appliances ENERGY ENERGY minimum Time of No No IL TRM DHW STAR and STAR Most federal Sale w/Electric CEE Tier 2 Efficient standard and 3 Clothes Clothes Heating Clothes Washer Washer Rate Washers (gas dryer) (gas dryer) 53 2% 68% All Electric ENERGY ENERGY New 0.71 No No 80% IL TRM Appliances minimum DHW STAR and STAR Most federal Constructi CEE Tier 2 w/Non-Efficient standard on Electric and 3 Clothes Clothes Heating Clothes Washer Washer Rate Washers (gas dryer) (gas dryer) 54 All ENERGY 0.71 No No 2% 80% 68% IL TRM Electric Appliances ENERGY minimum Time of DHW STAR and STAR Most federal Sale w/Non-CEE Tier 2 Efficient standard Electric and 3 Clothes Clothes Heating Clothes Washer Washer Rate Washers (gas dryer) (gas dryer)

#### Appendix D: Residential Measure Assumptions

\*Residential applicability factors were developed only for measures included in the potential analyses.

**ICF** International

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
55	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	0.22	No	No	86%	80%	68%	IL TRM
56	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	New Constructi on	0.22	No	No	86%	80%	68%	IL TRM
57	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	0.22	#N/A	No	86%	80%	68%	IL TRM
58	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Most Efficient Clothes Washer (gas dryer)	minimum federal standard Clothes Washer (gas dryer)	Time of Sale	0.22	#N/A	No	86%	80%	68%	IL TRM
59	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	New Constructi on	0.72	No	Yes	6%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
60	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Retrofit	0.18	No	Yes	6%	99%	69%	IL TRM
61	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Time of Sale	0.72	Νο	Yes	6%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
62	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	New Constructi on	0.72	No	Yes	94%	99%	69%	IL TRM
63	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Retrofit	0.18	No	Yes	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
64	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Time of Sale	0.72	No	Yes	94%	99%	69%	IL TRM
65	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	New Constructi on	0.86	No	Yes	6%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
66	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Retrofit	0.22	No	Yes	6%	99%	69%	IL TRM
67	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Time of Sale	0.86	No	Yes	6%	99%	69%	IL TRM
68	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	New Constructi on	0.86	No	Yes	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
69	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Retrofit	0.22	No	Yes	94%	99%	69%	IL TRM
70	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Time of Sale	0.86	No	Yes	94%	99%	69%	IL TRM

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Measure ID	Sub-Secto <u>r</u>	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*_	Technical Feasibility*	Not-Yet- Adopted Rate*	References
71	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	New Constructi on	0.68	No	Yes	6%	99%	69%	IL TRM
72	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Retrofit	0.17	No	Yes	6%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
73	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Time of Sale	0.68	No	Yes	6%	99%	69%	IL TRM
74	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	New Constructi on	0.68	No	Yes	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
75	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Retrofit	0.17	No	Yes	94%	99%	69%	IL TRM
76	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Time of Sale	0.68	No	Yes	94%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
77	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	New Constructi on	0.79	No	Yes	6%	99%	69%	IL TRM
78	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Retrofit	0.20	No	Yes	6%	99%	69%	IL TRM
79	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Time of Sale	0.79	No	Yes	6%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
80	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	New Constructi on	0.79	No	Yes	94%	99%	69%	IL TRM
81	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Retrofit	0.20	No	Yes	94%	99%	69%	IL TRM
82	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Time of Sale	0.79	No	Yes	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
83	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	New Constructi on	0.58	No	Yes	6%	99%	69%	IL TRM
84	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Retrofit	0.15	No	Yes	6%	99%	69%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
85	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Time of Sale	0.58	No	Yes	6%	99%	69%	IL TRM
86	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	New Constructi on	0.58	No	Yes	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
87	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Retrofit	0.15	No	Yes	94%	99%	69%	IL TRM
88	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Time of Sale	0.58	No	Yes	94%	99%	69%	IL TRM

Measure	Sub Soctor	Building	End Lico	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Typo*	Technical	Not-Yet- Adopted	References
89	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	New Constructi on	0.57	No	Yes	6%	99%	69%	IL TRM
90	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Retrofit	0.14	No	Yes	6%	99%	69%	IL TRM
91	AII	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Time of Sale	0.57	No	Yes	6%	99%	69%	IL TRM
92	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	New Constructi on	0.57	No	Yes	94%	99%	69%	IL TRM
Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tuno*	Technical	Not-Yet- Adopted	References
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93	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Retrofit	0.14	No	Yes	94%	99%	69%	IL TRM
94	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Time of Sale	0.57	No	Yes	94%	99%	69%	IL TRM
95	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	New Constructi on	0.49	No	Yes	6%	99%	69%	IL TRM
96	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Retrofit	0.12	No	Yes	6%	99%	69%	IL TRM

Measure	Sub Sector	Building	Endline	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
97	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Time of Sale	0.49	No	Yes	6%	99%	69%	IL TRM
98	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	New Constructi on	0.49	No	Yes	94%	99%	69%	IL TRM
99	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Retrofit	0.12	No	Yes	94%	99%	69%	IL TRM
100	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Time of Sale	0.49	No	Yes	94%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
101	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.30	No	No	6%	99%	69%	IL TRM
102	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.30	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
103	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.48	No	No	6%	99%	69%	IL TRM
104	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.48	No	No	94%	99%	69%	IL TRM

Appendix	D: Resident	ial Measu	re Assumpt	ions										
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
105	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.50	No	No	6%	99%	69%	IL TRM
106	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.50	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
107	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.30	No	No	6%	99%	69%	IL TRM
108	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) refrigerato r- freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.30	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
109	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.31	No	No	6%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
110	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.31	No	No	94%	99%	69%	IL TRM
111	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.41	No	No	6%	99%	69%	IL TRM

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Measure	Cub Castar	Building	Fedular	Measure	Efficient Measure	Baseline	Measure	Measu	Economic Potential	Achievable Potential	y to Building	Technical	Not-Yet- Adopted	References
112	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.41	No	No	94%	99%	69%	IL TRM
113	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.42	No	No	6%	99%	69%	IL TRM
114	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: CEE Tier 2 (≥ 25% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.42	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
115	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.20	No	No	6%	99%	69%	IL TRM
116	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.20	No	No	94%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
117	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.24	No	No	6%	99%	69%	IL TRM
118	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.24	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
119	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.41	No	No	6%	99%	69%	IL TRM
120	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.41	No	No	94%	99%	69%	IL TRM

Appendix	D: Resident	ial Measu	re Assumpt	ions										
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
121	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.48	No	No	6%	99%	69%	IL TRM
122	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.48	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
123	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.28	No	No	6%	99%	69%	IL TRM

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Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
124	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.28	No	No	94%	99%	69%	IL TRM
					defrost									
125	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.40	No	No	6%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
126	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.40	No	No	94%	99%	69%	IL TRM
127	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.42	No	No	6%	99%	69%	IL TRM
128	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Early Replaceme nt: Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	average existing refrigerato r with average remaining useful life	Early Replaceme nt	0.42	No	No	94%	99%	69%	IL TRM

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Measure ID	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
129	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	New Constructi on	0.96	No	No	6%	99%	69%	IL TRM
130	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Retrofit	0.08	No	No	6%	99%	69%	IL TRM
131	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Time of Sale	0.96	No	No	6%	99%	69%	IL TRM

прренал	21110010.0110		e / losampe											
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
132	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	New Constructi on	0.96	No	No	94%	99%	69%	IL TRM
133	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Retrofit	0.08	Yes	No	94%	99%	69%	IL TRM
134	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	federal standard refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Time of Sale	0.96	No	No	94%	99%	69%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
135	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	New Constructi on	1.01	Yes	No	6%	99%	69%	IL TRM
136	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Retrofit	0.09	Yes	No	6%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
137	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Time of Sale	1.01	No	No	6%	99%	69%	IL TRM
138	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	New Constructi on	1.01	Yes	No	94%	99%	69%	IL TRM

Measure		Building	5-44-4	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
139	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Retrofit	0.09	Yes	No	94%	99%	69%	IL TRM
140	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estervice Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Time of Sale	1.01	No	No	94%	99%	69%	IL TRM

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Measure	Sub-Sector	Building	Endlise	Measure Name	Efficient Measure Definition	Baseline	Measure	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Bate*	References
141	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	New Constructi on	1.05	Yes	No	6%	99%	69%	IL TRM
142	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Retrofit	0.09	Yes	No	6%	99%	69%	IL TRM
143	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Time of Sale	1.05	No	No	6%	99%	69%	IL TRM

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Measure	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline	Measure	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
144	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	New Constructi on	1.05	Yes	No	94%	99%	69%	IL TRM
145	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Retrofit	0.09	No	No	94%	99%	69%	IL TRM
146	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	federal standard refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Time of Sale	1.05	No	No	94%	99%	69%	IL TRM

Measure ID 147	Sub-Sector All	Building Type Electric Heating	End Use Appliances	Measure Name ENERGY STAR and CEE Tier 2 Refrigerato r	Efficient Measure Definition Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit	Baseline Definition federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door	Measure Type New Constructi on	Measu re TRC 0.96	Measure Included in Economic Potential Analysis No	Measure Included in Achievable Potential Analysis No	Applicabilit y to Building Type* 6%	Technical Feasibility* 99%	Not-Yet- Adopted Rate* 69%	References IL TRM
					hout through the door ice service	ice service								
148	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Retrofit	0.08	Νο	Νο	6%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
149	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Time of Sale	0.96	No	No	6%	99%	69%	IL TRM
150	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	New Constructi on	0.96	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
151	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Retrofit	0.08	No	No	94%	99%	69%	IL TRM
152	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	federal standard Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Time of Sale	0.96	No	No	94%	99%	69%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
153	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	New Constructi on	0.82	No	No	6%	99%	69%	IL TRM
154	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Retrofit	0.07	No	No	6%	99%	69%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definitio <u>n</u>	Measure Type	Measu re TR <u>C</u>	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
155	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Time of Sale	0.82	No	No	6%	99%	69%	IL TRM
156	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	New Constructi on	0.82	No	No	94%	99%	69%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TR <u>C</u>	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
157	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Retrofit	0.07	No	No	94%	99%	69%	IL TRM
158	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	federal standard Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Time of Sale	0.82	No	No	94%	99%	69%	IL TRM

Measure	Sub-Sector	Building	End Lise	Measure Name	Efficient Measure Definition	Baseline	Measure	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
159	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	New Constructi on	0.80	No	No	6%	99%	69%	IL TRM
160	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Retrofit	0.07	No	No	6%	99%	69%	IL TRM
161	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Time of Sale	0.80	No	No	6%	99%	69%	IL TRM
162	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	New Constructi on	0.80	No	No	94%	99%	69%	IL TRM

Measure	Sub-Sector	Building	Endlice	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Type*	Technical	Not-Yet- Adopted	References
163	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Retrofit	0.07	No	No	94%	99%	69%	IL TRM
164	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato r- freezer/par tial automatic defrost	federal standard Refrigerato r- freezer/par tial automatic defrost	Time of Sale	0.80	No	No	94%	99%	69%	IL TRM
165	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	New Constructi on	0.68	No	No	6%	99%	69%	IL TRM
166	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Retrofit	0.06	No	No	6%	99%	69%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
167	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Time of Sale	0.68	No	No	6%	99%	69%	IL TRM
168	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	New Constructi on	0.68	No	No	94%	99%	69%	IL TRM
169	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Retrofit	0.06	#N/A	No	94%	99%	69%	IL TRM
170	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerato r	Estar (≥ 20% better than federal standard) Refrigerato rs&Refrige rator- freezer/ma nual defrost	federal standard Refrigerato rs&Refrige rator- freezer/ma nual defrost	Time of Sale	0.68	#N/A	No	94%	99%	69%	IL TRM

#### Measure Measure Applicabilit Included in Included in Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 171 All Electric Appliances ENERGY ENERGY minimum New 0.94 No No 6% 20% 100% IL TRM STAR STAR Heating federal Constructi Clothes Clothes Clothes on Dryer Dryer Dryer (Electric) (Electric) 172 All ENERGY 0.94 #N/A 6% 20% 100% Electric Appliances ENERGY Time of Yes IL TRM minimum Heating STAR STAR federal Sale Clothes Clothes Clothes Dryer - RPP Dryer Dryer (Electric) (Electric) 173 All Gas Appliances ENERGY ENERGY minimum New 0.94 No No 94% 60% 100% IL TRM Heating STAR STAR federal Constructi Clothes Clothes Clothes on Dryer Dryer Dryer (Electric) (Electric) 174 All Gas Appliances ENERGY ENERGY Time of 0.94 #N/A Yes 94% 60% 100% IL TRM minimum Heating STAR STAR federal Sale Clothes Clothes Clothes Dryer - RPP Dryer Dryer (Electric) (Electric) 175 All Electric ENERGY ENERGY New 0.29 No No 6% 20% 100% Appliances minimum IL TRM STAR STAR federal Heating Constructi Clothes Clothes Clothes on Dryer Dryer (Gas) Dryer (Gas) ENERGY 0.29 6% 100% 176 All Electric Appliances ENERGY minimum Time of No No 20% IL TRM Heating STAR STAR federal Sale Clothes Clothes Clothes Dryer (Gas) Dryer (Gas) Dryer #N/A 177 All Gas Appliances ENERGY ENERGY minimum New 0.29 No 94% 60% 100% IL TRM Heating STAR STAR federal Constructi Clothes Clothes Clothes on Dryer Dryer (Gas) Dryer (Gas) 178 All Gas Appliances ENERGY ENERGY minimum Time of 0.29 #N/A No 94% 60% 100% IL TRM Heating STAR STAR federal Sale Clothes Clothes Clothes Dryer Dryer (Gas) Dryer (Gas)

#### Appendix D: Residential Measure Assumptions

Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tumo*	Technical	Not-Yet- Adopted	References
179	All	Electric Heating	Appliances	ENERGY STAR Dehumidifi er V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	Time of Sale	1.50	Yes	Yes	6%	23%	1%	IL TRM
180	All	Electric Heating	Appliances	ENERGY STAR Dehumidifi er V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	New Constructi on	1.50	Yes	Yes	6%	23%	1%	IL TRM
181	All	Gas Heating	Appliances	ENERGY STAR Dehumidifi er V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	Time of Sale	1.50	Yes	Yes	94%	23%	1%	IL TRM
182	All	Gas Heating	Appliances	ENERGY STAR Dehumidifi er V 3	<75 pints/day, ≥1.85 L/kWh	>54 to ≤ 75 pints/day, ≥ 1.70 L/kWh	New Constructi on	1.50	Yes	Yes	94%	23%	1%	IL TRM
183	All	Electric Heating	Appliances	ENERGY STAR Dehumidifi er V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	Time of Sale	2.70	Yes	Yes	6%	23%	1%	IL TRM
184	All	Electric Heating	Appliances	ENERGY STAR Dehumidifi er V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	New Constructi on	2.70	Yes	Yes	6%	23%	1%	IL TRM
185	All	Gas Heating	Appliances	ENERGY STAR Dehumidifi er V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	Time of Sale	2.70	#N/A	Yes	94%	23%	1%	IL TRM
186	All	Gas Heating	Appliances	ENERGY STAR Dehumidifi er V 3	75 to ≤185 pints/day, ≥2.80 L/kWh	>75 to ≤185 pints/day, ≥2.5 L/kWh	New Constructi on	2.70	#N/A	No	94%	23%	1%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Building Measure Measure Measure Baseline Measure Measu Potential Potential Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 187 All Electric Appliances ENERGY 295 307 Time of 0.19 No No 6% 67% 81% IL TRM STAR kwh/year, kWh/year, Heating Sale 5.0 Dishwashe 4.25 r gal/cycle gal/cycle (standard; electric DHW) 188 All 295 307 0.19 6% 67% 81% IL TRM Electric Appliances ENERGY New No No STAR Heating kwh/year, kWh/year, Constructi Dishwashe 4.25 5.0 on gal/cycle gal/cycle r (standard; electric DHW) 189 All Gas Appliances ENERGY 295 307 Time of 0.19 #N/A No 94% 67% 81% IL TRM Heating STAR kwh/year, kWh/year, Sale Dishwashe 4.25 5.0 gal/cycle gal/cycle r (standard; electric DHW) 190 All Gas Appliances ENERGY 295 307 New 0.19 #N/A No 94% 67% 81% IL TRM Heating STAR kwh/year, kWh/year, Constructi Dishwashe 4.25 5.0 on gal/cycle gal/cycle r (standard; electric DHW) 191 All Electric ENERGY 295 307 New 0.11 No No 6% 67% 81% Appliances IL TRM STAR kwh/year, kWh/year, Constructi Heating Dishwashe 4.25 5.0 on gal/cycle gal/cycle r (standard; gas DHW) 192 All Electric ENERGY 295 307 New 0.11 No No 6% 67% 81% IL TRM Appliances Heating STAR kwh/year, kWh/year, Constructi 4.25 5.0 Dishwashe on r gal/cycle gal/cycle (standard; gas DHW)

#### Appendix D: Residential Measure Assumptions

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 193 All Gas Appliances ENERGY 295 307 New 0.11 #N/A No 94% 67% 81% IL TRM STAR kWh/year, Heating kwh/year, Constructi 5.0 Dishwashe 4.25 on r gal/cycle gal/cycle (standard; gas DHW) All ENERGY 295 307 0.11 #N/A 94% 67% 81% 194 Gas Appliances New No IL TRM kWh/year, Heating STAR kwh/year, Constructi Dishwashe 4.25 5.0 on gal/cycle gal/cycle r (standard: gas DHW) 195 All NAECA -0.68 6% 80% Electric Appliances ENERGY Time of No 31% IL TRM 10% more No Heating STAR efficient Sale chest and Freezer than all others NAECA chest and all others All NAECA -0.68 196 Gas ENERGY Time of No No 94% 31% 80% Appliances 10% more IL TRM Heating STAR efficient chest and Sale Freezer than all others NAECA chest and all others 197 All Electric Appliances ENERGY 10% more NAECA -New 0.68 No No 6% 31% 80% IL TRM Heating STAR efficient chest and Constructi Freezer than all others on NAECA chest and all others 198 All Gas ENERGY 10% more NAECA -0.68 No 94% 31% 80% IL TRM Appliances New No Heating STAR efficient chest and Constructi Freezer than all others on NAECA chest and all others 199 All ENERGY NAECA -0.77 No No 6% 31% 80% IL TRM Electric Appliances 10% more Time of Heating STAR efficient Upright/m Sale anual Freezer than NAECA defrost Upright/m anual defrost

**Appendix D: Residential Measure Assumptions**
#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 200 All Gas Appliances ENERGY 10% more NAECA -Time of 0.77 No No 94% 31% 80% IL TRM STAR efficient Heating Upright/m Sale Freezer than anual NAECA defrost Upright/m anual defrost All 0.77 6% 31% 80% IL TRM 201 Electric Appliances ENERGY 10% more NAECA -New Yes No Heating STAR efficient Upright/m Constructi Freezer than anual on NAECA defrost Upright/m anual defrost 202 All Gas Appliances ENERGY 10% more NAECA -New 0.77 Yes No 94% 31% 80% IL TRM Upright/m Heating STAR efficient Constructi Freezer than anual on NAECA defrost Upright/m anual defrost 203 All Electric Appliances ENERGY 10% more NAECA -Time of 1.03 Yes No 6% 31% 80% IL TRM STAR efficient upright/au Sale Heating Freezer tomatic than NAECA defrost upright/au tomatic defrost 204 All Gas ENERGY NAECA -1.03 Yes No 94% 31% 80% Appliances 10% more Time of IL TRM Heating STAR efficient upright/au Sale Freezer tomatic than NAECA defrost upright/au tomatic defrost 205 All Electric Appliances ENERGY 10% more NAECA -New 1.03 No No 6% 31% 80% IL TRM efficient Heating STAR upright/au Constructi Freezer than tomatic on NAECA defrost upright/au tomatic defrost

Appendix D: Residential Measure Assumptions

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
206	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/au tomatic defrost	NAECA - upright/au tomatic defrost	New Constructi on	1.03	NO	NO	94%	31%	80%	IL I KIMI
207	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	Time of Sale	0.51	No	No	6%	31%	80%	IL TRM
208	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	Time of Sale	0.51	No	No	94%	31%	80%	IL TRM
209	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	New Constructi on	0.51	Yes	No	6%	31%	80%	IL TRM
210	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	New Constructi on	0.51	Yes	No	94%	31%	80%	IL TRM
211	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/au tomatic defrost	NAECA - compact upright/au tomatic defrost	Time of Sale	1.01	Yes	No	6%	31%	80%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
212	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/au tomatic defrost	NAECA - compact upright/au tomatic defrost	Time of Sale	1.01	Yes	No	94%	31%	80%	IL TRM
213	All	Electric Heating	Appliances	ENERGY STAR Freezer - RPP	20% more efficient than NAECA - compact upright/au tomatic defrost	NAECA - compact upright/au tomatic defrost	Time of Sale	1.01	#N/A	Yes	6%	31%	80%	IL TRM
214	All	Gas Heating	Appliances	ENERGY STAR Freezer - RPP	20% more efficient than NAECA - compact upright/au tomatic defrost	NAECA - compact upright/au tomatic defrost	Time of Sale	1.01	#N/A	Yes	94%	31%	80%	IL TRM
215	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/au tomatic defrost	NAECA - compact upright/au tomatic defrost	New Constructi on	1.01	No	No	6%	31%	80%	IL TRM
216	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/au tomatic defrost	NAECA - compact upright/au tomatic defrost	New Constructi on	1.01	No	No	94%	31%	80%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
217	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/ma nual defrost	NAECA - compact upright/ma nual defrost	Time of Sale	0.70	#N/A	No	6%	31%	80%	IL TRM
218	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/ma nual defrost	NAECA - compact upright/ma nual defrost	Time of Sale	0.70	#N/A	No	94%	31%	80%	IL TRM
219	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/ma nual defrost	NAECA - compact upright/ma nual defrost	New Constructi on	0.70	#N/A	No	6%	31%	80%	IL TRM
220	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/ma nual defrost	NAECA - compact upright/ma nual defrost	New Constructi on	0.70	#N/A	No	94%	31%	80%	IL TRM
221	All	Electric Heating	Appliances	Freezer Recycling	Recycling post-1990 chest and all others freezers	Keeping post-1990 chest and all others freezers	Early Retirement	3.35	Yes	Yes	6%	31%	12%	IL TRM
222	All	Gas Heating	Appliances	Freezer Recycling	Recycling post-1990 chest and all others freezers	Keeping post-1990 chest and all others freezers	Early Retirement	3.35	Yes	Yes	94%	31%	12%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 223 All Electric Appliances Freezer Recycling Early 3.44 Yes Yes 6% 31% 12% IL TRM Keeping Heating Recycling post-1990 post-1990 Retirement upright/au upright/au tomatic tomatic defrost defrost freezer freezer 224 All 3.44 Yes Yes 94% 31% 12% Gas Freezer Recycling Early IL TRM Appliances Keeping Heating post-1990 Recycling post-1990 Retirement upright/au upright/au tomatic tomatic defrost defrost freezer freezer 225 All 6% IL TRM Electric Appliances 3.44 31% 12% Freezer Recycling Keeping Early Yes Yes Recycling post-1990 Heating post-1990 Retirement Upright/m Upright/m anual anual defrost defrost freezer freezer 226 All 12% Gas Early 3.44 Yes Yes 94% 31% IL TRM Appliances Freezer Recycling Keeping post-1990 Heating Recycling post-1990 Retirement Upright/m Upright/m anual anual defrost defrost freezer freezer 227 All Electric Appliances Freezer Recycling Keeping Early 4.83 Yes Yes 6% 31% 88% IL TRM Heating Recycling pre-1990 pre-1990 Retirement chest and chest and all others all others freezers freezers 228 All 4.83 Yes 94% 88% Gas Appliances Freezer Recycling Early Yes 31% IL TRM Keeping Heating Recycling pre-1990 pre-1990 Retirement chest and chest and all others all others freezers freezers 229 All Recycling 4.91 #N/A 6% 31% 88% Electric Appliances Freezer Early Yes IL TRM Keeping Heating Recycling pre-1990 pre-1990 Retirement upright/au upright/au tomatic tomatic defrost defrost freezer freezer

#### Appendix D: Residential Measure Assumptions

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 230 All Gas Appliances Freezer Recycling Keeping Early 4.91 #N/A Yes 94% 31% 88% IL TRM Heating Recycling pre-1990 pre-1990 Retirement upright/au upright/au tomatic tomatic defrost defrost freezer freezer 231 All 4.91 #N/A Yes 6% 31% 88% Electric Appliances Freezer Recycling Keeping Early IL TRM Heating Recycling pre-1990 pre-1990 Retirement Upright/m Upright/m anual anual defrost defrost freezer freezer 232 All #N/A 88% IL TRM Appliances Freezer 4.91 94% 31% Gas Recycling Keeping Early Yes Heating Recycling pre-1990 pre-1990 Retirement Upright/m Upright/m anual anual defrost defrost freezer freezer 233 All 2.52 99% 15% Electric Recycling Yes Yes 6% IL TRM Appliances Refrigerato Keeping Early Heating r Recycling post-1990 post-1990 Retirement refrigeator refrigeator freezer/aut freezer/aut omatic omatic defrost/to defrost/to p mounted p mounted freezer/thr freezer/thr ough the ough the door ice door ice service service 234 All 2.52 94% 99% 15% Gas Appliances Refrigerato Recycling Early Yes Yes IL TRM Keeping Heating r Recycling post-1990 post-1990 Retirement refrigeator refrigeator freezer/aut freezer/aut omatic omatic defrost/to defrost/to p mounted p mounted freezer/thr freezer/thr ough the ough the door ice door ice service service

#### Appendix D: Residential Measure Assumptions

Appendix	D: Resident	ial Measu	re Assumpt	ions										
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
235	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Keeping post-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
236	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Keeping post-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
237	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Keeping post-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Early Retirement	4.05	Yes	Yes	6%	99%	15%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
238	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Keeping post-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Early Retirement	4.05	Yes	Yes	94%	99%	15%	IL TRM
239	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Keeping post-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Early Retirement	4.05	Yes	Yes	6%	99%	15%	IL TRM
240	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Keeping post-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Early Retirement	4.05	Yes	Yes	94%	99%	15%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
241	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Keeping post-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
242	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Keeping post-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
243	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato r- freezer/par tial automatic defrost	Keeping post-1990 Refrigerato r- freezer/par tial automatic defrost	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
244	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato r- freezer/par tial automatic defrost	Keeping post-1990 Refrigerato r- freezer/par tial automatic defrost	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
245	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato rs&Refrige rator- freezer/ma nual defrost	Keeping post-1990 Refrigerato rs&Refrige rator- freezer/ma nual defrost	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
246	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling post-1990 Refrigerato rs&Refrige rator- freezer/ma nual defrost	Keeping post-1990 Refrigerato rs&Refrige rator- freezer/ma nual defrost	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
247	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Keeping pre-1990 refrigeator - freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	Early Retirement	4.35	Yes	Yes	6%	99%	85%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analvsis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
248	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 refrigeator	Keeping pre-1990 refrigeator	Early Retirement	4.35	Yes	Yes	94%	99%	85%	IL TRM
					freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service	freezer/aut omatic defrost/to p mounted freezer/thr ough the door ice service								
249	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Keeping pre-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Early Retirement	4.35	Yes	Yes	6%	99%	85%	IL TRM
250	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Keeping pre-1990 refrigerato r- freezer/aut omatic defrost/bo ttom mounted freezer/wit hout through the door ice service	Early Retirement	4.35	Yes	Yes	94%	99%	85%	IL TRM

Appendix	D: Resident	ial Measu	re Assumpt	ions										
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
251	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Keeping pre-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Early Retirement	5.88	Yes	Yes	6%	99%	85%	IL TRM
252	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Keeping pre-1990 refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit h through the door ice service	Early Retirement	5.88	Yes	Yes	94%	99%	85%	IL TRM
253	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Keeping pre-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Early Retirement	5.88	Yes	Yes	6%	99%	85%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
254	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Keeping pre-1990 Refrigerato r- freezer/aut omatic defrost/sid emounted freezer/wit hout through the door ice service	Early Retirement	5.88	Yes	Yes	94%	99%	85%	IL TRM
255	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Keeping pre-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Early Retirement	4.35	Yes	Yes	6%	99%	85%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
256	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Keeping pre-1990 Refrigerato r- freezer/aut omatic defrost/to p mounted freezer/wit hout through the door ice service & refrigerato rs w/ automatic defrost	Early Retirement	4.35	Yes	Yes	94%	99%	85%	IL TRM
257	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato r- freezer/par tial automatic defrost	Keeping pre-1990 Refrigerato r- freezer/par tial automatic defrost	Early Retirement	4.35	#N/A	Yes	6%	99%	85%	IL TRM
258	All	Gas Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato r- freezer/par tial automatic defrost	Keeping pre-1990 Refrigerato r- freezer/par tial automatic defrost	Early Retirement	4.35	#N/A	Yes	94%	99%	85%	IL TRM
259	All	Electric Heating	Appliances	Refrigerato r Recycling	Recycling pre-1990 Refrigerato rs&Refrige rator- freezer/ma nual defrost	Keeping pre-1990 Refrigerato rs&Refrige rator- freezer/ma nual defrost	Early Retirement	4.35	#N/A	Yes	6%	99%	85%	IL TRM

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 260 All Gas Appliances Refrigerato Recycling Keeping Early 4.35 #N/A Yes 94% 99% 85% IL TRM pre-1990 Heating r Recycling pre-1990 Retirement Refrigerato Refrigerato rs&Refrige rs&Refrige ratorratorfreezer/ma freezer/ma nual nual defrost defrost 261 All #N/A 94% 30% 100% Gas Appliances Room Air Recycling existing Early 2.05 Yes IL TRM Heating Conditione old unit inefficient Retirement r Recycling room air conditione r, EER 7.7 All 2.05 #N/A 100% 262 Electric Appliances Room Air Recycling Early Yes 6% 30% IL TRM existing Heating Conditione old unit inefficient Retirement r Recycling room air conditione r, EER 7.7 263 All Electric Smart Strip 5 plug Time of 0.74 No No 6% 100% 98% IL TRM Consumer standard Heating Electronics smart strip Sale power strip 0.74 2% 100% 98% IL TRM 264 SingleFamily Electric Consumer Smart Strip 5 plug standard Direct No No &Duplex Heating Electronics smart strip power Install strip 265 Multifamily Electric Consumer Smart Strip 5 plug standard Direct 0.75 No No 13% 62% 98% IL TRM Heating Electronics smart strip Install power strip 266 All Gas Consumer Smart Strip 5 plug standard Time of 0.74 No No 94% 62% 98% IL TRM Heating Sale Electronics smart strip power strip 0.74 98% 100% 98% 267 SingleFamily Gas 5 plug Direct No No IL TRM Consumer Smart Strip standard &Duplex Heating Electronics smart strip power Install strip

\*Residential applicability factors were developed only for measures included in the potential analyses.

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#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 268 Multifamily Gas Consumer Smart Strip 5 plug standard Direct 0.75 No No 87% 100% 98% IL TRM Heating Electronics smart strip Install power strip 269 All 7 plug Time of 0.83 No 6% 100% 98% Electric Smart Strip standard Yes IL TRM Consumer smart strip Sale Heating Electronics power strip 270 SingleFamily Electric Consumer Smart Strip 7 plug standard Direct 0.83 No Yes 2% 100% 98% IL TRM &Duplex Heating Electronics smart strip Install power strip 271 Multifamily Electric Smart Strip 7 plug standard Direct 0.84 #N/A Yes 13% 100% 98% IL TRM Consumer Install Heating Electronics smart strip power strip 272 All Gas 7 plug Time of 0.83 #N/A Yes 94% 100% 98% IL TRM Consumer Smart Strip standard Sale Heating Electronics smart strip power strip 0.83 #N/A 100% 98% 273 SingleFamily Gas Consumer Smart Strip 7 plug standard Direct Yes 98% IL TRM &Duplex Heating smart strip Install Electronics power strip #N/A 274 Multifamily Gas Smart Strip 7 plug standard Direct 0.84 Yes 87% 100% 98% IL TRM Consumer Heating Electronics smart strip Install power strip 275 SingleFamily Electric Hot Water Bathroom 1.5 GPM or 2.25 GPM Retrofit 2.79 Yes Yes 8% 62% 99% IL TRM &Duplex DHW Low Flow less or more w/Electric Aerators Heating Rate

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
276	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	2.79	Yes	No	1%	62%	99%	IL TRM
277	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Faucet Aerators and Showerhea ds	1.5 GPM or less	2.25 GPM or more	Retrofit	2.79	#N/A	Yes	8%	62%	99%	IL TRM
278	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	2.79	Yes	No	1%	62%	99%	IL TRM
279	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	4.31	#N/A	Yes	20%	62%	93%	IL TRM
280	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	4.31	#N/A	No	4%	62%	93%	IL TRM
281	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	New Constructi on	2.79	#N/A	Yes	8%	62%	99%	IL TRM
282	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	New Constructi on	2.79	#N/A	Yes	1%	62%	99%	IL TRM
283	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	New Constructi on	4.31	#N/A	Yes	20%	62%	93%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
284	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	New Constructi on	4.31	#N/A	Yes	4%	62%	93%	IL TRM
285	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	8.01	Yes	Yes	8%	62%	99%	IL TRM
286	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	8.01	Yes	No	1%	62%	99%	IL TRM
287	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Faucet Aerators and Showerhea ds	2.2 GPM or less	2.75 GPM or more	Retrofit	8.01	#N/A	Yes	8%	62%	99%	IL TRM
288	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	8.01	#N/A	No	1%	62%	99%	IL TRM
289	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	6.29	#N/A	Yes	20%	62%	93%	IL TRM
290	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	6.29	#N/A	No	4%	62%	93%	IL TRM
291	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Constructi on	8.01	#N/A	Yes	8%	62%	99%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 292 SingleFamily Electric Hot Water Kitchen 2.2 GPM or 2.75 GPM New 8.01 #N/A Yes 1% 62% 99% IL TRM &Duplex DHW Low Flow Constructi less or more w/Non-Aerators on Electric Heating Rate 293 2.2 GPM or 2.75 GPM 6.56 #N/A Yes 20% 62% 93% Multifamily Electric Hot Water Kitchen New IL TRM DHW Low Flow less or more Constructi w/Electric Aerators on Heating Rate #N/A 4% 62% 93% 294 Multifamily Electric Hot Water Kitchen 2.2 GPM or 2.75 GPM New 6.56 Yes IL TRM DHW Low Flow or more Constructi less w/Non-Aerators on Electric Heating Rate 295 SingleFamily 1.5 GPM 2.5 GPM 10.37 8% 100% 60% Electric Hot Water Low flow Direct Yes Yes IL TRM &Duplex DHW shower Install w/Electric head Heating Rate 296 SingleFamily Electric Hot Water Low flow 1.5 GPM 2.5 GPM Retrofit 7.54 Yes No 8% 100% 60% IL TRM &Duplex DHW shower w/Electric head Heating Rate 297 SingleFamily Hot Water Low flow 1.5 GPM 2.5 GPM 10.67 Yes No 8% 100% 60% IL TRM Electric Retrofit &Duplex DHW shower w/Electric head Heating Rate 298 SingleFamily Electric Hot Water Low flow 1.5 GPM 2.5 GPM Time of 11.32 Yes No 8% 100% 60% IL TRM &Duplex DHW shower Sale w/Electric head Heating Rate 299 Multifamily Electric Hot Water Low flow 1.5 GPM 2.5 GPM Direct 8.23 Yes Yes 20% 100% 60% IL TRM DHW Install shower w/Electric head Heating Rate

#### Appendix D: Residential Measure Assumptions

Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tymo*	Technical	Not-Yet- Adopted Pato*	References
300	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	11.66	Yes	No	20%	100%	60%	IL TRM
301	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	10.37	Yes	No	20%	100%	60%	IL TRM
302	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	7.54	Yes	No	1%	100%	60%	IL TRM
303	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	10.67	Yes	No	1%	100%	60%	IL TRM
304	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	11.32	Yes	No	1%	100%	60%	IL TRM
305	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	8.23	Yes	No	1%	100%	60%	IL TRM
306	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	11.66	Yes	No	4%	100%	60%	IL TRM

Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tymo*	Technical	Not-Yet- Adopted	References
307	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	7.54	Yes	No	4%	100%	60%	IL TRM
308	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	8.23	Yes	No	4%	100%	60%	IL TRM
309	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	7.54	Yes	Yes	8%	100%	60%	IL TRM
310	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	8.23	Yes	Yes	20%	100%	60%	IL TRM
311	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	7.54	Yes	Yes	1%	100%	60%	IL TRM
312	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	8.23	Yes	Yes	4%	100%	60%	IL TRM
313	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	8.16	Yes	No	8%	100%	60%	IL TRM
314	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	5.32	Yes	No	8%	100%	60%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit y to		Not-Yet-	
Measure	Sub Soctor	Building	Endlico	Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	l echnical	Adopted Pato*	References
315	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	7.54	Yes	No	8%	100%	60%	IL TRM
316	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	8.91	Yes	No	20%	100%	60%	IL TRM
317	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	5.81	Yes	No	20%	100%	60%	IL TRM
318	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	8.24	Yes	No	20%	100%	60%	IL TRM
319	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	8.16	Yes	No	1%	100%	60%	IL TRM
320	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	5.32	Yes	No	1%	100%	60%	IL TRM
321	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	7.54	Yes	No	1%	100%	60%	IL TRM
322	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	8.91	Yes	No	4%	100%	60%	IL TRM

Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
323	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	5.81	Yes	No	4%	100%	60%	IL TRM
324	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	8.24	Yes	No	4%	100%	60%	IL TRM
325	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	5.94	Yes	No	8%	100%	60%	IL TRM
326	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	3.10	Yes	No	8%	100%	60%	IL TRM
327	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	4.40	#N/A	No	8%	100%	60%	IL TRM
328	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	6.49	#N/A	No	20%	100%	60%	IL TRM
329	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	3.39	#N/A	No	20%	100%	60%	IL TRM
330	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	4.81	#N/A	No	20%	100%	60%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
331	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	5.94	#N/A	No	1%	100%	60%	IL TRM
		Rate												
332	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	3.10	#N/A	No	1%	100%	60%	IL TRM
333	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	4.40	#N/A	No	1%	100%	60%	IL TRM
334	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	6.49	#N/A	No	4%	100%	60%	IL TRM
335	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	3.39	#N/A	No	4%	100%	60%	IL TRM
336	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	4.81	#N/A	No	4%	100%	60%	IL TRM
337	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 16	50 gal No wrap (R-8)	Retrofit	2.34	Yes	No	11%	20%	76%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit v to		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
338	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 16	50 gal No wrap (R-8)	Direct Install	2.34	Yes	No	11%	20%	76%	IL TRM
339	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 16	50 gal No wrap (R-8)	Retrofit	2.34	Yes	No	2%	20%	76%	IL TRM
340	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 16	50 gal No wrap (R-8)	Direct Install	2.34	Yes	No	2%	20%	76%	IL TRM
341	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R- 10)	Retrofit	1.62	Yes	No	11%	20%	76%	IL TRM
342	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R-8)	Retrofit	2.64	Yes	No	11%	20%	76%	IL TRM
343	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R- 10)	Direct Install	1.62	Yes	No	11%	20%	76%	IL TRM
344	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R-8)	Direct Install	2.64	Yes	No	11%	20%	76%	IL TRM
345	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R- 10)	Retrofit	1.62	Yes	No	2%	20%	76%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 346	Sub-Sector All	Type Electric	End Use Hot Water	Name Water	Definition 50 gal: R-	Definition 50 gal No	Type Retrofit	re TRC 2.64	Analysis Yes	Analysis No	Type* 2%	Feasibility* 20%	Rate* 76%	IL TRM
		DHW w/Non- Electric Heating Rate		Heater Tank Wrap	18	wrap (R-8)								
347	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R- 10)	Direct Install	1.62	Yes	No	2%	20%	76%	IL TRM
348	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 18	50 gal No wrap (R-8)	Direct Install	2.64	Yes	No	2%	20%	76%	IL TRM
349	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 12)	Retrofit	1.19	Yes	No	11%	20%	76%	IL TRM
350	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 10)	Retrofit	1.87	Yes	No	11%	20%	76%	IL TRM
351	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 12)	Direct Install	1.19	#N/A	No	11%	20%	76%	IL TRM
352	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 10)	Direct Install	1.87	#N/A	No	11%	20%	76%	IL TRM
353	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 12)	Retrofit	1.19	#N/A	No	2%	20%	76%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 25.4	Sub-Sector	Type	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
354	All	Electric DHW w/Non- Electric Heating Rate	Hot water	water Heater Tank Wrap	50 gai: R- 20	50 gai No wrap (R- 10)	Retrofit	1.87	₩N/A	ΝΟ	2%	20%	76%	IL I KIM
355	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 12)	Direct Install	1.19	#N/A	No	2%	20%	76%	IL TRM
356	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 20	50 gal No wrap (R- 10)	Direct Install	1.87	#N/A	No	2%	20%	76%	IL TRM
357	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 22	50 gal No wrap (R- 12)	Retrofit	1.39	#N/A	No	11%	20%	76%	IL TRM
358	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 22	50 gal No wrap (R- 12)	Direct Install	1.39	#N/A	No	11%	20%	76%	IL TRM
359	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 22	50 gal No wrap (R- 12)	Retrofit	1.39	#N/A	No	2%	20%	76%	IL TRM
360	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R- 22	50 gal No wrap (R- 12)	Direct Install	1.39	#N/A	No	2%	20%	76%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
361	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Retrofit	1.35	#N/A	No	11%	100%	78%	IL TRM
362	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	New Constructi on	1.35	#N/A	Yes	11%	100%	78%	IL TRM
363	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Time of Sale	1.35	#N/A	No	11%	100%	78%	IL TRM
364	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Retrofit	2.02	#N/A	No	2%	100%	78%	IL TRM
365	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	New Constructi on	2.02	#N/A	Yes	2%	100%	78%	IL TRM
366	All	Electric DHW w/Non- Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Time of Sale	2.02	#N/A	No	2%	100%	78%	IL TRM
367	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	1.69	#N/A	Yes	8%	100%	78%	IL TRM
368	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	1.69	#N/A	No	20%	100%	78%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 369 SingleFamily Electric Hot Water Water 120 ≥ 130 Direct 1.69 #N/A No 1% 100% 78% IL TRM &Duplex DHW Heater degrees degrees Install w/Non-Temp Electric Setback Heating Rate 370 Water 120 ≥ 130 1.69 #N/A 4% 100% 78% Multifamily Electric Hot Water Direct No IL TRM DHW Heater degrees Install degrees w/Non-Temp Electric Setback Heating Rate SEER 15 5% 100% IL TRM 371 Multifamily HVAC Air Source Existing air Early 1.14 No No 100% Heat Pump Heat Pump Replaceme source heat pump nt 372 HVAC SEER 15 1.16 0% 100% 100% SingleFamily Heat Pump Air Source Existing air Early No Yes IL TRM &Duplex Heat Pump source Replaceme nt heat pump 373 Multifamily Heat Pump HVAC Air Source SEER 16 Existing air Early 1.08 No No 5% 100% 100% IL TRM Heat Pump Replaceme source nt heat pump 374 SingleFamily HVAC Air Source SEER 16 1.10 No Yes 0% 100% 100% IL TRM Heat Pump Existing air Early &Duplex Heat Pump source Replaceme heat pump nt 375 Multifamily Heat Pump HVAC Air Source SEER 17 Existing air Early 1.03 No No 5% 100% 100% IL TRM Heat Pump Replaceme source nt heat pump 376 SingleFamily Heat Pump HVAC Air Source SEER 17 Early 1.05 No Yes 0% 100% 100% IL TRM Existing air &Duplex Heat Pump Replaceme source heat pump nt

### Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
377	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Existing air source heat pump	Early Replaceme nt	0.98	Yes	No	5%	100%	100%	IL TRM
378	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Existing air source heat pump	Early Replaceme nt	1.00	Yes	Yes	0%	100%	100%	IL TRM
379	Multifamily	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.64	Yes	No	4%	100%	100%	IL TRM
380	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.64	Yes	Yes	0%	100%	100%	IL TRM
381	Multifamily	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.63	Yes	No	4%	100%	100%	IL TRM
382	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.62	Yes	Yes	0%	100%	100%	IL TRM
383	Multifamily	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.61	Yes	No	4%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
384	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.61	Yes	Yes	0%	100%	100%	IL TRM
385	Multifamily	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.60	Yes	No	4%	100%	100%	IL TRM
386	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance no AC/dual baseline = heat pump	Early Replaceme nt	0.59	Yes	Yes	0%	100%	100%	IL TRM
387	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	1.22	No	Yes	1%	100%	93%	IL TRM
388	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	1.15	No	No	4%	100%	93%	IL TRM
389	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	1.22	No	Yes	86%	100%	93%	IL TRM
390	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	Time of Sale	1.15	No	No	40%	100%	93%	IL TRM
391	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	1.22	No	Yes	1%	100%	93%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
392	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	1.15	No	Yes	4%	100%	93%	IL TRM
393	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	1.22	No	Yes	86%	100%	93%	IL TRM
394	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Constructi on	1.15	No	Yes	40%	100%	93%	IL TRM
395	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.20	No	Yes	1%	100%	93%	IL TRM
396	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.19	No	No	4%	100%	93%	IL TRM
397	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.20	No	Yes	86%	100%	93%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 398 Multifamily AC/Gas HVAC Central Air SEER 14.5 Shifting Early 0.19 No No 40% 100% 93% IL TRM Conditioni baseline Heat Replaceme ng > 14.5 from nt SEER existing AC equipment to Federal minimum SEER13 equipment AC/Electric SEER 15 0.78 1% 100% 93% 399 SingleFamily HVAC Central Air Federal Time of No No IL TRM &Duplex Resistance Conditioni minimum Sale Heat ng > 14.5 SEER13 SEER equipment 400 Multifamily AC/Electric HVAC Central Air SEER 15 Federal Time of 0.74 No No 4% 100% 93% IL TRM Conditioni Resistance minimum Sale ng > 14.5 SEER13 Heat SEER equipment 401 SingleFamily AC/Gas HVAC Central Air SEER 15 Federal Time of 0.78 No No 86% 100% 93% IL TRM minimum &Duplex Conditioni Sale Heat ng > 14.5 SEER13 SEER equipment AC/Gas HVAC SEER 15 0.74 No 40% 100% 93% 402 Multifamily Central Air Time of No IL TRM Federal Conditioni minimum Heat Sale ng > 14.5 SEER13 SEER equipment 403 SingleFamily AC/Electric HVAC Central Air SEER 15 Federal New 0.78 No Yes 1% 100% 93% IL TRM &Duplex Resistance Conditioni Constructi minimum ng > 14.5 SEER13 Heat on SEER equipment 404 Multifamily AC/Electric HVAC Central Air SEER 15 0.74 4% 100% 93% IL TRM Federal New No Yes Resistance Conditioni minimum Constructi Heat ng > 14.5 SEER13 on SEER equipment

### Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
405	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Constructi on	0.78	No	Yes	86%	100%	93%	IL TRM
406	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Constructi on	0.74	No	Yes	40%	100%	93%	IL TRM
407	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.20	No	No	1%	100%	93%	IL TRM
408	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.19	No	No	4%	100%	93%	IL TRM
409	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.20	No	No	86%	100%	93%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 410 Multifamily AC/Gas HVAC Central Air SEER 15 Shifting Early 0.19 No No 40% 100% 93% IL TRM Conditioni baseline Heat Replaceme ng > 14.5 from nt SEER existing AC equipment to Federal minimum SEER13 equipment AC/Electric SEER 16 0.73 1% 100% 93% 411 SingleFamily HVAC Central Air Federal Time of No Yes IL TRM &Duplex Resistance Conditioni minimum Sale Heat ng > 14.5 SEER13 SEER equipment 412 Multifamily AC/Electric HVAC Central Air SEER 16 Federal Time of 0.69 No No 4% 100% 93% IL TRM Conditioni Resistance minimum Sale ng > 14.5 SEER13 Heat SEER equipment 413 SingleFamily AC/Gas HVAC Central Air SEER 16 Federal Time of 0.73 No Yes 86% 100% 93% IL TRM minimum &Duplex Conditioni Sale Heat ng > 14.5 SEER13 SEER equipment AC/Gas HVAC SEER 16 0.69 No 40% 100% 93% 414 Multifamily Central Air Time of No IL TRM Federal Conditioni minimum Heat Sale ng > 14.5 SEER13 SEER equipment 415 SingleFamily AC/Electric HVAC Central Air SEER 16 Federal New 0.73 No Yes 1% 100% 93% IL TRM &Duplex Resistance Conditioni Constructi minimum ng > 14.5 SEER13 Heat on SEER equipment 416 Multifamily AC/Electric HVAC Central Air SEER 16 0.69 4% 100% 93% IL TRM Federal New No Yes Resistance Conditioni minimum Constructi Heat ng > 14.5 SEER13 on SEER equipment

### Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
417	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Constructi on	0.73	No	Yes	86%	100%	93%	IL TRM
418	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Constructi on	0.69	No	Yes	40%	100%	93%	IL TRM
419	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.22	No	Yes	1%	100%	93%	IL TRM
420	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.21	No	No	4%	100%	93%	IL TRM
421	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.22	No	Yes	86%	100%	93%	IL TRM
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
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422	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.21	No	No	40%	100%	93%	IL TRM
423	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	0.69	No	No	1%	100%	93%	IL TRM
424	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	0.65	No	No	4%	100%	93%	IL TRM
425	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	0.69	No	No	86%	100%	93%	IL TRM
426	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	0.65	No	No	40%	100%	93%	IL TRM
427	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Constructi on	0.69	No	No	1%	100%	93%	IL TRM
428	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Constructi on	0.65	No	No	4%	100%	93%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
429	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Constructi on	0.69	No	No	86%	100%	93%	IL TRM
430	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Constructi on	0.65	No	No	40%	100%	93%	IL TRM
431	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.23	No	No	1%	100%	93%	IL TRM
432	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.22	No	No	4%	100%	93%	IL TRM
433	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.23	No	No	86%	100%	93%	IL TRM

# Measure Measure Included in Included in Applicabilit Economic Achievable

# Appendix D: Residential Measure Assumptions

Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
434	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum	Early Replaceme nt	0.22	No	No	40%	100%	93%	IL TRM
						SEER13								
435	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	0.64	No	No	1%	100%	93%	IL TRM
436	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	0.61	No	No	4%	100%	93%	IL TRM
437	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	0.64	No	No	86%	100%	93%	IL TRM
438	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	0.61	No	No	40%	100%	93%	IL TRM
439	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	0.64	No	No	1%	100%	93%	IL TRM
440	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	0.61	No	No	4%	100%	93%	IL TRM

\*Residential applicability factors were developed only for measures included in the potential analyses.

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
441	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	0.64	No	No	86%	100%	93%	IL TRM
442	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	0.61	No	No	40%	100%	93%	IL TRM
443	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.24	No	No	1%	100%	93%	IL TRM
444	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.23	No	No	4%	100%	93%	IL TRM
445	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.24	No	No	86%	100%	93%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
446	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.23	No	No	40%	100%	93%	IL TRM
447	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	0.60	No	No	1%	100%	93%	IL TRM
448	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	0.57	No	No	4%	100%	93%	IL TRM
449	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	0.60	No	No	86%	100%	93%	IL TRM
450	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	Time of Sale	0.57	No	No	40%	100%	93%	IL TRM
451	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	0.60	No	No	1%	100%	93%	IL TRM
452	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	0.57	No	No	4%	100%	93%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
453	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	0.60	No	No	86%	100%	93%	IL TRM
454	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Constructi on	0.57	No	No	40%	100%	93%	IL TRM
455	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.25	No	No	1%	100%	93%	IL TRM
456	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.24	No	No	4%	100%	93%	IL TRM
457	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.25	No	No	86%	100%	93%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
458	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.24	No	No	40%	100%	93%	IL TRM
459	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	0.57	No	No	1%	100%	93%	IL TRM
460	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	0.54	No	No	4%	100%	93%	IL TRM
461	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	0.57	No	No	86%	100%	93%	IL TRM
462	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	Time of Sale	0.54	No	No	40%	100%	93%	IL TRM
463	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	0.57	No	No	1%	100%	93%	IL TRM
464	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	0.54	No	No	4%	100%	93%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
465	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	0.57	No	No	86%	100%	93%	IL TRM
466	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Constructi on	0.54	No	No	40%	100%	93%	IL TRM
467	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.27	No	No	1%	100%	93%	IL TRM
468	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.25	No	No	4%	100%	93%	IL TRM
469	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.27	No	No	86%	100%	93%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* 470 Multifamily AC/Gas HVAC **Central Air** SEER 20 Shifting Early 0.25 No No 40% 100% Conditioni baseline Heat Replaceme ng > 14.5 from nt SEER existing AC equipment to Federal minimum SEER13 equipment AC/Electric SEER 21 0.56 1% 100% 471 SingleFamily HVAC Central Air Federal Time of No No &Duplex Resistance Conditioni minimum Sale Heat ng > 14.5 SEER13 SEER equipment 472 Multifamily AC/Electric HVAC Central Air SEER 21 Federal Time of 0.53 No No 4% 100% Conditioni Resistance minimum Sale ng > 14.5 SEER13 Heat SEER equipment 473 SingleFamily AC/Gas HVAC Central Air SEER 21 Federal Time of 0.56 #N/A No 86% 100% minimum &Duplex Conditioni Sale Heat ng > 14.5 SEER13 SEER equipment 474 AC/Gas HVAC SEER 21 0.53 #N/A No 40% 100% Multifamily Central Air Time of Federal minimum Heat Conditioni Sale ng > 14.5 SEER13 SEER equipment

Federal

SEER13

Federal

SEER13

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equipment

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equipment

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New

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on

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0.53

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#N/A

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No

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4%

### **Appendix D: Residential Measure Assumptions**

\*Residential applicability factors were developed only for measures included in the potential analyses.

Central Air

Conditioni

Central Air

Conditioni

ng > 14.5

SEER

ng > 14.5

SEER

SEER 21

SEER 21

475

476

SingleFamily

&Duplex

Multifamily

AC/Electric

Resistance

Heat

AC/Electric

Resistance

Heat

HVAC

HVAC

100%

100%

Not-Yet-

Adopted

Rate\*

93%

93%

93%

93%

93%

93%

93%

References

IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
477	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Constructi on	0.56	#N/A	No	86%	100%	93%	IL TRM
478	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Constructi on	0.53	#N/A	No	40%	100%	93%	IL TRM
479	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.28	#N/A	No	1%	100%	93%	IL TRM
480	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.26	#N/A	No	4%	100%	93%	IL TRM
481	SingleFamily &Duplex	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.28	#N/A	No	86%	100%	93%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
482	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioni ng > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replaceme nt	0.26	#N/A	No	40%	100%	93%	IL TRM
483	SingleFamily &Duplex	AC/Gas Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	5.12	#N/A	Yes	86%	100%	100%	IL TRM
484	SingleFamily &Duplex	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to 88	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	2.68	#N/A	Yes	13%	100%	100%	IL TRM

									Measure	Measure	Applicabilit			
Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Economic Potential	Achievable Potential	y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
485	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	8.06	#N/A	Yes	1%	100%	100%	IL TRM
486	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	5.61	#N/A	Yes	0%	100%	100%	IL TRM
487	SingleFamily &Duplex	Heat Pump	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	5.10	#N/A	Yes	0%	100%	100%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
488	SingleFamily &Duplex	AC/Gas Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	5.87	#N/A	No	86%	100%	100%	IL TRM
489	SingleFamily &Duplex	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	3.14	#N/A	No	13%	100%	100%	IL TRM
490	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	9.85	#N/A	No	1%	100%	100%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
491	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	7.13	#N/A	No	0%	100%	100%	IL TRM
492	SingleFamily &Duplex	Heat Pump	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	50% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	5.68	#N/A	No	0%	100%	100%	IL TRM
493	Multifamily	AC/Gas Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	5.08	#N/A	No	40%	100%	100%	IL TRM

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Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
494	Multifamily	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	2.53	#N/A	No	47%	100%	100%	IL TRM
495	Multifamily	AC/Electric Resistance Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	8.53	#N/A	No	4%	100%	100%	IL TRM
496	Multifamily	Electric Resistance Heat/No CAC	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	5.97	#N/A	No	4%	100%	100%	IL TRM

									Measure	Measure				
Measure	Sub-Sector	Building	Endlise	Measure	Efficient Measure Definition	Baseline	Measure	Measu	Included in Economic Potential	Included in Achievable Potential	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
497	Multifamily	Heat Pump	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	Retrofit	5.38	#N/A	No	5%	100%	100%	IL TRM
498	Multifamily	AC/Gas Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	2.00	#N/A	No	40%	100%	100%	IL TRM
499	Multifamily	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	1.03	#N/A	No	47%	100%	100%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
500	Multifamily	AC/Electric Resistance Heat	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	3.58	#N/A	No	4%	100%	100%	IL TRM
501	Multifamily	Electric Resistance Heat/No CAC	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	2.60	#N/A	No	4%	100%	100%	IL TRM
502	Multifamily	Heat Pump	HVAC	Duct Insulation and Sealing	90% or more ducts inside envelope   Connection s sealed with mastic  Ducts outside envelope are insulated to R8	90% or more ducts inside envelope   Significant leaks   Ducts outside envelope are insulated to R4 to R7	New Constructi on	2.06	#N/A	No	5%	100%	100%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 503 All AC/Gas HVAC Furnace Brushless non-BPM Time of 10.82 #N/A Yes 69% 100% 100% IL TRM Heat Blower blower Sale permanent Motor magnet motor (BPM) blower motor 504 All AC/Gas HVAC 10.82 #N/A 69% 100% New Yes 100% IL TRM Furnace Brushless non-BPM Heat Blower blower permanent Constructi Motor magnet motor on (BPM) blower motor 3% 505 All AC/Electric HVAC non-BPM 11.80 #N/A 100% 100% IL TRM Furnace Brushless Time of Yes Resistance Sale Blower permanent blower Heat Motor magnet motor (BPM) blower motor #N/A 3% 506 All AC/Electric HVAC New 11.80 Yes 100% 100% Furnace Brushless non-BPM IL TRM Resistance Blower permanent blower Constructi Heat Motor on magnet motor (BPM) blower motor 507 All Electric HVAC Furnace Brushless non-BPM Time of 8.93 #N/A Yes 1% 100% 100% IL TRM Resistance Blower permanent blower Sale Heat/No Motor magnet motor CAC (BPM) blower motor 508 All HVAC 8.93 #N/A 1% 100% 100% IL TRM Electric Furnace Brushless non-BPM New Yes Resistance Blower blower Constructi permanent Heat/No Motor magnet motor on CAC (BPM) blower motor 509 All HVAC Time of 11.80 #N/A 2% 100% 100% IL TRM Heat Pump Furnace Brushless non-BPM Yes Blower blower Sale permanent Motor magnet motor (BPM) blower motor

#### Appendix D: Residential Measure Assumptions

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition re TRC Analysis Analysis Type\* Feasibility\* Rate\* Type 510 All Heat Pump HVAC Furnace Brushless non-BPM New 11.80 #N/A Yes 2% 100% 100% IL TRM Blower blower Constructi permanent Motor magnet motor on (BPM) blower motor 511 All HVAC 7.95 #N/A 25% 100% 100% Gas Heat non-BPM Time of Yes IL TRM Furnace Brushless (No AC) Blower blower Sale permanent Motor magnet motor (BPM) blower motor 512 All HVAC #N/A 100% Gas Heat non-BPM 7.95 25% 100% IL TRM Furnace Brushless New Yes (No AC) Blower permanent blower Constructi Motor magnet motor on (BPM) blower motor 0.57 No 5% 64% 513 HVAC SEER 14, Time of No 100% Multifamily Heat Pump Ground ENERGY IL TRM Source STAR DGX HSPF 8.2, Sale Heat Pump 11.8 EER ASHP 0.58 0% 64% 514 SingleFamily Heat Pump HVAC Ground ENERGY SEER 14. Time of No Yes 100% IL TRM &Duplex Source STAR DGX HSPF 8.2, Sale Heat Pump 11.8 EER ASHP 5% 100% 64% 515 Multifamily Heat Pump HVAC Ground ENERGY SEER 14, New 0.53 No Yes IL TRM HSPF 8.2, Source STAR DGX Constructi Heat Pump 11.8 EER on ASHP HVAC 0.54 0% 100% 64% 516 SingleFamily Heat Pump Ground ENERGY **SEER 14**, New No Yes IL TRM &Duplex STAR DGX HSPF 8.2, Source Constructi Heat Pump 11.8 EER on ASHP 517 AC/Electric HVAC ENERGY 3.51 4% 100% 64% IL TRM Multifamily Ground Federal Time of No No Resistance Source STAR DGX standard Sale Heat Heat Pump central AC, electric resistance heating

Appendix D: Residential Measure Assumptions

Maagura		Duilding		Maggura	Efficient	Deceline	Maagura	Moosu	Measure Included in Economic	Measure Included in Achievable	Applicabilit y to	Tachaical	Not-Yet-	
ID	Sub-Sector	Tvpe	End Use	Name	Definition	Definition		re TRC	Analysis	Analysis	Tvpe*	Feasibility*	Rate*	References
518	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	Time of Sale	3.62	No	Yes	1%	100%	64%	IL TRM
519	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	New Constructi on	3.66	No	Yes	4%	100%	64%	IL TRM
520	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	New Constructi on	3.80	No	Yes	1%	100%	64%	IL TRM
521	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing air source heat pump	Early Replaceme nt	0.75	No	No	5%	100%	64%	IL TRM
522	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing air source heat pump	Early Replaceme nt	0.76	No	Yes	0%	100%	64%	IL TRM
523	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing AC, electric heating	Early Replaceme nt	1.18	No	No	4%	100%	64%	IL TRM
524	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Existing AC, electric heating	Early Replaceme nt	1.27	No	Yes	1%	100%	64%	IL TRM
525	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.44	No	No	5%	100%	64%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analvsis	Measure Included in Achievable Potential Analvsis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
526	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.44	No	Yes	0%	100%	64%	IL TRM
527	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.57	No	Yes	5%	100%	64%	IL TRM
528	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.58	No	Yes	0%	100%	64%	IL TRM
529	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.56	No	No	4%	100%	64%	IL TRM
530	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.69	No	Yes	1%	100%	64%	IL TRM
531	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	3.51	No	Yes	4%	100%	64%	IL TRM
532	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	3.62	No	Yes	1%	100%	64%	IL TRM

Measure		Building	E due	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
533	All	Electric Heating	HVAC	High Efficiency Bathroom Exhaust Fan	Continuous operation - 8.3 CFM/watt exhaust- only ventilation fan	3.1 CFM/watt exhaust- only ventilation fan	Type Time of Sale	1.82	#N/A	Analysis Yes	түре* 6%	74%	100%	IL TRM
534	SingleFamily &Duplex	Electric Heating	HVAC	High Efficiency Bathroom Exhaust Fan	Continuous operation - 8.3 CFM/watt exhaust- only ventilation fan	3.1 CFM/watt exhaust- only ventilation fan	Retrofit	1.82	#N/A	No	2%	82%	100%	IL TRM
535	Multifamily	Electric Heating	HVAC	High Efficiency Bathroom Exhaust Fan	Continuous operation - 8.3 CFM/watt exhaust- only ventilation fan	3.1 CFM/watt exhaust- only ventilation fan	Retrofit	1.82	#N/A	No	13%	59%	100%	IL TRM
536	All	Electric Heating	HVAC	High Efficiency Bathroom Exhaust Fan	Continuous operation - 8.3 CFM/watt exhaust- only ventilation fan	3.1 CFM/watt exhaust- only ventilation fan	New Constructi on	1.82	#N/A	Yes	6%	74%	100%	IL TRM
537	All	Gas Heating	HVAC	High Efficiency Bathroom Exhaust Fan	Continuous operation - 8.3 CFM/watt exhaust- only ventilation fan	3.1 CFM/watt exhaust- only ventilation fan	Time of Sale	1.82	#N/A	Yes	94%	74%	100%	IL TRM

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 538 SingleFamily Gas HVAC High Continuous 3.1 Retrofit 1.82 #N/A No 98% 82% 100% IL TRM &Duplex CFM/watt Heating Efficiency operation exhaust-Bathroom 8.3 Exhaust CFM/watt only Fan exhaustventilation only fan ventilation fan HVAC 3.1 1.82 #N/A 87% 59% 100% 539 Multifamily Gas High Continuous Retrofit No IL TRM Heating Efficiency operation -CFM/watt Bathroom exhaust-8.3 Exhaust CFM/watt only exhaust-Fan ventilation only fan ventilation fan 540 All Gas HVAC High Continuous 3.1 New 1.82 #N/A Yes 94% 74% 100% IL TRM Heating Efficiency operation -CFM/watt Constructi Bathroom 8.3 exhauston Exhaust CFM/watt only exhaust-Fan ventilation only fan ventilation fan SingleFamily HVAC Programm 5.17 2% 100% 47% 541 Electric Programm Non-Retrofit Yes No IL TRM &Duplex Heating able able Programm able Thermosta Thermosta ts ts Thermosta t 542 HVAC Non-3.33 Yes Yes 13% 100% 35% IL TRM Multifamily Electric Programm Programm Retrofit Heating able able Programm Thermosta Thermosta able ts ts Thermosta t 2% 100% 47% 543 SingleFamily Electric HVAC Programm Programm Non-New 5.17 Yes No IL TRM &Duplex Heating able able Programm Constructi Thermosta able Thermosta on ts ts Thermosta t 544 Multifamily Electric HVAC Programm Programm Non-New 3.33 Yes No 13% 100% 35% IL TRM Heating able able Programm Constructi able Thermosta Thermosta on ts ts Thermosta t

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
545	SingleFamily &Duplex	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Retrofit	2.44	#N/A	No	98%	100%	47%	IL TRM
546	Multifamily	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Retrofit	1.59	#N/A	No	87%	100%	35%	IL TRM
547	SingleFamily &Duplex	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	New Constructi on	2.44	#N/A	No	98%	100%	47%	IL TRM
548	Multifamily	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	New Constructi on	1.59	#N/A	No	87%	100%	35%	IL TRM
549	SingleFamily &Duplex	Electric Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Time of Sale	5.17	#N/A	No	2%	100%	47%	IL TRM
550	Multifamily	Electric Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Time of Sale	3.33	#N/A	Yes	13%	100%	35%	IL TRM
551	SingleFamily &Duplex	Electric Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Direct Install	9.24	#N/A	No	2%	100%	47%	IL TRM
552	Multifamily	Electric Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Direct Install	5.95	#N/A	Yes	13%	100%	35%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
553	Sub-Sector SingleFamily &Duplex	Type Heat Pump	HVAC	Name Programm able Thermosta ts	Definition Programm able Thermosta ts	Definition Non- Programm able Thermosta t	Type New Constructi on	<u>re TRC</u> 3.04	Analysis #N/A	Analysis No	Type* 0%	Feasibility*	Rate* 47%	IL TRM
554	Multifamily	Heat Pump	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	New Constructi on	1.96	#N/A	No	5%	100%	35%	IL TRM
555	SingleFamily &Duplex	Heat Pump	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Retrofit	3.04	#N/A	No	0%	100%	47%	IL TRM
556	Multifamily	Heat Pump	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Retrofit	1.96	#N/A	No	5%	100%	35%	IL TRM
557	SingleFamily &Duplex	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Direct Install	2.63	#N/A	Yes	98%	100%	47%	IL TRM
558	Multifamily	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Direct Install	1.70	#N/A	Yes	87%	100%	35%	IL TRM
559	SingleFamily &Duplex	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Time of Sale	2.44	#N/A	No	98%	100%	47%	IL TRM
560	Multifamily	Gas Heating	HVAC	Programm able Thermosta ts	Programm able Thermosta ts	Non- Programm able Thermosta t	Time of Sale	1.59	#N/A	Yes	87%	100%	35%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 561 SingleFamily Heat Pump HVAC Programm Non-Direct 5.43 #N/A No 0% 100% 47% IL TRM Programm &Duplex able able Programm Install able Thermosta Thermosta ts ts Thermosta t HVAC 3.50 #N/A 5% 100% 35% 562 Multifamily Heat Pump Programm Programm Non-Direct Yes IL TRM able able Programm Install Thermosta Thermosta able ts Thermosta ts t 563 SingleFamily Heat Pump HVAC Programm Programm Non-Time of 3.04 #N/A No 0% 100% 47% IL TRM &Duplex able able Programm Sale Thermosta able Thermosta Thermosta ts ts t 564 Multifamily Heat Pump HVAC Programm Non-Time of 1.96 #N/A No 5% 100% 35% IL TRM Programm able able Programm Sale Thermosta Thermosta able ts ts Thermosta t SingleFamily 565 HVAC Smart Wifi Smart Wifi Non-1.44 Yes Yes 2% 100% 99% IL TRM Electric Retrofit &Duplex Thermosta Heating Thermosta Programm ts able ts Thermosta t 0.93 566 Multifamily Electric HVAC Smart Wifi Smart Wifi Non-Retrofit No No 13% 100% 99% IL TRM Heating Thermosta Thermosta Programm ts ts able Thermosta t 567 SingleFamily Electric HVAC Smart Wifi Smart Wifi Non-New 1.44 No Yes 2% 100% 99% IL TRM &Duplex Heating Thermosta Thermosta Programm Constructi able ts ts on Thermosta t 568 Multifamily Electric HVAC Smart Wifi Smart Wifi Non-New 0.93 No Yes 13% 100% 99% IL TRM Heating Thermosta Thermosta Programm Constructi ts ts able on Thermosta t

#### Appendix D: Residential Measure Assumptions

Measure	Sub-Sector	Building	<b>Fnd Lise</b>	Measure Name	Efficient Measure Definition	Baseline	Measure Type	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Bate*	References
569	SingleFamily &Duplex	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Retrofit	0.68	#N/A	Yes	98%	100%	99%	IL TRM
570	Multifamily	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Retrofit	0.44	#N/A	No	87%	100%	99%	IL TRM
571	SingleFamily &Duplex	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	New Constructi on	0.68	#N/A	Yes	98%	100%	99%	IL TRM
572	Multifamily	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	New Constructi on	0.44	#N/A	Yes	87%	100%	99%	IL TRM
573	SingleFamily &Duplex	Electric Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Time of Sale	1.44	#N/A	Yes	2%	100%	99%	IL TRM
574	Multifamily	Electric Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Time of Sale	0.93	#N/A	Yes	13%	100%	99%	IL TRM
575	SingleFamily &Duplex	Electric Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Direct Install	2.57	#N/A	Yes	2%	100%	99%	IL TRM
576	Multifamily	Electric Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Direct Install	1.66	#N/A	Yes	13%	100%	99%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
577	Sub-Sector SingleFamily &Duplex	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	New Constructi on	0.85	#N/A	Yes	0%	100%	846** 99%	IL TRM
578	Multifamily	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	New Constructi on	0.55	#N/A	Yes	5%	100%	99%	IL TRM
579	SingleFamily &Duplex	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Retrofit	0.85	#N/A	Yes	0%	100%	99%	IL TRM
580	Multifamily	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Retrofit	0.55	#N/A	No	5%	100%	99%	IL TRM
581	SingleFamily &Duplex	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Direct Install	1.22	#N/A	Yes	98%	100%	99%	IL TRM
582	Multifamily	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Direct Install	0.44	#N/A	No	87%	100%	99%	IL TRM
583	SingleFamily &Duplex	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Time of Sale	0.68	#N/A	Yes	98%	100%	99%	IL TRM
584	Multifamily	Gas Heating	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Time of Sale	0.44	#N/A	Yes	87%	100%	99%	IL TRM

Measure ID 585	Sub-Sector SingleFamily &Duplex	Building Type Heat Pump	End Use HVAC	Measure Name Smart Wifi Thermosta ts	Efficient Measure Definition Smart Wifi Thermosta ts	Baseline Definition Non- Programm able	Measure Type Direct Install	Measu re TRC 1.51	Measure Included in Economic Potential Analysis #N/A	Measure Included in Achievable Potential Analysis Yes	Applicabilit y to Building Type* 0%	Technical Feasibility* 100%	Not-Yet- Adopted Rate* 99%	References IL TRM
						Thermosta t								
586	Multifamily	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Direct Install	0.98	#N/A	Yes	5%	100%	99%	IL TRM
587	SingleFamily &Duplex	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Time of Sale	0.85	#N/A	Yes	0%	100%	99%	IL TRM
588	Multifamily	Heat Pump	HVAC	Smart Wifi Thermosta ts	Smart Wifi Thermosta ts	Non- Programm able Thermosta t	Time of Sale	0.55	#N/A	Yes	5%	100%	99%	IL TRM
589	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	7.70	No	Yes	98%	100%	100%	IL TRM
590	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	7.26	No	Yes	2%	100%	100%	IL TRM

Measure		Building	·	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Type	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
591	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	7.72	No	Yes	87%	100%	100%	IL TRM
592	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	7.24	No	Yes	13%	100%	100%	IL TRM
593	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	7.85	No	Yes	94%	100%	88%	IL TRM
594	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	7.39	No	Yes	6%	100%	88%	IL TRM
595	All	Gas Heating	Lighting	Efficient light bulbs	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	7.85	#N/A	Yes	94%	100%	88%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 596	Sub-Sector All	Type Electric Heating	End Use Lighting	Name Efficient light bulbs	Definition 12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	Definition 15W Post- 2020 EISA compliant lamp	Type Time of Sale	re TRC 7.39	Analysis #N/A	Analysis Yes	<u>Type*</u> 6%	Feasibility* 100%	Rate* 88%	IL TRM
597	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps - OM	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	7.85	#N/A	Yes	94%	100%	88%	IL TRM
598	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps - OM	12.32 W LED installed in year 2020 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	7.39	#N/A	Yes	6%	100%	88%	IL TRM
599	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2021 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	6.17	No	Yes	98%	100%	100%	IL TRM
600	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2021 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	5.82	No	Yes	2%	100%	100%	IL TRM

Measure		Building	·	Massura	Efficient	Raceline	Maasura	Мезси	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet-	Deferonces
ID	Sub-Sector	Type	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	References
601	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2021 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	6.19	No	Yes	87%	100%	100%	IL TRM
602	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2021 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	5.80	No	Yes	13%	100%	100%	IL TRM
603	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2021 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	6.29	No	No	94%	100%	88%	IL TRM
604	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2021 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	5.92	No	No	6%	100%	88%	IL TRM
605	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2022 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	5.15	No	Yes	98%	100%	100%	IL TRM

Measure		Building	·	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
606	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2022 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	4.85	No	Yes	2%	100%	100%	IL TRM
607	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2022 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	5.16	No	Yes	87%	100%	100%	IL TRM
608	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2022 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	4.84	No	Yes	13%	100%	100%	IL TRM
609	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2022 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	5.25	No	No	94%	100%	88%	IL TRM
610	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2022 representi ng bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Time of Sale	4.94	No	No	6%	100%	88%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 611 SingleFamily Gas Lighting Omnidirect 23.1 W LED 28.2W Direct 11.52 No Yes 98% 100% 100% IL TRM &Duplex ional A-Post-2020 Heating installed in Install year 2020 EISA type LED lamps compliant lamp 612 SingleFamily Omnidirect 23.1 W LED 28.2W 10.86 2% 100% 100% Electric Lighting Direct No Yes IL TRM &Duplex ional Ainstalled in Post-2020 Heating Install type LED year 2020 EISA lamps compliant lamp Lighting 613 Multifamily Gas Omnidirect 23.1 W LED 28.2W Direct 11.54 No Yes 87% 100% 100% IL TRM Heating ional Ainstalled in Post-2020 Install type LED year 2020 EISA lamps compliant lamp 614 Multifamily Electric Omnidirect 23.1 W LED 28.2W Direct 10.83 No Yes 13% 100% 100% IL TRM Lighting ional A-Post-2020 Heating installed in Install type LED EISA year 2020 lamps compliant lamp 615 All Gas Omnidirect 23.1 W LED 28.2W Time of 11.75 No Yes 94% 100% 88% IL TRM Lighting ional Ainstalled in Post-2020 Sale Heating type LED year 2020 EISA lamps compliant lamp 11.06 100% 88% 616 All Electric Lighting Omnidirect 23.1 W LED 28.2W Time of No Yes 6% IL TRM Heating ional Ainstalled in Post-2020 Sale type LED year 2020 EISA lamps compliant lamp 617 SingleFamily Gas Lighting Omnidirect 23.1 W LED 28.2W Direct 9.23 No Yes 98% 100% 100% IL TRM &Duplex Heating ional Ainstalled in Post-2020 Install type LED year 2021 EISA lamps compliant lamp 618 SingleFamily Electric Lighting Omnidirect 23.1 W LED 28.2W Direct 8.70 No Yes 2% 100% 100% IL TRM ional Ainstalled in Post-2020 &Duplex Heating Install EISA type LED year 2021 lamps compliant lamp

#### Appendix D: Residential Measure Assumptions

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 619 Multifamily Gas Lighting Omnidirect 23.1 W LED 28.2W Direct 9.25 No Yes 87% 100% 100% IL TRM ional A-Post-2020 Heating installed in Install year 2021 EISA type LED lamps compliant lamp 620 Multifamily 23.1 W LED 28.2W 8.67 No 13% 100% 100% Electric Lighting Omnidirect Direct Yes IL TRM ional Ainstalled in Post-2020 Heating Install type LED year 2021 EISA lamps compliant lamp Lighting 621 All Gas Omnidirect 23.1 W LED 28.2W Time of 9.41 No No 94% 100% 88% IL TRM Heating ional Ainstalled in Post-2020 Sale type LED year 2021 EISA lamps compliant lamp 622 All Electric Lighting Omnidirect 23.1 W LED 28.2W Time of 8.86 No No 6% 100% 88% IL TRM ional A-Post-2020 Heating installed in Sale type LED EISA year 2021 lamps compliant lamp 623 SingleFamily Gas Omnidirect 23.1 W LED 28.2W 7.70 No Yes 98% 100% 100% Lighting Direct IL TRM &Duplex ional Ainstalled in Post-2020 Install Heating type LED year 2022 EISA lamps compliant lamp 7.26 2% 100% 100% 624 SingleFamily Electric Lighting Omnidirect 23.1 W LED 28.2W Direct No Yes IL TRM &Duplex Heating ional Ainstalled in Post-2020 Install type LED year 2022 EISA lamps compliant lamp 625 7.71 Multifamily Gas Lighting Omnidirect 23.1 W LED 28.2W Direct No Yes 87% 100% 100% IL TRM Heating ional Ainstalled in Post-2020 Install type LED year 2022 EISA lamps compliant lamp 626 Multifamily Electric Lighting Omnidirect 23.1 W LED 28.2W Direct 7.24 No Yes 13% 100% 100% IL TRM ional Ainstalled in Post-2020 Heating Install EISA type LED year 2022 lamps compliant lamp

#### Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
627	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Time of Sale	7.85	No	No	94%	100%	88%	IL TRM
628	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Time of Sale	7.39	No	No	6%	100%	88%	IL TRM
631	Multifamily	Gas Heating	Lighting	High Performan ce and Reduced Wattage T8 Fixtures and Lamps	High Performan ce T8/T5, Reduced Wattage T8/T5, and T8/T5 Fixtures and Lamps	2-Lamp 32W HPT8 with Low- BF Ballast	Time of Sale	1.32	#N/A	No	87%	62%	100%	IL TRM
632	Multifamily	Electric Heating	Lighting	High Performan ce and Reduced Wattage T8 Fixtures and Lamps	High Performan ce T8/T5, Reduced Wattage T8/T5, and T8/T5 Fixtures and Lamps	2-Lamp 32W HPT8 with Low- BF Ballast	Time of Sale	1.19	#N/A	No	13%	62%	100%	IL TRM
633	All	Gas Heating	Lighting	LED Downlights	14 W LED	35W Incandesce nt/Halogen MR16/PAR 16 pin- based lamps	Time of Sale	130.76	Yes	Yes	94%	6%	88%	IL TRM
634	All	Gas Heating	Lighting	LED Downlights	14 W LED	35W Incandesce nt/Halogen MR16/PAR 16 pin- based lamps	New Constructi on	130.76	Yes	Yes	94%	2%	100%	IL TRM
пррепам	Binesidenti	armeasar	enssampt											
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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
635	All	Electric Heating	Lighting	LED Downlights	14 W LED	35W Incandesce nt/Halogen MR16/PAR 16 pin- based lamps	Time of Sale	123.13	Yes	Yes	6%	6%	88%	IL TRM
636	All	Electric Heating	Lighting	LED Downlights	14 W LED	35W Incandesce nt/Halogen MR16/PAR 16 pin- based lamps	New Constructi on	123.13	Yes	Yes	6%	2%	100%	IL TRM
637	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	1.12	No	Yes	98%	100%	100%	IL TRM
638	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	1.05	No	Yes	2%	100%	100%	IL TRM
639	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	1.12	No	Yes	87%	43%	100%	IL TRM

Measure		Building	·	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
640	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	1.05	No	Yes	13%	43%	100%	IL TRM
641	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	43.80	No	No	94%	100%	90%	IL TRM
642	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	41.26	No	No	6%	100%	53%	IL TRM
643	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2017 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.66	Yes	Yes	98%	100%	100%	IL TRM
644	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2017 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.62	Yes	Yes	2%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
645	Multifamily	Gas Heating	Lighting	ENERGY STAR	13.9 W CFL installed in	42.4W EISA	Direct Install	0.66	Yes	Yes	87%	100%	100%	IL TRM
				Compact Fluorescen	year 2017 representi	compliant Iamp								
				t Lamp (CFL)	ng bulbs less than									
					1050 Iumens									
646	Multifamily	Electric	Lighting	ENERGY	13.9 W CFL	42.4W	Direct	0.62	Yes	Yes	13%	100%	100%	IL TRM
		Heating		STAR	installed in	EISA	Install							
				Compact	year 2017	compliant								
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs									
				(CFL)	less than									
					lumens									
647	All	Gas	Lighting	ENERGY	13.9 W CFL	42.4W	Time of	32.42	Yes	Yes	94%	100%	81%	IL TRM
		Heating	0 0	STAR	installed in	EISA	Sale							
		-		Compact	year 2017	compliant								
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs									
				(CFL)	less than									
					1050									
640	A 11	El constru	1 to batta a	ENIEDOV	lumens	42 414	<b>T</b> '	20.04		N	<u> </u>	100%	400/	
648	All	Electric	Lighting	ENERGY	13.9 W CFL	42.4W	Time of	30.81	Yes	Yes	6%	100%	48%	IL I RIVI
		пеацій		Compact	vear 2017	compliant	Sale							
				Fluorescen	renresenti	lamn								
				t Lamp	ng bulbs	lamp								
				(CFL)	less than									
				. ,	1050									
					lumens									
649	SingleFamily	Gas	Lighting	ENERGY	13.9 W CFL	42.4W	Direct	0.36	Yes	No	98%	100%	100%	IL TRM
	&Duplex	Heating		STAR	installed in	EISA	Install							
				Compact	year 2018	compliant								
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs									
				(CFL)	1050									
					lumens									

Measure		Building	·	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
650	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR	13.9 W CFL installed in	42.4W EISA	Direct Install	0.35	Yes	No	2%	100%	100%	IL TRM
				Compact Fluorescen	year 2018 representi	compliant lamp								
				t Lamp (CFL)	ng bulbs less than									
					1050 Iumens									
651	Multifamily	Gas	Lighting	ENERGY	13.9 W CFL	42.4W	Direct	0.36	Yes	No	87%	43%	100%	IL TRM
		Heating		STAR	installed in	EISA	Install							
				Compact	year 2018	compliant								
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs									
				(CFL)	less than									
					1050									
652	Multifamily	Electric	Lighting	ENERGY	13 9 W CEI	42 4\\/	Direct	0.35	Ves	No	13%	43%	100%	II TRM
032	Waterariny	Heating	21811118	STAR	installed in	EISA	Install	0.55	105	110	13/0	1370	100/0	12 1100
		B		Compact	vear 2018	compliant	motan							
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs	·								
				(CFL)	less than									
					1050									
					lumens									
653	All	Gas	Lighting	ENERGY	13.9 W CFL	42.4W	Time of	6.22	Yes	No	94%	100%	73%	IL TRM
		Heating		STAR	installed in	EISA	Sale							
				Compact	year 2018	compliant								
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs									
				(CFL)	less than									
					lumons									
654	۵	Flectric	Lighting	ENERGY	13 9 W CEI	42 410/	Time of	5 94	Ves	No	6%	100%	43%	
054		Heating	Lighting	STAR	installed in	42.4 W	Sale	5.54	163	NO	070	100%	4370	
		ricuting		Compact	vear 2018	compliant	Suic							
				Fluorescen	representi	lamp								
				t Lamp	ng bulbs	I.								
				(CFL)	less than									
					1050									
					lumens									

Measure		Building	·	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
655	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.16	Yes	No	98%	100%	100%	IL TRM
656	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.15	Yes	No	2%	100%	100%	IL TRM
657	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.16	Yes	No	87%	43%	100%	IL TRM
658	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.15	Yes	No	13%	43%	100%	IL TRM
659	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	1.02	Yes	No	94%	100%	66%	IL TRM

Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Turo*	Technical	Not-Yet- Adopted	References
660	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	0.96	Yes	No	6%	100%	39%	IL TRM
661	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.14	Yes	No	98%	100%	100%	IL TRM
662	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.14	Yes	No	2%	100%	100%	IL TRM
663	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.14	Yes	No	87%	43%	100%	IL TRM
664	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.14	Yes	No	13%	43%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
665	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	0.68	Yes	No	94%	100%	59%	IL TRM
666	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	0.64	Yes	No	6%	100%	35%	IL TRM
667	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp	New Constructi on	0.71	No	No	6%	100%	100%	IL TRM
668	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.71	No	No	6%	100%	63%	IL TRM
669	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.71	No	No	94%	100%	100%	IL TRM

			<u>e r (ee ap (</u>						Measure	Measure	Applicabilit			
					Efficient				Fconomic		Applicabilit v to		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Type	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	nererences
670	All	Gas	Lighting	Exterior	13.9 W CFL	42.4W	Time of	0.71	No	No	94%	100%	63%	IL TRM
		Heating		Hardwired	installed in	EISA	Sale							
				Compact	year 2016	compliant								
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
674		El stato	the latter of	E de de c	lumens	42 444	N	0.45	N1 -	NL	<u> </u>	4000/	4000/	
671	All	Electric	Lighting	Exterior	13.9 W CFL	42.4W	New	0.45	NO	NO	6%	100%	100%	IL I RIVI
		Heating		Hardwired	Installed In	EISA	Constructi							
				Eluorescen	representi	lamn -	011							
				tlamn	ng hulhs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									
672	All	Electric	Lighting	Exterior	13.9 W CFL	42.4W	Time of	0.45	No	No	6%	100%	63%	IL TRM
		Heating		Hardwired	installed in	EISA	Sale							
				Compact	year 2017	compliant								
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
673	٨١	Gas	Lighting	Exterior		12 1111	Now	0.45	No	No	9/%	100%	100%	
075		Heating	Lighting	Hardwired	installed in	FISA	Constructi	0.45	NO	NO	5470	10070	100%	
		B		Compact	vear 2017	compliant	on							
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									
674	All	Gas	Lighting	Exterior	13.9 W CFL	42.4W	Time of	0.45	No	No	94%	100%	63%	IL TRM
		Heating		Hardwired	installed in	EISA	Sale							
				Compact	year 2017	compliant								
				Fluorescen	representi	lamp -								
					loss than	Exterior								
				(CFL) Fixtura	1050	naiuwired								
				TIXLUTE	lumens									
					umens									

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
675	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.26	No	No	6%	100%	100%	IL TRM
676	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.26	No	No	6%	100%	63%	IL TRM
677	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.26	#N/A	Yes	94%	25%	100%	IL TRM
678	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.26	No	No	94%	100%	63%	IL TRM
679	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.11	#N/A	Yes	6%	25%	100%	IL TRM

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									Included in	Included in	Applicabilit			
					Efficient				Economic	Achievable	v to		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
680	All	Electric	Lighting	Exterior	13.9 W CFL	42.4W	Time of	0.11	No	No	6%	100%	63%	IL TRM
		Heating		Hardwired	installed in	EISA	Sale							
				Compact	year 2019	compliant								
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									
681	All	Gas	Lighting	Exterior	13.9 W CFL	42.4W	New	0.11	#N/A	Yes	94%	25%	100%	IL TRM
		Heating		Hardwired	installed in	EISA	Constructi							
				Lighting	year 2019	compliant	on							
				Fixtures	representi	lamp -								
					ng bulbs	Exterior								
					1050	Haluwileu								
					lumens									
682	All	Gas	Lighting	Exterior	13.9 W CFI	42 4W	Time of	0.11	No	No	94%	100%	63%	II TRM
002	,	Heating	218110118	Hardwired	installed in	EISA	Sale	0.11	110	110	5170	100/0	0370	12 1100
				Compact	year 2019	compliant								
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									
683	All	Electric	Lighting	Exterior	13.9 W CFL	42.4W	New	0.11	#N/A	Yes	6%	25%	100%	IL TRM
		Heating		Hardwired	installed in	EISA	Constructi							
				Lighting	year 2020	compliant	on							
				Fixtures	representi	lamp -								
					ng bulbs	Exterior								
					less than	Hardwired								
					1050									
694	A II	Flootric	Lighting	Futorior		42 4144	Time of	0.11	No	No	69/	100%	639/	
084	All	Heating	Lighting	Exterior	13.9 W CFL		Sala	0.11	INO	INO	0%	100%	03%	IL I KIVI
		пеация		Compact	ver 2020	compliant	Sale							
				Fluorescen	renresenti	lamn -								
				t Lamn	ng bulbs	Exterior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									

Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tuno*	Technical	Not-Yet- Adopted	References
685	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.11	#N/A	Yes	94%	25%	100%	IL TRM
686	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.11	No	No	94%	100%	63%	IL TRM
687	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.26	#N/A	Yes	94%	25%	100%	IL TRM
688	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.26	No	No	94%	100%	63%	IL TRM
689	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.24	#N/A	Yes	6%	25%	100%	IL TRM

			<u> </u>						Measure	Measure				
					Tff:start				Included in	Included in	Applicabilit			
Moasuro		Ruilding		Moasuro	Mossuro	Pacolino	Mossuro	Морси	Potontial	Potontial	y tu Building	Tochnical	Adopted	Deferrer
	Sub-Sector	Type	Endlise	Name	Definition	Definition	Type	ro TRC	Analysis	Analysis		Feasibility*	Rate*	References
690		Electric	Lighting	Interior	13.9 W CEL	42 4W	Time of	0.24	No	No	6%	100%	63%	II TRM
050		Heating	Lighting	Hardwired	installed in	FISA	Sale	0.24		No	070	100/0	0570	
		i i catili B		Compact	vear 2016	compliant	oure							
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Interior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									
691	All	Gas	Lighting	Interior	13.9 W CFL	42.4W	New	0.19	#N/A	Yes	94%	25%	100%	IL TRM
		Heating		Hardwired	installed in	EISA	Constructi							
				Lighting	year 2017	compliant	on							
				Fixtures	representi	lamp -								
					ng bulbs	Interior								
					less than	Hardwired								
					1050									
602	٨١	Gas	Lighting	Interior		12 1111	Timo of	0.10	No	No	01%	100%	62%	
052		Heating	Lighting	Hardwired	installed in	FISA	Sale	0.15	NO	NO	5470	10070	0370	
		Treating		Compact	vear 2017	compliant	Sale							
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Interior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									
693	All	Electric	Lighting	Interior	13.9 W CFL	42.4W	New	0.18	#N/A	Yes	6%	25%	100%	IL TRM
		Heating		Hardwired	installed in	EISA	Constructi							
				Lighting	year 2017	compliant	on							
				Fixtures	representi	lamp -								
					ng bulbs	Interior								
					less than	Hardwired								
					1050									
604	A II	Electric	Lighting	Interior		12 1111	Time of	0.19	No	No	69/	100%	620/	
694	All	Heating	Lighting	Hardwirod	13.9 W CFL	42.4VV	Salo	0.18	NO	NO	0%	100%	03%	
		Treating		Compact	vear 2017	compliant	Sale							
				Fluorescen	representi	lamp -								
				t Lamp	ng bulbs	Interior								
				(CFL)	less than	Hardwired								
				Fixture	1050									
					lumens									

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
695	Sub-Sector All	Gas Heating	Lighting	Name Interior Hardwired Lighting Fixtures	Definition 13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	Definition 42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	re TRC 0.12	Analysis #N/A	Analysis Yes	<u>1ype*</u> 94%	Feasibility* 25%	Rate*	IL TRM
696	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.12	No	No	94%	100%	63%	IL TRM
697	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.12	#N/A	Yes	6%	25%	100%	IL TRM
698	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.12	No	No	6%	100%	63%	IL TRM
699	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.06	#N/A	Yes	94%	25%	100%	IL TRM

Measure	Sub-Sector	Building	End Lise	Measure	Efficient Measure Definition	Baseline	Measure	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
700	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.06	No	No	94%	100%	63%	IL TRM
701	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.05	#N/A	Yes	6%	25%	100%	IL TRM
702	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.05	No	No	6%	100%	63%	IL TRM
703	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.06	#N/A	Yes	94%	25%	100%	IL TRM
704	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.06	No	No	94%	100%	63%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TR <u>C</u>	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
705	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Constructi on	0.05	#N/A	Yes	6%	25%	100%	IL TRM
706	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	13.9 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	Time of Sale	0.05	No	No	6%	100%	63%	IL TRM
707	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	MF Common Area Default Value W CFL installed in year representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	2.39	No	No	87%	100%	63%	IL TRM
708	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	MF Common Area Default Value W CFL installed in year representi ng bulbs less than 1050 lumeps	43W EISA compliant lamp	New Constructi on	2.39	No	No	87%	43%	100%	IL TRM

	Binesiaene	armeasar	<u>e / 1990ampe</u>	10110										
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
709	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	MF Common Area Default Value W CFL installed in year representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Retrofit	2.39	No	Yes	87%	43%	63%	IL TRM
710	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	MF Common Area Default Value W CFL installed in year representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	2.16	No	No	13%	100%	63%	IL TRM
711	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	MF Common Area Default Value W CFL installed in year representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	2.16	No	No	13%	43%	100%	IL TRM

Measure	Cub Costor	Building	Endline	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
712	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	MF Common Area Default Value W CFL installed in year representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Retrofit	2.16	No	Yes	13%	43%	63%	IL TRM
713	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	0.26	#N/A	Yes	94%	25%	100%	IL TRM
714	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	14 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	0.26	No	No	94%	100%	63%	IL TRM
715	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	0.25	#N/A	Yes	6%	25%	100%	IL TRM
716	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	14 W CFL installed in year 2016 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	0.25	No	No	6%	100%	63%	IL TRM

									Measure	Measure				
									Included in	Included in	Applicabilit			
					Efficient	<b>D</b>		•••	Economic	Achievable	y to		Not-Yet-	
Measure		Building	e	Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Type	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
/1/	All	Gas	Lighting	Interior	14 W CFL	43W EISA	New	0.19	#N/A	Yes	94%	25%	100%	IL I RIVI
		Heating		Hardwired	Installed in	compliant	Constructi							
				Lighting	year 2017	lamp	OII							
				Fixtures	ng hulbs									
					less than									
					1050									
					lumens									
718	All	Gas	Lighting	Interior	14 W CFL	43W EISA	Time of	0.19	No	No	94%	100%	63%	IL TRM
		Heating	0 0	Hardwired	installed in	compliant	Sale							
		_		Compact	year 2017	lamp								
				Fluorescen	representi									
				t Lamp	ng bulbs									
				(CFL)	less than									
				Fixture	1050									
710		<b>51</b>			lumens	1011/5101		0.10			<b>C</b> 24	25%	1000/	
/19	All	Electric	Lighting	Interior	14 W CFL	43W EISA	New	0.18	#N/A	Yes	6%	25%	100%	IL I RIVI
		пеацій		Lighting	voar 2017	lamn	constructi							
				Fixtures	renresenti	lamp	UII							
				Tixtures	ng bulbs									
					less than									
					1050									
					lumens									
720	All	Electric	Lighting	Interior	14 W CFL	43W EISA	Time of	0.18	No	No	6%	100%	63%	IL TRM
		Heating		Hardwired	installed in	compliant	Sale							
				Compact	year 2017	lamp								
				Fluorescen	representi									
				t Lamp	ng bulbs									
				(CFL)	less than									
				Fixture	1050									
721	A 11	Gar	Lighting	Interior		12\N/ EICA	Now	0.12	#NI/A	Voc	0.4%	259/	100%	
/21	All	Gas	Lighting	Hardwirod	14 W CFL	43W EISA	Constructi	0.12	#N/A	res	94%	25%	100%	
		neating		Lighting	vear 2018	lamn	on							
				Fixtures	representi		011							
					ng bulbs									
					less than									
					1050									
					lumens									

Moscuro		Puilding		Moocuro	Efficient	Pacolino	Mooguro	Moosu	Measure Included in Economic	Measure Included in Achievable	Applicabilit y to	Tochnical	Not-Yet-	Defense
	Sub-Sector	Type	Endlice	Name	Definition	Definition	Type	ro TRC	Analysis	Analysis		Feasibility*	Rate*	References
722	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Eixture	14 W CFL installed in year 2018 representi ng bulbs less than 1050	43W EISA compliant lamp	Time of Sale	0.12	No	No	94%	100%	63%	IL TRM
				Tixture	lumens									
723	All	Electric Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	0.12	#N/A	Yes	6%	25%	100%	IL TRM
724	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	14 W CFL installed in year 2018 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	0.12	No	No	6%	100%	63%	IL TRM
725	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	New Constructi on	0.06	#N/A	Yes	94%	25%	100%	IL TRM
726	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	14 W CFL installed in year 2019 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	0.06	No	No	94%	100%	63%	IL TRM

									Measure	Measure				
									Included in	Included in	Applicabilit			
					Efficient				Economic	Achievable	y to		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
727	All	Electric	Lighting	Interior	14 W CFL	43W EISA	New	0.05	#N/A	Yes	6%	25%	100%	IL TRM
		Heating		Hardwired	installed in	compliant	Constructi							
				Lighting	year 2019	lamp	on							
				Fixtures	representi									
					loss than									
					1050									
					lumens									
728	All	Flectric	Lighting	Interior	14 W CFI	43W/ FISA	Time of	0.05	No	No	6%	100%	63%	II TRM
, 20	7.01	Heating	2.8.11.18	Hardwired	installed in	compliant	Sale	0.05			0/0	100/0	0370	12 1100
				Compact	vear 2019	lamp	bare							
				Fluorescen	representi									
				t Lamp	ng bulbs									
				(CFL)	less than									
				Fixture	1050									
					lumens									
729	All	Gas	Lighting	Interior	14 W CFL	43W EISA	New	0.06	#N/A	Yes	94%	25%	100%	IL TRM
		Heating		Hardwired	installed in	compliant	Constructi							
				Lighting	year 2020	lamp	on							
				Fixtures	representi									
					ng bulbs									
					lumens									
730	All	Gas	Lighting	Interior	14 W CFL	43W EISA	Time of	0.06	No	No	94%	100%	63%	IL TRM
	7.11	Heating	8	Hardwired	installed in	compliant	Sale	0.00			5 170	100/0	00/0	
		5		Compact	year 2020	lamp								
				Fluorescen	representi	•								
				t Lamp	ng bulbs									
				(CFL)	less than									
				Fixture	1050									
					lumens									
731	All	Electric	Lighting	Interior	14 W CFL	43W EISA	New	0.05	#N/A	Yes	6%	25%	100%	IL TRM
		Heating		Hardwired	installed in	compliant	Constructi							
				Lighting	year 2020	lamp	on							
				Fixtures	representi									
					ng bulbs									
					1050 than									
					LUDOD									
1					iumens									

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analvsis	Measure Included in Achievable Potential Analvsis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
732	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	14 W CFL installed in year 2020 representi ng bulbs less than 1050 lumens	43W EISA compliant lamp	Time of Sale	0.05	No	No	6%	100%	63%	IL TRM
733	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2020	45.4W Post-2020 EISA compliant lamp	Direct Install	13.40	No	Yes	98%	100%	100%	IL TRM
734	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2020	45.4W Post-2020 EISA compliant lamp	Direct Install	12.64	No	Yes	2%	100%	100%	IL TRM
735	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2020	45.4W Post-2020 EISA compliant lamp	Direct Install	13.43	No	Yes	87%	100%	100%	IL TRM
736	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2020	45.4W Post-2020 EISA compliant lamp	Direct Install	12.60	No	Yes	13%	100%	100%	IL TRM
737	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2020	45.4W Post-2020 EISA compliant lamp	Time of Sale	13.67	No	Yes	94%	100%	100%	IL TRM
738	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2020	45.4W Post-2020 EISA compliant lamp	Time of Sale	12.88	No	Yes	6%	100%	100%	IL TRM
739	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2021	45.4W Post-2020 EISA compliant lamp	Direct Install	10.74	No	Yes	98%	100%	100%	IL TRM

### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 740 SingleFamily Electric Lighting Omnidirect 37.2 W LED 45.4W Direct 10.13 No Yes 2% 100% 100% IL TRM &Duplex ional A-Post-2020 Heating installed in Install year 2021 EISA type LED lamps compliant lamp 741 Multifamily Lighting Omnidirect 37.2 W LED 45.4W 10.76 87% 100% 100% Gas Direct No Yes IL TRM ional Ainstalled in Post-2020 Heating Install type LED year 2021 EISA lamps compliant lamp 742 Multifamily Electric Lighting Omnidirect 37.2 W LED 45.4W Direct 10.09 No Yes 13% 100% 100% IL TRM Heating ional Ainstalled in Post-2020 Install type LED year 2021 EISA lamps compliant lamp 743 All Gas Lighting Omnidirect 37.2 W LED 45.4W Time of 10.96 No No 94% 100% 100% IL TRM ional A-Post-2020 Heating installed in Sale type LED year 2021 EISA lamps compliant lamp 744 All Electric Omnidirect 37.2 W LED 45.4W Time of 10.32 No No 6% 100% 100% IL TRM Lighting ional Ainstalled in Post-2020 Sale Heating type LED year 2021 EISA lamps compliant lamp 8.96 100% 100% 745 SingleFamily Gas Lighting Omnidirect 37.2 W LED 45.4W Direct No Yes 98% IL TRM &Duplex Heating ional Ainstalled in Post-2020 Install type LED year 2022 EISA lamps compliant lamp 746 SingleFamily Electric Lighting Omnidirect 37.2 W LED 45.4W Direct 8.45 No Yes 2% 100% 100% IL TRM &Duplex Heating ional Ainstalled in Post-2020 Install type LED year 2022 EISA lamps compliant lamp 747 Multifamily Gas Lighting Omnidirect 37.2 W LED 45.4W Direct 8.97 No Yes 87% 100% 100% IL TRM ional Ainstalled in Post-2020 Heating Install EISA type LED year 2022 lamps compliant lamp

### Appendix D: Residential Measure Assumptions Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Building Measure Measure Measure Baseline Measure Measu Potential Potential Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 748 Multifamily Electric Lighting Omnidirect 37.2 W LED 45.4W Direct 8.42 No Yes 13% 100% 100% IL TRM ional A-Post-2020 Heating installed in Install type LED year 2022 EISA lamps compliant lamp 749 All Gas Lighting Omnidirect 37.2 W LED 45.4W 9.14 No No 94% 100% 100% Time of IL TRM ional Ainstalled in Post-2020 Heating Sale type LED year 2022 EISA lamps compliant lamp Lighting 750 All Electric Omnidirect 37.2 W LED 45.4W Time of 8.61 No No 6% 100% 100% IL TRM Heating ional Ainstalled in Post-2020 Sale type LED year 2022 EISA lamps compliant lamp 751 All Gas Lighting LED 13 W LED 45W Time of 156.04 Yes Yes 94% 6% 88% IL TRM Downlights Incandesce Heating Sale nt/Halogen Tracklight 752 All Gas Lighting LED 13 W LED 45W New 156.04 Yes Yes 94% 2% 100% IL TRM Heating Downlights Incandesce Constructi nt/Halogen on Tracklight All LED 13 W LED 45W 147.48 6% 6% 88% 753 Electric Lighting Time of Yes Yes IL TRM Heating Downlights Incandesce Sale nt/Halogen Tracklight 754 LED 45W 6% All Electric Lighting 13 W LED New 147.48 Yes Yes 2% 100% IL TRM Heating Downlights Incandesce Constructi nt/Halogen on Tracklight 755 All Gas Lighting LED 14 W LED 50W Time of 190.38 Yes Yes 94% 6% 100% IL TRM Downlights Heating Incandesce Sale nt/Halogen Recessed Downlight

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 756 All Gas Lighting LED 14 W LED 50W Time of 190.38 #N/A Yes 94% 6% 100% IL TRM Downlights Heating Incandesce Sale - OM nt/Halogen Recessed Downlight 757 All Gas Lighting LED 14 W LED 50W 190.38 Yes Yes 94% 2% 100% New IL TRM Downlights Constructi Heating Incandesce nt/Halogen on Recessed Downlight 758 All Electric Lighting LED 14 W LED 50W Time of 179.96 Yes Yes 6% 6% 100% IL TRM Heating Downlights Incandesce Sale nt/Halogen Recessed Downlight 759 All Electric Lighting LED 14 W LED 50W Time of 179.96 #N/A Yes 6% 6% 100% IL TRM Downlights Heating Incandesce Sale - OM nt/Halogen Recessed Downlight 760 All Electric Lighting LED 14 W LED 50W New 179.96 Yes Yes 6% 2% 100% IL TRM Downlights Heating Incandesce Constructi nt/Halogen on Recessed Downlight ENERGY 1.01 98% 100% 100% 761 SingleFamily Gas Lighting 20 W CFL 53W EISA Direct No Yes IL TRM &Duplex Heating STAR installed in compliant Install Compact year 2016 lamp Fluorescen t Lamp (CFL) 762 20 W CFL 0.95 2% SingleFamily Electric ENERGY 53W EISA No No 100% 100% IL TRM Lighting Direct &Duplex Heating STAR installed in compliant Install Compact year 2016 lamp Fluorescen t Lamp (CFL) 763 Multifamily Gas Lighting ENERGY 20 W CFL 53W EISA Direct 1.02 No Yes 87% 43% 100% IL TRM STAR installed in compliant Install Heating year 2016 Compact lamp Fluorescen t Lamp (CFL)

### Appendix D: Residential Measure Assumptions

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 764 Multifamily Electric Lighting ENERGY 20 W CFL 53W EISA Direct 0.95 No No 13% 43% 100% IL TRM STAR Heating installed in compliant Install Compact year 2016 lamp Fluorescen t Lamp (CFL) 765 All Gas ENERGY 20 W CFL 53W EISA 50.76 No 94% 100% 90% Lighting Time of No IL TRM Heating STAR installed in compliant Sale Compact year 2016 lamp Fluorescen t Lamp (CFL) 766 All 20 W CFL 47.82 6% 100% IL TRM Electric Lighting ENERGY 53W EISA Time of No No 53% Heating STAR installed in Sale compliant year 2016 Compact lamp Fluorescen t Lamp (CFL) Lighting 20 W CFL 0.62 767 SingleFamily Gas ENERGY 53W EISA Direct No No 98% 100% 100% IL TRM &Duplex Heating STAR installed in compliant Install Compact year 2017 lamp Fluorescen t Lamp (CFL) 768 SingleFamily Electric Lighting ENERGY 20 W CFL 53W EISA Direct 0.59 No No 2% 100% 100% IL TRM &Duplex Heating STAR installed in compliant Install Compact year 2017 lamp Fluorescen t Lamp (CFL) 769 Multifamily ENERGY 20 W CFL 53W EISA 0.62 No No 87% 100% 100% IL TRM Gas Lighting Direct Heating STAR installed in compliant Install Compact year 2017 lamp Fluorescen t Lamp (CFL) 770 Multifamily 20 W CFL 53W EISA 0.59 No No 13% 100% 100% IL TRM Electric Lighting ENERGY Direct Heating STAR installed in compliant Install Compact year 2017 lamp Fluorescen t Lamp (CFL)

### **Appendix D: Residential Measure Assumptions**

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 771 All Gas Lighting ENERGY 20 W CFL 53W EISA Time of 37.56 No Yes 94% 100% 81% IL TRM STAR Heating installed in compliant Sale Compact year 2017 lamp Fluorescen t Lamp (CFL) 772 All ENERGY 20 W CFL 53W EISA 35.70 No Yes 6% 100% 48% Electric Lighting Time of IL TRM Heating STAR installed in compliant Sale Compact year 2017 lamp Fluorescen t Lamp (CFL) SingleFamily 20 W CFL 0.35 100% IL TRM 773 Gas Lighting ENERGY 53W EISA Direct No No 98% 100% &Duplex STAR installed in Install Heating compliant year 2018 Compact lamp Fluorescen t Lamp (CFL) 774 20 W CFL 0.34 2% SingleFamily Electric ENERGY 53W EISA Direct No No 100% 100% IL TRM Lighting &Duplex Heating STAR installed in compliant Install Compact year 2018 lamp Fluorescen t Lamp (CFL) 775 Multifamily Gas Lighting ENERGY 20 W CFL 53W EISA Direct 0.36 No No 87% 43% 100% IL TRM Heating STAR installed in compliant Install Compact year 2018 lamp Fluorescen t Lamp (CFL) 776 Multifamily ENERGY 20 W CFL 53W EISA 0.34 No No 13% 43% 100% IL TRM Electric Lighting Direct Heating STAR installed in compliant Install Compact year 2018 lamp Fluorescen t Lamp (CFL) 777 All Gas ENERGY 20 W CFL 53W EISA 4.54 No No 94% 100% 73% IL TRM Lighting Time of Heating STAR installed in compliant Sale Compact year 2018 lamp Fluorescen t Lamp (CFL)

### Appendix D: Residential Measure Assumptions

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 778 All Electric Lighting ENERGY 20 W CFL 53W EISA Time of 4.34 No No 6% 100% 43% IL TRM STAR Heating installed in compliant Sale Compact year 2018 lamp Fluorescen t Lamp (CFL) 779 ENERGY 20 W CFL 53W EISA 0.15 No 98% 100% 100% SingleFamily Gas Lighting Direct No IL TRM &Duplex Heating STAR installed in compliant Install Compact year 2019 lamp Fluorescen t Lamp (CFL) 20 W CFL 0.15 2% 100% IL TRM 780 SingleFamily Electric Lighting ENERGY 53W EISA Direct No No 100% &Duplex STAR installed in Install Heating compliant year 2019 Compact lamp Fluorescen t Lamp (CFL) 781 Lighting 20 W CFL 0.16 87% Multifamily Gas ENERGY 53W EISA Direct No No 43% 100% IL TRM Heating STAR installed in compliant Install Compact year 2019 lamp Fluorescen t Lamp (CFL) 782 Multifamily Electric Lighting ENERGY 20 W CFL 53W EISA Direct 0.15 No No 13% 43% 100% IL TRM Heating STAR installed in compliant Install Compact year 2019 lamp Fluorescen t Lamp (CFL) 783 All Gas ENERGY 20 W CFL 53W EISA 0.98 No 94% 100% 66% IL TRM Lighting Time of No Heating STAR installed in compliant Sale Compact year 2019 lamp Fluorescen t Lamp (CFL) Electric 784 All 20 W CFL 53W EISA 0.92 No No 6% 100% 39% IL TRM Lighting ENERGY Time of Heating STAR installed in compliant Sale Compact year 2019 lamp Fluorescen t Lamp (CFL)

### Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
785	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	0.14	No	No	98%	100%	100%	IL TRM
786	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	0.14	No	No	2%	100%	100%	IL TRM
787	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	0.15	No	No	87%	43%	100%	IL TRM
788	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Direct Install	0.14	No	No	13%	43%	100%	IL TRM
789	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Time of Sale	0.70	No	No	94%	100%	59%	IL TRM
790	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	20 W CFL installed in year 2020	53W EISA compliant lamp	Time of Sale	0.65	No	No	6%	100%	35%	IL TRM
791	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2016	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.82	#N/A	Yes	6%	25%	100%	IL TRM

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 792 All Electric Lighting Exterior 20 W CFL 53W EISA Time of 0.82 No No 6% 100% 63% IL TRM Hardwired Heating installed in compliant Sale Compact year 2016 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 793 All 20 W CFL #N/A 94% 25% 100% Gas Lighting Exterior 53W EISA New 0.82 Yes IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2016 lamp on Fixtures Exterior Hardwired 794 All Gas Lighting Exterior 20 W CFL 53W EISA Time of 0.82 No No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2016 lamp -Fluorescen Exterior Hardwired t Lamp (CFL) Fixture 20 W CFL 795 All Electric Lighting Exterior 53W EISA New 0.52 #N/A Yes 6% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2017 lamp on Fixtures Exterior Hardwired 796 All Electric Lighting Exterior 20 W CFL 53W EISA 0.52 No No 6% 100% 63% IL TRM Time of Heating Hardwired installed in compliant Sale Compact year 2017 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 797 All Gas 20 W CFL 53W EISA 0.52 #N/A 94% 25% 100% IL TRM Lighting Exterior New Yes Heating Hardwired installed in compliant Constructi Lighting year 2017 lamp on Fixtures Exterior Hardwired 798 All Gas Lighting Exterior 20 W CFL 53W EISA Time of 0.52 No No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2017 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture

Appendix D: Residential Measure Assumptions

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 799 All Electric Lighting Exterior 20 W CFL 53W EISA New 0.30 #N/A Yes 6% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2018 lamp on Fixtures Exterior Hardwired 800 All Lighting 20 W CFL 0.30 6% 100% 63% Electric Exterior 53W EISA Time of No No IL TRM installed in Heating Hardwired compliant Sale Compact year 2018 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 801 All Gas Lighting Exterior 20 W CFL 53W EISA New 0.30 #N/A Yes 94% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2018 lamp on Fixtures Exterior Hardwired 802 All Gas Lighting Exterior 20 W CFL 53W EISA Time of 0.30 No No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2018 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 803 All Electric Lighting 20 W CFL 53W EISA New 0.13 #N/A Yes 6% 25% 100% IL TRM Exterior Heating Hardwired installed in compliant Constructi Lighting year 2019 lamp on Fixtures Exterior Hardwired 804 All 0.13 6% 100% 63% Electric Lighting Exterior 20 W CFL 53W EISA Time of No No IL TRM Heating Hardwired installed in compliant Sale Compact year 2019 lamp -Exterior Fluorescen t Lamp Hardwired (CFL) Fixture 805 All Gas Lighting Exterior 20 W CFL 53W EISA New 0.13 #N/A Yes 94% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2019 lamp on Fixtures Exterior Hardwired

### Appendix D: Residential Measure Assumptions

Appendix	D: Resident	ial Measur	e Assumpt	ions										
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
806	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.13	No	No	94%	100%	63%	IL TRM
807	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.13	#N/A	Yes	6%	25%	100%	IL TRM
808	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.13	No	No	6%	100%	63%	IL TRM
809	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.13	#N/A	Yes	94%	25%	100%	IL TRM
810	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.13	No	No	94%	100%	63%	IL TRM
811	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2016	53W EISA compliant lamp - Interior Hardwired	New Constructi on	0.30	No	No	94%	100%	100%	IL TRM

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 812 All Gas Lighting Interior 20 W CFL 53W EISA Time of 0.30 No No 94% 100% 63% IL TRM Hardwired Heating installed in compliant Sale Compact year 2016 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 813 All 20 W CFL 0.28 6% 100% 100% Electric Lighting Interior 53W EISA New No No IL TRM Heating Hardwired installed in compliant Constructi Compact year 2016 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture 814 All Electric Interior 20 W CFL 53W EISA Time of 0.28 No No 6% 100% 63% IL TRM Lighting Heating Hardwired installed in compliant Sale Compact year 2016 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 815 All Gas Lighting Interior 20 W CFL 53W EISA New 0.22 No No 94% 100% 100% IL TRM Heating Hardwired installed in compliant Constructi Compact year 2017 lamp on Fluorescen Interior Hardwired t Lamp (CFL) Fixture 816 All Gas Lighting 20 W CFL 53W EISA 0.22 No No 94% 100% 63% Interior Time of IL TRM Heating Hardwired installed in compliant Sale Compact year 2017 lamp -Interior Fluorescen t Lamp Hardwired (CFL) Fixture 817 All Electric 20 W CFL 53W EISA New 0.21 No No 6% 100% 100% IL TRM Lighting Interior Hardwired installed in Heating compliant Constructi Compact year 2017 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture

\*Residential applicability factors were developed only for measures included in the potential analyses.

**Appendix D: Residential Measure Assumptions** 

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 818 All Electric Lighting Interior 20 W CFL 53W EISA Time of 0.21 No No 6% 100% Hardwired Heating installed in compliant Sale Compact year 2017 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 819 All 20 W CFL 94% 100% Gas Lighting Interior 53W EISA New 0.14 No No Heating Hardwired installed in compliant Constructi Compact year 2018 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture 820 All Gas Interior 20 W CFL 53W EISA Time of 0.14 No No 94% 100% Lighting Heating Hardwired installed in compliant Sale Compact year 2018 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 821 All Electric Lighting Interior 20 W CFL 53W EISA New 0.13 No No 6% 100% Heating Hardwired installed in compliant Constructi Compact year 2018 lamp on Fluorescen Interior Hardwired t Lamp (CFL) Fixture 822 All Electric Lighting 20 W CFL 53W EISA 0.13 No No 6% 100% Interior Time of Hardwired installed in compliant Sale Heating Compact year 2018 lamp -Interior Fluorescen t Lamp Hardwired (CFL) Fixture 823 All Gas 20 W CFL 53W EISA New 0.07 No No 94% 100% Lighting Interior Hardwired installed in Heating compliant Constructi

### **Appendix D: Residential Measure Assumptions**

\*Residential applicability factors were developed only for measures included in the potential analyses.

Compact

t Lamp

(CFL) Fixture

Fluorescen

year 2019

lamp -

Interior

Hardwired

on

References

IL TRM

IL TRM

IL TRM

IL TRM

IL TRM

IL TRM

63%

100%

63%

100%

63%

100%

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
824	Sub-Sector All	Type Gas Heating	End Use Lighting	Name Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	Definition 20 W CFL installed in year 2019	Definition 53W EISA compliant lamp - Interior Hardwired	Type Time of Sale	0.07	Analysis No	Analysis No	туре* 94%	Feasibility* 100%	Rate* 63%	IL TRM
825	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	New Constructi on	0.06	No	No	6%	100%	100%	IL TRM
826	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	Time of Sale	0.06	No	No	6%	100%	63%	IL TRM
827	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	New Constructi on	0.07	No	No	94%	100%	100%	IL TRM
828	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	Time of Sale	0.07	No	No	94%	100%	63%	IL TRM
829	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	New Constructi on	0.06	No	No	6%	100%	100%	IL TRM

Measure	Cub Costor	Building	End Lice	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
830	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	Time of Sale	0.06	No	No	6%	100%	63%	IL TRM
831	All	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescen t Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandesce nt Generic Specialty Lamp	Time of Sale	117.30	#N/A	No	94%	100%	64%	IL TRM
832	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescen t Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandesce nt Generic Specialty Lamp	Direct Install	114.95	#N/A	Yes	98%	100%	100%	IL TRM
833	Multifamily	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescen t Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandesce nt Generic Specialty Lamp	Direct Install	115.11	#N/A	Yes	87%	62%	100%	IL TRM
834	All	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescen t Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandesce nt Generic Specialty Lamp	New Constructi on	117.30	#N/A	No	94%	100%	100%	IL TRM
835	All	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescen t Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandesce nt Generic Specialty Lamp	Time of Sale	110.22	#N/A	No	6%	100%	70%	IL TRM

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 836 SingleFamily Electric Lighting ENERGY 15W CFL 60W Direct 108.18 #N/A Yes 2% 100% 100% IL TRM &Duplex STAR Install Heating Generic Incandesce Specialty Specialty nt Generic Compact Lamp Specialty Fluorescen Lamp t Lamp (CFL) 60W 107.79 #N/A 13% 62% 100% 837 Multifamily Electric Lighting ENERGY 15W CFL Direct Yes IL TRM Heating STAR Generic Incandesce Install Specialty Specialty nt Generic Compact Lamp Specialty Fluorescen Lamp t Lamp (CFL) 838 All Electric Lighting ENERGY 15W CFL 60W New 110.22 #N/A No 6% 100% 100% IL TRM Heating STAR Generic Incandesce Constructi Specialty Specialty nt Generic on Compact Lamp Specialty Fluorescen Lamp t Lamp (CFL) 839 All Gas Lighting LED 21 W LED 67W Time of 159.78 #N/A Yes 94% 6% 88% IL TRM Heating Downlights Incandesce Sale nt/Halogen PAR30 screw-in lamps LED 21 W LED 94% 100% 840 All Lighting 67W 159.78 #N/A 2% IL TRM Gas New Yes Downlights Heating Incandesce Constructi nt/Halogen on PAR30 screw-in lamps 841 All LED #N/A 6% 6% 88% Electric Lighting 21 W LED 67W Time of 150.48 Yes IL TRM Heating Downlights Incandesce Sale nt/Halogen PAR30 screw-in lamps 6% 842 All Electric LED 21 W LED 67W New 150.48 #N/A Yes 2% 100% IL TRM Lighting Heating Downlights Incandesce Constructi nt/Halogen on PAR30 screw-in

Appendix D: Residential Measure Assumptions

\*Residential applicability factors were developed only for measures included in the potential analyses.

**ICF** International

lamps
#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 843 SingleFamily Gas Lighting ENERGY 25 W CFL 72W EISA Direct 1.44 No Yes 98% 100% 100% IL TRM &Duplex STAR Heating installed in compliant Install Compact year 2016 lamp Fluorescen t Lamp (CFL) ENERGY 25 W CFL 72W EISA 1.36 No Yes 2% 100% 100% 844 SingleFamily Electric Lighting Direct IL TRM &Duplex Heating STAR installed in compliant Install Compact year 2016 lamp Fluorescen t Lamp (CFL) Multifamily 25 W CFL 87% IL TRM 845 Gas Lighting ENERGY 72W EISA Direct 1.44 No Yes 43% 100% STAR installed in Install Heating compliant year 2016 Compact lamp Fluorescen t Lamp (CFL) 25 W CFL 1.36 846 Multifamily Electric ENERGY 72W EISA Direct No Yes 13% 43% 100% IL TRM Lighting Heating STAR installed in compliant Install Compact year 2016 lamp Fluorescen t Lamp (CFL) 847 All Gas Lighting ENERGY 25 W CFL 72W EISA Time of 72.26 #N/A No 94% 100% 64% IL TRM Heating STAR installed in compliant Sale Compact year 2016 lamp Fluorescen t Lamp (CFL) 848 All ENERGY 25 W CFL 72W EISA 68.09 #N/A 6% 100% 64% IL TRM Electric Lighting Time of No Heating STAR installed in compliant Sale Compact year 2016 lamp Fluorescen t Lamp (CFL) SingleFamily Gas 25 W CFL 72W EISA 0.89 #N/A No 98% 100% 100% IL TRM 849 Lighting ENERGY Direct &Duplex Heating STAR installed in compliant Install Compact year 2017 lamp Fluorescen t Lamp (CFL)

#### **Appendix D: Residential Measure Assumptions**

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit v to		Not-Yet-	
Measure	Cub Costor	Building	Endling	Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
850	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	0.84	#N/A	No	2%	100%	100%	IL TRM
851	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	0.89	#N/A	No	87%	100%	100%	IL TRM
852	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	0.84	#N/A	No	13%	100%	100%	IL TRM
853	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Time of Sale	53.48	#N/A	Yes	94%	100%	58%	IL TRM
854	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Time of Sale	50.84	#N/A	Yes	6%	100%	58%	IL TRM
855	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	0.50	#N/A	No	98%	100%	100%	IL TRM
856	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	0.48	#N/A	No	2%	100%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
857	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	0.51	#N/A	No	87%	43%	100%	IL TRM
858	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Direct Install	0.48	#N/A	No	13%	43%	100%	IL TRM
859	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Time of Sale	6.46	#N/A	No	94%	100%	52%	IL TRM
860	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2018	72W EISA compliant lamp	Time of Sale	6.17	#N/A	No	6%	100%	52%	IL TRM
861	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	0.22	#N/A	No	98%	100%	100%	IL TRM
862	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	0.21	#N/A	No	2%	100%	100%	IL TRM
863	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	0.22	#N/A	No	87%	43%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
864	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Direct Install	0.21	#N/A	No	13%	43%	100%	IL TRM
865	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Time of Sale	1.40	#N/A	No	94%	100%	47%	IL TRM
866	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2019	72W EISA compliant lamp	Time of Sale	1.32	#N/A	No	6%	100%	47%	IL TRM
867	SingleFamily &Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	0.21	#N/A	No	98%	100%	100%	IL TRM
868	SingleFamily &Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	0.19	#N/A	No	2%	100%	100%	IL TRM
869	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	0.21	#N/A	No	87%	43%	100%	IL TRM
870	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Direct Install	0.19	#N/A	No	13%	43%	100%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
871	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Time of Sale	0.99	#N/A	No	94%	100%	42%	IL TRM
872	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescen t Lamp (CFL)	25 W CFL installed in year 2020	72W EISA compliant lamp	Time of Sale	0.93	#N/A	No	6%	100%	42%	IL TRM
873	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	1.16	#N/A	Yes	6%	25%	100%	IL TRM
874	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	1.16	#N/A	No	6%	100%	63%	IL TRM
875	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	1.16	#N/A	Yes	94%	25%	100%	IL TRM
876	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescen t Lamp (CFL) Fixture	25 W CFL installed in year 2016	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	1.16	#N/A	No	94%	100%	63%	IL TRM
877	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2017	72W EISA compliant lamp - Exterior Hardwired	New Constructi on	0.73	#N/A	Yes	6%	25%	100%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 878 All Electric Lighting Exterior 25 W CFL 72W EISA Time of 0.73 #N/A No 6% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2017 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 879 All 25 W CFL 0.73 #N/A 94% 25% 100% Gas Lighting Exterior 72W EISA New Yes IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2017 lamp on Fixtures Exterior Hardwired 880 All Gas Lighting Exterior 25 W CFL 72W EISA Time of 0.73 #N/A No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2017 lamp -Fluorescen Exterior Hardwired t Lamp (CFL) Fixture 25 W CFL 881 All Electric Lighting Exterior 72W EISA New 0.42 #N/A Yes 6% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2018 lamp on Fixtures Exterior Hardwired 882 All Electric Lighting Exterior 25 W CFL 72W EISA 0.42 #N/A No 6% 100% 63% IL TRM Time of Heating Hardwired installed in compliant Sale Compact year 2018 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 883 All Gas 25 W CFL 72W EISA 0.42 #N/A 94% 25% 100% IL TRM Lighting Exterior New Yes Heating Hardwired installed in compliant Constructi Lighting year 2018 lamp on Fixtures Exterior Hardwired 884 All Gas Lighting Exterior 25 W CFL 72W EISA Time of 0.42 #N/A No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2018 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture

Appendix D: Residential Measure Assumptions

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Type\* Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Feasibility\* Rate\* 885 All Electric Lighting Exterior 25 W CFL 72W EISA New 0.18 #N/A Yes 6% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2019 lamp on Fixtures Exterior Hardwired 886 All Lighting 25 W CFL 72W EISA 0.18 #N/A 6% 100% 63% Electric Exterior Time of No IL TRM Heating Hardwired installed in compliant Sale Compact year 2019 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 887 All Gas Lighting Exterior 25 W CFL 72W EISA New 0.18 #N/A Yes 94% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2019 lamp on Fixtures Exterior Hardwired 888 All Gas Lighting Exterior 25 W CFL 72W EISA Time of 0.18 #N/A No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2019 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 889 All Electric 25 W CFL 72W EISA New 0.18 #N/A Yes 6% 25% 100% IL TRM Lighting Exterior Heating Hardwired installed in compliant Constructi Lighting year 2020 lamp on Fixtures Exterior Hardwired 890 All 0.18 #N/A 6% 100% 63% Electric Lighting Exterior 25 W CFL 72W EISA Time of No IL TRM Heating Hardwired installed in compliant Sale Compact year 2020 lamp -Exterior Fluorescen t Lamp Hardwired (CFL) Fixture 891 All Gas Lighting Exterior 25 W CFL 72W EISA New 0.18 #N/A Yes 94% 25% 100% IL TRM Heating Hardwired installed in compliant Constructi Lighting year 2020 lamp on Fixtures Exterior Hardwired

#### Appendix D: Residential Measure Assumptions

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 892 All Gas Lighting Exterior 25 W CFL 72W EISA Time of 0.18 #N/A No 94% 100% 63% IL TRM Hardwired Heating installed in compliant Sale Compact year 2020 lamp -Fluorescen Exterior t Lamp Hardwired (CFL) Fixture 893 All 25 W CFL 0.43 #N/A 94% 100% 100% Gas Lighting Interior 72W EISA New No IL TRM Heating Hardwired installed in compliant Constructi Compact year 2016 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture 894 All Gas 25 W CFL 72W EISA Time of 0.43 #N/A No 94% 100% 63% IL TRM Lighting Interior Heating Hardwired installed in compliant Sale Compact year 2016 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 895 All Electric Lighting Interior 25 W CFL 72W EISA New 0.40 #N/A No 6% 100% 100% IL TRM Heating Hardwired installed in compliant Constructi Compact year 2016 lamp on Fluorescen Interior Hardwired t Lamp (CFL) Fixture 896 All Electric Lighting 25 W CFL 72W EISA 0.40 #N/A No 6% 100% 63% Interior Time of IL TRM Hardwired installed in compliant Sale Heating Compact year 2016 lamp -Interior Fluorescen t Lamp Hardwired (CFL) Fixture 897 All Gas 25 W CFL 72W EISA New 0.31 #N/A No 94% 100% 100% IL TRM Lighting Interior Hardwired installed in Heating compliant Constructi Compact year 2017 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 898 All Gas Lighting Interior 25 W CFL 72W EISA Time of 0.31 #N/A No 94% 100% 63% IL TRM Hardwired Heating installed in compliant Sale Compact year 2017 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 899 All 25 W CFL 0.29 #N/A 6% 100% 100% Electric Lighting Interior 72W EISA New No IL TRM Heating Hardwired installed in compliant Constructi Compact year 2017 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture 900 All Electric Interior 25 W CFL 72W EISA Time of 0.29 #N/A No 6% 100% 63% IL TRM Lighting Heating Hardwired installed in compliant Sale Compact year 2017 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 901 All Gas Lighting Interior 25 W CFL 72W EISA New 0.20 #N/A No 94% 100% 100% IL TRM Heating Hardwired installed in compliant Constructi Compact year 2018 lamp on Fluorescen Interior Hardwired t Lamp (CFL) Fixture 902 All Gas Lighting 25 W CFL 72W EISA 0.20 #N/A No 94% 100% 63% Interior Time of IL TRM Heating Hardwired installed in compliant Sale Compact year 2018 lamp -Interior Fluorescen t Lamp Hardwired (CFL) Fixture 903 All Electric 25 W CFL 72W EISA New 0.19 #N/A No 6% 100% 100% IL TRM Lighting Interior Hardwired installed in Heating compliant Constructi Compact year 2018 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 904 All Electric Lighting Interior 25 W CFL 72W EISA Time of 0.19 #N/A No 6% 100% 63% IL TRM Hardwired Heating installed in compliant Sale Compact year 2018 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture All 25 W CFL #N/A 94% 100% 100% 905 Gas Lighting Interior 72W EISA New 0.09 No IL TRM Heating Hardwired installed in compliant Constructi Compact year 2019 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture 906 All Gas Interior 25 W CFL 72W EISA Time of 0.09 #N/A No 94% 100% 63% IL TRM Lighting Heating Hardwired installed in compliant Sale Compact year 2019 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 907 All Electric Lighting Interior 25 W CFL 72W EISA New 0.09 #N/A No 6% 100% 100% IL TRM Heating Hardwired installed in compliant Constructi Compact year 2019 lamp on Fluorescen Interior Hardwired t Lamp (CFL) Fixture 908 All Electric Lighting 25 W CFL 72W EISA 0.09 #N/A No 6% 100% 63% Interior Time of IL TRM Hardwired installed in compliant Sale Heating Compact year 2019 lamp -Interior Fluorescen t Lamp Hardwired (CFL) Fixture 909 All Gas Lighting 25 W CFL 72W EISA New 0.09 #N/A No 94% 100% 100% IL TRM Interior Hardwired installed in Heating compliant Constructi Compact year 2020 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture

#### **Appendix D: Residential Measure Assumptions** Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 910 All Gas Lighting Interior 25 W CFL 72W EISA Time of 0.09 #N/A No 94% 100% 63% IL TRM Heating Hardwired installed in compliant Sale Compact year 2020 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 911 All 25 W CFL #N/A 6% 100% 100% IL TRM Electric Lighting Interior 72W EISA New 0.09 No Heating Hardwired installed in compliant Constructi Compact year 2020 lamp on Fluorescen Interior t Lamp Hardwired (CFL) Fixture 912 All Electric Interior 25 W CFL 72W EISA Time of 0.09 #N/A No 6% 100% 63% IL TRM Lighting Heating Hardwired installed in compliant Sale Compact year 2020 lamp -Fluorescen Interior t Lamp Hardwired (CFL) Fixture 913 Multifamily Gas Lighting LED Exit LED exit Fluorescen Time of 484.87 #N/A Yes 87% 100% 51% IL TRM Heating t Exit Sign Sale Signs sign 914 Multifamily Gas Lighting LED Exit LED exit Fluorescen Retrofit 484.87 #N/A Yes 87% 43% 51% IL TRM Heating Signs sign t Exit Sign 915 Multifamily LED Exit LED exit 484.87 #N/A 87% 100% 51% IL TRM Gas Lighting Fluorescen New No Heating Signs sign t Exit Sign Constructi on 916 Multifamily Electric Lighting LED Exit LED exit Fluorescen Time of 457.65 #N/A Yes 13% 100% 51% IL TRM Heating Signs sign t Exit Sign Sale

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
917	Multifamily	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescen t Exit Sign	Retrofit	457.65	#N/A	Yes	13%	43%	51%	IL TRM
918	Multifamily	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescen t Exit Sign	New Constructi on	457.65	#N/A	No	13%	100%	51%	IL TRM
919	Multifamily	Gas Heating	Lighting	Home Energy Audit & Retrofit Multifamil y: Common Area	0	Home Energy Audit & Retrofit Multifamil y: Common Area	Direct Install	0.00	#N/A	No	87%	100%	100%	ICF
920	Multifamily	Electric Heating	Lighting	Home Energy Audit & Retrofit Multifamil y: Common Area	0	Home Energy Audit & Retrofit Multifamil y: Common Area	Direct Install	0.00	#N/A	No	13%	100%	100%	ICF
921	All	Gas Heating	Lighting	ENERGY STAR Torchiere - OM	Energy Star Torchiere	Incandesce nt/Halogen Torchiere	Time of Sale	384.85	#N/A	Yes	94%	100%	70%	IL TRM
922	All	Gas Heating	Lighting	ENERGY STAR Torchiere	Energy Star Torchiere	Incandesce nt/Halogen Torchiere	New Constructi on	384.85	#N/A	No	94%	1%	70%	IL TRM
923	All	Electric Heating	Lighting	ENERGY STAR Torchiere - OM	Energy Star Torchiere	Incandesce nt/Halogen Torchiere	Time of Sale	362.34	#N/A	Yes	6%	100%	70%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
924	All	Electric Heating	Lighting	ENERGY STAR Torchiere	Energy Star Torchiere	Incandesce nt/Halogen Torchiere	New Constructi on	362.34	#N/A	No	6%	1%	70%	IL TRM
925	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2016 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	4.00	No	Yes	98%	100%	100%	IL TRM
926	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2016 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.77	No	Yes	2%	100%	100%	IL TRM
927	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2016 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	4.01	No	Yes	87%	43%	100%	IL TRM
928	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2016 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.76	No	Yes	13%	43%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Type	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Tvpe*	Feasibility*	Rate*	
929	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2016 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	4.08	Yes	No	94%	100%	64%	IL TRM
930	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2016 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.84	Yes	No	6%	100%	64%	IL TRM
931	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.44	Yes	Yes	98%	100%	100%	IL TRM
932	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.24	Yes	Yes	2%	100%	100%	IL TRM
933	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.44	Yes	Yes	87%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
934	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2017 representi ng bulbs less than 1050	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant	Direct Install	3.23	Yes	Yes	13%	100%	100%	IL TRM
					lumens	lamp								
935	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.50	No	Yes	94%	100%	58%	IL TRM
936	All	Electric	Lighting	Omnidirect	12.32 W	Pre 2020	Time of	3.30	No	Yes	6%	100%	58%	IL TRM
		Heating		ional A- type LED lamps	LED installed in year 2017 representi ng bulbs less than 1050 lumens	lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Sale							
937	All	Gas Heating	Lighting	Efficient light bulbs	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.61	#N/A	Yes	94%	100%	58%	IL TRM
938	All	Electric Heating	Lighting	Efficient light bulbs	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.60	#N/A	Yes	6%	100%	58%	IL TRM

					Ffficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
939	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps - OM	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.50	#N/A	Yes	94%	100%	88%	IL TRM
940	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps - OM	12.32 W LED installed in year 2017 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.30	#N/A	Yes	6%	100%	88%	IL TRM
941	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2018 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.09	No	Yes	98%	100%	100%	IL TRM
942	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2018 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	2.92	No	Yes	2%	100%	100%	IL TRM
943	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2018 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	3.10	No	Yes	87%	43%	100%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit y to		Not-Yet-	
Measure	Cub Castor	Building	Endline	Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
944	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2018	Pre 2020 lamp of 32.3W; switching	Direct Install	2.91	No	Yes	13%	43%	100%	IL TRM
					representi ng bulbs less than 1050 lumens	to 15W EISA post- 2020 compliant Iamp								
945	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2018 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	3.15	No	No	94%	100%	52%	IL TRM
946	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2018 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	2.97	No	No	6%	100%	52%	IL TRM
947	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2019 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	2.81	No	Yes	98%	100%	100%	IL TRM
948	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2019 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	2.65	No	Yes	2%	100%	100%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit y to		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Туре*	Feasibility*	Rate*	
949	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2019 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	2.82	No	Yes	87%	43%	100%	IL TRM
950	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2019 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Direct Install	2.64	No	Yes	13%	43%	100%	IL TRM
951	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2019 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	2.87	No	No	94%	100%	47%	IL TRM
952	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	12.32 W LED installed in year 2019 representi ng bulbs less than 1050 lumens	Pre 2020 lamp of 32.3W; switching to 15W EISA post- 2020 compliant lamp	Time of Sale	2.70	No	No	6%	100%	47%	IL TRM
953	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	5.99	Yes	Yes	98%	100%	100%	IL TRM

Moosuro		Puilding	·	Mossuro	Efficient	Pasolino	Moosuro	Морси	Measure Included in Economic	Measure Included in Achievable	Applicabilit y to Building	Tochnical	Not-Yet-	Deferrer
ID	Sub-Sector	Tvpe	End Use	Name	Definition	Definition		re TRC	Analysis	Analysis	Tvpe*	Feasibility*	Rate*	References
954	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	5.65	Yes	Yes	2%	100%	100%	IL TRM
955	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	6.00	Yes	Yes	87%	43%	100%	IL TRM
956	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	5.63	Yes	Yes	13%	43%	100%	IL TRM
957	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Time of Sale	6.11	Yes	No	94%	100%	64%	IL TRM
958	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2016	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Time of Sale	5.75	Yes	No	6%	100%	64%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
959	Sub-Sector SingleFamily &Duplex	Gas Heating	End Use Lighting	Name Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2017	Definition Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Type Direct Install	re TRC 5.14	Analysis No	Analysis Yes	98%	Feasibility* 100%	Rate* 100%	IL TRM
960	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.85	No	Yes	2%	100%	100%	IL TRM
961	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	5.15	No	Yes	87%	100%	100%	IL TRM
962	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.83	No	Yes	13%	100%	100%	IL TRM
963	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Time of Sale	5.24	No	Yes	94%	100%	58%	IL TRM

					Ffficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID OC4	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	U TOM
964	All	Heating	Lignting	omnidirect ional A- type LED lamps	23.1 W LED installed in year 2017	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Sale	4.94	NO	Yes	6%	100%	58%	IL I KIVI
965	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.63	No	Yes	98%	100%	100%	IL TRM
966	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.36	No	Yes	2%	100%	100%	IL TRM
967	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.64	No	Yes	87%	43%	100%	IL TRM
968	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.35	No	Yes	13%	43%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1D 969	Sub-Sector All	Type Gas	End Use Lighting	Name Omnidirect	23.1 W LED	Definition Pre 2020	Type Time of	re TRC 4.72	Analysis No	Analysis No	Type* 94%	Feasibility* 100%	Rate* 52%	IL TRM
		Heating		ional A- type LED lamps	installed in year 2018	lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Sale							
970	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2018	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Time of Sale	4.44	No	No	6%	100%	52%	IL TRM
971	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.21	No	Yes	98%	100%	100%	IL TRM
972	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	3.97	No	Yes	2%	100%	100%	IL TRM
973	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	4.22	No	Yes	87%	43%	100%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit y to		Not-Yet-	
Measure	Sub-Sector	Building Type	Endlise	Measure Name	Measure Definition	Baseline Definition	Measure Type	Measu	Potential Analysis	Potential Analysis	Building Type*	Technical Feasibility*	Adopted Bate*	References
974	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Direct Install	3.95	No	Yes	13%	43%	100%	IL TRM
975	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Time of Sale	4.29	No	No	94%	100%	47%	IL TRM
976	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	23.1 W LED installed in year 2019	Pre 2020 lamp of 53W; switching to 28.2W EISA post- 2020 compliant lamp	Time of Sale	4.04	No	No	6%	100%	47%	IL TRM
977	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	6.97	No	Yes	98%	100%	100%	IL TRM
978	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	6.57	No	Yes	2%	100%	100%	IL TRM

					Efficient				Measure Included in	Measure Included in	Applicabilit		Not Vot	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
979	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	6.98	No	Yes	87%	43%	100%	IL TRM
980	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	6.55	No	Yes	13%	43%	100%	IL TRM
981	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	7.11	No	No	94%	100%	64%	IL TRM
982	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2016	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	6.69	No	No	6%	100%	64%	IL TRM
983	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	121.50	No	Yes	98%	100%	100%	IL TRM

Measure	Sub-Sector	Building	End Lise	Measure Name	Efficient Measure Definition	Baseline	Measure	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
984	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	114.59	No	Yes	2%	100%	100%	IL TRM
985	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	121.71	No	Yes	87%	43%	100%	IL TRM
986	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	114.19	No	Yes	13%	43%	100%	IL TRM
987	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	123.96	No	Yes	94%	100%	58%	IL TRM
988	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2017	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	116.73	No	Yes	6%	100%	58%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit y to		Not-Yet-	
Measure	Sub-Sector	Building Type	End Lise	Measure Name	Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Potential Analysis	Potential Analysis	Building Type*	Technical Feasibility*	Adopted Rate*	References
989	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	121.50	No	Yes	98%	100%	100%	IL TRM
990	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	114.59	No	Yes	2%	100%	100%	IL TRM
991	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	121.71	No	Yes	87%	43%	100%	IL TRM
992	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	114.19	No	Yes	13%	43%	100%	IL TRM
993	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	123.96	No	No	94%	100%	52%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
994	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2018	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	116.73	No	No	6%	100%	52%	IL TRM
995	SingleFamily &Duplex	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	66.91	No	Yes	98%	100%	100%	IL TRM
996	SingleFamily &Duplex	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	63.11	No	Yes	2%	100%	100%	IL TRM
997	Multifamily	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	67.03	No	Yes	87%	43%	100%	IL TRM
998	Multifamily	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Direct Install	62.89	No	Yes	13%	43%	100%	IL TRM

	Binesident		. / 100 di i i p i											
Measure		Building		Measure	Efficient Measure	Raseline	Measure	Меаси	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet-	Poforoncoc
	Sub-Sector	Type	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	References
999	SingleFamily	AC/Electric	Shell	Air Sealing	Sealed	IECC 2009	New	4.26	#N/A	No	1%	100%	100%	II TRM
	&Duplex	Resistance Heat	Sheh	An Scaning	Envelope with Normal Exposure - 4 ACH50	Code Level Envelope Tightness with Normal Exposure - 7 ACH50	Constructi on	4.20		he	17	100%	100/1	
1000	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	2.55	#N/A	No	0%	100%	100%	IL TRM
1001	SingleFamily &Duplex	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	2.91	#N/A	No	0%	100%	100%	IL TRM
1002	SingleFamily &Duplex	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	2.71	#N/A	No	86%	100%	100%	IL TRM
1003	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Constructi on	1.00	#N/A	No	13%	100%	100%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1004 Multifamily AC/Electric Shell Sealed IECC 2009 New 4.15 #N/A No 4% 100% 100% IL TRM Air Sealing Resistance Envelope Code Level Constructi Heat with Envelope on Normal Tightness Exposure with 4 ACH50 Normal Exposure -7 ACH50 Multifamily #N/A 4% 100% 100% 1005 Electric Shell Air Sealing Sealed **IECC 2009** New 1.19 No IL TRM Resistance Envelope Code Level Constructi Heat/No with Envelope on CAC Tightness Normal with Exposure -4 ACH50 Normal Exposure -7 ACH50 1006 Multifamily Heat Pump Shell Air Sealing Sealed **IECC 2009** New 4.02 #N/A No 5% 100% 100% IL TRM Envelope Code Level Constructi with Envelope on Normal Tightness Exposure with 4 ACH50 Normal Exposure -7 ACH50 IECC 2009 2.91 #N/A 40% 100% 100% 1007 Multifamily AC/Gas Shell Air Sealing Sealed New No IL TRM Heat Envelope Code Level Constructi with Envelope on Tightness Normal Exposure with 4 ACH50 Normal Exposure -7 ACH50 1008 Multifamily Gas Heat Shell Air Sealing Sealed **IECC 2009** New 1.04 #N/A No 47% 100% 100% IL TRM (No AC) Envelope Code Level Constructi with Envelope on Normal Tightness with Exposure -4 ACH50 Normal Exposure -7 ACH50 1009 AC/Electric Shell 5.38 #N/A 1% 100% 100% IL TRM SingleFamily Air Sealing Sealed Leaky Retrofit Yes &Duplex Resistance Envelope Envelope Heat with with Normal Normal Exposure Exposure

Appendix D: Residential Measure Assumptions

\*Residential applicability factors were developed only for measures included in the potential analyses.

**ICF** International

Measure ID	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1010	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	3.05	#N/A	Yes	0%	100%	100%	IL TRM
1011	SingleFamily &Duplex	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	4.03	#N/A	Yes	0%	100%	100%	IL TRM
1012	SingleFamily &Duplex	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	3.70	#N/A	Yes	86%	100%	100%	IL TRM
1013	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	1.37	#N/A	Yes	13%	100%	100%	IL TRM
1014	Multifamily	AC/Electric Resistance Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	5.28	#N/A	Yes	4%	100%	100%	IL TRM
1015	Multifamily	Electric Resistance Heat/No CAC	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	1.52	#N/A	Yes	4%	100%	100%	IL TRM
1016	Multifamily	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	5.28	#N/A	Yes	5%	100%	100%	IL TRM
1017	Multifamily	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	3.80	#N/A	Yes	40%	100%	100%	IL TRM

#### Appendix D: Residential Measure Assumptions Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1018 Multifamily Gas Heat Shell Sealed Leaky Retrofit 1.24 #N/A Yes 47% 100% 100% IL TRM Air Sealing (No AC) Envelope Envelope with with Normal Normal Exposure Exposure 1019 AC/Electric Shell 1.87 #N/A 1% 42% 100% SingleFamily Conditione Retrofit Yes IL TRM Basement Conditione d Space No &Duplex Resistance Sidewall d Heat Insulation basement Insulation with code level - R13 Cavity Insulation above and below grade #N/A 0% 42% 100% 1020 SingleFamily Electric Shell Basement Conditione Conditione Retrofit 1.60 Yes IL TRM &Duplex d Space No Resistance Sidewall d Heat/No Insulation basement Insulation CAC with code level - R13 Cavity Insulation above and below grade 1021 SingleFamily Heat Pump Shell Basement Conditione Conditione Retrofit 1.16 #N/A Yes 0% 42% 100% IL TRM &Duplex Sidewall d d Space No Insulation Insulation basement with code level - R13 Cavity Insulation above and below grade 1022 SingleFamily AC/Gas #N/A 86% 42% 100% IL TRM Shell Basement Conditione Conditione Retrofit 1.10 Yes &Duplex Heat Sidewall d d Space No Insulation basement Insulation with code level - R13 Cavity Insulation above and below grade

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Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Туре*	Feasibility*	Rate*	
1023	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Conditione d basement with code level - R13 Cavity Insulation above and below grade	Conditione d Space No Insulation	Retrofit	0.83	#N/A	Yes	13%	42%	100%	IL TRM
1024	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Conditione d basement with code level - R13 Cavity Insulation above and below grade	Conditione d Space No Insulation	Retrofit	1.89	#N/A	No	4%	5%	100%	IL TRM
1025	Multifamily	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Conditione d basement with code level - R13 Cavity Insulation above and below grade	Conditione d Space No Insulation	Retrofit	1.59	#N/A	No	4%	5%	100%	IL TRM
1026	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	Conditione d basement with code level - R13 Cavity Insulation above and below grade	Conditione d Space No Insulation	Retrofit	1.18	#N/A	No	5%	5%	100%	IL TRM

Measure	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1027	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	Conditione d basement with code level - R13 Cavity Insulation above and below grade	Conditione d Space No Insulation	Retrofit	1.12	#N/A	No	40%	5%	100%	IL TRM
1028	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Conditione d basement with code level - R13 Cavity Insulation above and below grade	Conditione d Space No Insulation	Retrofit	0.83	#N/A	No	47%	5%	100%	IL TRM
1029	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	3.58	#N/A	Yes	1%	11%	100%	IL TRM
1030	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	3.22	#N/A	Yes	0%	11%	100%	IL TRM
1031	SingleFamily &Duplex	Heat Pump	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	2.16	#N/A	Yes	0%	11%	100%	IL TRM

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									Included in	Included in	Applicabilit			
					Efficient	- "			Economic	Achievable	y to		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1032	SingleFamily	AC/Gas	Shell	Basement	Crawlspace	Crawlspace	Retrofit	2.02	#N/A	Yes	86%	11%	100%	IL TRM
	&Duplex	Heat		Sidewall	with code	No								
				Insulation	level - R13	Insulation								
					Cavity									
					Insulation									
					above and									
					below									
					grade									
1033	SingleFamily	Gas Heat	Shell	Basement	Crawlspace	Crawlspace	Retrofit	1.66	#N/A	Yes	13%	11%	100%	IL TRM
	&Duplex	(No AC)		Sidewall	with code	No								
				Insulation	level - R13	Insulation								
					Cavity									
					Insulation									
					above and									
					below									
					grade									
1034	Multifamily	AC/Electric	Shell	Basement	Crawlspace	Crawlspace	Retrofit	3.59	#N/A	No	4%	11%	100%	IL TRM
		Resistance		Sidewall	with code	NO								
		Heat		Insulation	level - R13	Insulation								
					Cavity									
					Insulation									
					above and									
					below									
1025		Flastria	Chall	Deservent	grade	Crevelana en	Detrefit	2.20	411/0	Na	40/	110/	100%	
1035	wuitifamily	Electric	Shell	Basement	Crawispace	Crawispace	Retront	3.20	#N/A	NO	4%	11%	100%	IL I RIVI
		Resistance		Sidewali	with code	NO In culation								
		Heat/No		Insulation	level - K13	Insulation								
		LAL			Cavity									
					insulation									
					above and									
					grado									
1026	Multifamily	Hoat Dump	Shall	Pacamont	Crawlenaco	Crawlenaco	Potrofit	2 1 0	#NI/A	No	E9/	110/	100%	
1050	wiultianiiy	neat Pullip	Shell	Sidowall	with code	No	Relioni	2.10	#IN/A	NO	5%	1170	100%	
				Inculation		Inculation								
				Insulation	Covity	Insulation								
					Insulation									
					above and									
					helow									
					grade									
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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1037	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	2.06	#N/A	No	40%	11%	100%	IL TRM
1038	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	1.66	#N/A	No	47%	11%	100%	IL TRM
1039	SingleFamily &Duplex	Heat Pump	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.63	#N/A	Yes	0%	36%	100%	IL TRM
1040	SingleFamily &Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.59	#N/A	Yes	86%	36%	100%	IL TRM

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1041	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.50	#N/A	Yes	13%	36%	100%	IL TRM
1042	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	1.06	#N/A	No	4%	36%	100%	IL TRM
1043	Multifamily	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.96	#N/A	No	4%	36%	100%	IL TRM
1044	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.63	#N/A	No	5%	6%	100%	IL TRM
Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
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1045	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.60	#N/A	No	40%	6%	100%	IL TRM
1046	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditio ned basement with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.50	#N/A	No	47%	6%	100%	IL TRM
1047	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	UnConditio ned space with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	1.06	#N/A	Yes	1%	6%	100%	IL TRM
1048	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	UnConditio ned space with code level - R13 Cavity Insulation above and below grade	Unconditio ned Space No Insulation	Retrofit	0.97	#N/A	Yes	0%	6%	100%	IL TRM
1049	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	2.09	#N/A	Yes	1%	11%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1050	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	1.88	#N/A	Yes	0%	11%	100%	IL TRM
1051	SingleFamily &Duplex	Heat Pump	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	1.26	#N/A	Yes	0%	11%	100%	IL TRM
1052	SingleFamily &Duplex	AC/Gas Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	1.18	#N/A	Yes	86%	11%	100%	IL TRM
1053	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	0.97	#N/A	Yes	13%	11%	100%	IL TRM
1054	Multifamily	AC/Electric Resistance Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	2.03	#N/A	No	4%	11%	100%	IL TRM
1055	Multifamily	Electric Resistance Heat/No CAC	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	1.85	#N/A	No	4%	11%	100%	IL TRM
1056	Multifamily	Heat Pump	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	1.27	#N/A	No	5%	11%	100%	IL TRM
1057	Multifamily	AC/Gas Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	1.20	#N/A	No	40%	11%	100%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1058 Multifamily Gas Heat Shell Floor R30 Floor Retrofit 0.97 #N/A No 47% 11% 100% IL TRM no (No AC) insulation Insulation insulation above crawlspace 1059 SingleFamily Shell R19 Wall 0.18 Yes 0% 94% 100% Heat Pump Wall and R19 Wall New No IL TRM &Duplex Ceiling/Atti Cavity Cavity Constructi С Insulation Insulation on Insulation + R5 Sheathing 1060 SingleFamily AC/Electric Shell Wall and R19 Wall R19 Wall New 0.27 Yes No 1% 94% 100% IL TRM &Duplex Resistance Ceiling/Atti Cavity Cavity Constructi Insulation Insulation Heat С on Insulation + R5 Sheathing 1061 SingleFamily Electric Shell Wall and R19 Wall R19 Wall New 0.21 Yes No 0% 94% 100% IL TRM Ceiling/Atti &Duplex Resistance Cavity Cavity Constructi Heat/No С Insulation Insulation on CAC Insulation + R5 Sheathing 1062 SingleFamily AC/Gas Shell Wall and R19 Wall R19 Wall New 0.16 Yes No 86% 94% 100% IL TRM &Duplex Ceiling/Atti Heat Cavity Cavity Constructi Insulation Insulation С on Insulation + R5 Sheathing 1063 SingleFamily Gas Heat Shell Wall and R19 Wall R19 Wall New 0.11 Yes No 13% 94% 100% IL TRM &Duplex (No AC) Ceiling/Atti Cavity Cavity Constructi Insulation Insulation on С Insulation + R5 Sheathing Wall and 1064 Multifamily Heat Pump Shell R19 Wall R19 Wall New 0.18 Yes No 5% 83% 100% IL TRM Ceiling/Atti Cavity Cavity Constructi Insulation Insulation С on Insulation + R5 Sheathing 1065 Multifamily AC/Electric Shell Wall and R19 Wall R19 Wall New 0.27 Yes No 4% 83% 100% IL TRM Ceiling/Atti Resistance Cavity Cavity Constructi Heat С Insulation Insulation on Insulation + R5 Sheathing

#### Appendix D: Residential Measure Assumptions

Measure	Sub-Sector	Building	End Lise	Measure	Efficient Measure Definition	Baseline	Measure Type	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Bate*	References
1066	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Constructi on	0.21	Yes	No	4%	83%	100%	IL TRM
1067	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Constructi on	0.16	Yes	No	40%	83%	100%	IL TRM
1068	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Constructi on	0.11	Yes	No	47%	83%	100%	IL TRM
1069	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	0.87	Yes	Yes	0%	6%	100%	IL TRM
1070	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	1.32	Yes	Yes	1%	6%	100%	IL TRM
1071	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	1.03	Yes	Yes	0%	6%	100%	IL TRM
1072	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	0.78	Yes	Yes	86%	6%	100%	IL TRM
1073	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	0.53	Yes	Yes	13%	6%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1074	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	6.09	No	No	5%	17%	100%	IL TRM
1075	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	6.54	No	No	4%	17%	100%	IL TRM
1076	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	6.48	No	No	4%	17%	100%	IL TRM
1077	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	6.00	No	No	40%	17%	100%	IL TRM
1078	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R19 Wall Insulation	Uninsulate d external wall	Retrofit	5.99	No	No	47%	17%	100%	IL TRM
1079	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.77	No	Yes	0%	100%	100%	IL TRM
1080	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	2.76	No	Yes	1%	100%	100%	IL TRM
1081	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	2.22	No	Yes	0%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1082	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.58	No	Yes	86%	100%	100%	IL TRM
1083	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.15	No	Yes	13%	100%	100%	IL TRM
1084	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.49	No	Yes	0%	100%	100%	IL TRM
1085	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.76	No	Yes	1%	100%	100%	IL TRM
1086	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.61	No	Yes	0%	100%	100%	IL TRM
1087	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.44	No	Yes	86%	100%	100%	IL TRM
1088	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.32	No	Yes	13%	100%	100%	IL TRM
1089	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.19	Yes	No	0%	100%	100%	IL TRM

Measure	Sub Soctor	Building	Endlico	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Typo*	Technical	Not-Yet- Adopted	References
1090	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.30	Yes	No	1%	100%	100%	IL TRM
1091	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.24	Yes	No	0%	100%	100%	IL TRM
1092	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.17	Yes	No	86%	100%	100%	IL TRM
1093	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.12	Yes	No	13%	100%	100%	IL TRM
1094	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.38	Yes	No	5%	100%	100%	IL TRM
1095	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.90	Yes	No	4%	100%	100%	IL TRM
1096	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.90	Yes	No	4%	100%	100%	IL TRM
1097	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.20	Yes	No	40%	100%	100%	IL TRM

Measure		Building	<b>F</b> orther	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1098	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti C Insulation	R38 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.19	Yes	No	47%	100%	100%	IL TRM
1099	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	4.10	Yes	No	5%	100%	100%	IL TRM
1100	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	4.37	Yes	No	4%	100%	100%	IL TRM
1101	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	4.34	Yes	No	4%	100%	100%	IL TRM
1102	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	4.05	Yes	No	40%	100%	100%	IL TRM
1103	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	4.05	Yes	No	47%	100%	100%	IL TRM
1104	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.46	Yes	No	5%	100%	100%	IL TRM
1105	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.56	Yes	No	4%	100%	100%	IL TRM

Measure	Sub-Sector	Building Type	Fnd Lise	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Bate*	References
1106	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.55	Yes	No	4%	100%	100%	IL TRM
1107	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.44	Yes	No	40%	100%	100%	IL TRM
1108	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R38 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.43	Yes	No	47%	100%	100%	IL TRM
1109	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.55	No	Yes	0%	100%	100%	IL TRM
1110	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	2.41	No	Yes	1%	100%	100%	IL TRM
1111	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.94	No	Yes	0%	100%	100%	IL TRM
1112	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.38	No	Yes	86%	100%	100%	IL TRM
1113	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	1.00	No	Yes	13%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1114	Sub-Sector SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti C Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.46	Yes	Yes	0%	100%	100%	IL TRM
1115	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.71	Yes	Yes	1%	100%	100%	IL TRM
1116	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.58	Yes	Yes	0%	100%	100%	IL TRM
1117	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.41	Yes	Yes	86%	100%	100%	IL TRM
1118	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	0.30	Yes	Yes	13%	100%	100%	IL TRM
1119	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.24	#N/A	No	0%	100%	100%	IL TRM
1120	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.37	#N/A	No	1%	100%	100%	IL TRM
1121	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.30	#N/A	No	0%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1122	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.21	#N/A	No	86%	100%	100%	IL TRM
1123	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	0.15	#N/A	No	13%	100%	100%	IL TRM
1124	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	0.12	#N/A	No	0%	100%	100%	IL TRM
1125	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	0.19	#N/A	No	1%	100%	100%	IL TRM
1126	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	0.15	#N/A	No	0%	100%	100%	IL TRM
1127	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	0.11	#N/A	No	86%	100%	100%	IL TRM
1128	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	0.08	#N/A	No	13%	100%	100%	IL TRM
1129	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	3.74	#N/A	No	5%	100%	100%	IL TRM

Measure	Sub Soctor	Building	Endlico	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tymo*	Technical	Not-Yet- Adopted	References
1130	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.14	#N/A	No	4%	100%	100%	IL TRM
1131	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	4.14	#N/A	No	4%	100%	100%	IL TRM
1132	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	3.58	#N/A	No	40%	100%	100%	IL TRM
1133	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	0 to 3 inches of ceiling/atti c insulation	Retrofit	3.57	#N/A	No	47%	100%	100%	IL TRM
1134	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	3.40	#N/A	No	5%	100%	100%	IL TRM
1135	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	3.65	#N/A	No	4%	100%	100%	IL TRM
1136	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	3.62	#N/A	No	4%	100%	100%	IL TRM
1137	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	3.35	#N/A	No	40%	100%	100%	IL TRM

Measure	Sub Soctor	Building	End Lico	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tymo*	Technical	Not-Yet- Adopted	References
1138	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	4 to 6 inches of ceiling/atti c insulation	Retrofit	3.35	#N/A	No	47%	100%	100%	IL TRM
1139	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	3.91	#N/A	No	5%	100%	100%	IL TRM
1140	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.04	#N/A	No	4%	100%	100%	IL TRM
1141	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	4.03	#N/A	No	4%	100%	100%	IL TRM
1142	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	3.88	#N/A	No	40%	100%	100%	IL TRM
1143	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	7 to 10 inches of ceiling/atti c insulation	Retrofit	3.88	#N/A	No	47%	100%	100%	IL TRM
1144	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	6.44	#N/A	No	5%	100%	100%	IL TRM
1145	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	6.51	#N/A	No	4%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1146	Sub-Sector Multifamily	Electric Resistance Heat/No CAC	Shell	Name Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	Definition 10+ inches of ceiling/atti c insulation	Retrofit	6.50	Analysis #N/A	Analysis No	4%	100%	Rate* 100%	IL TRM
1147	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	6.43	#N/A	No	40%	100%	100%	IL TRM
1148	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	10+ inches of ceiling/atti c insulation	Retrofit	6.43	#N/A	No	47%	100%	100%	IL TRM
1149	SingleFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	0.08	#N/A	No	0%	100%	100%	IL TRM
1150	SingleFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	0.12	#N/A	No	1%	100%	100%	IL TRM
1151	SingleFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	0.10	#N/A	No	0%	100%	100%	IL TRM
1152	SingleFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	0.07	#N/A	No	86%	100%	100%	IL TRM
1153	SingleFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	0.05	#N/A	No	13%	100%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1154	Multifamily	Heat Pump	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	6.41	#N/A	Yes	5%	100%	100%	IL TRM
1155	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	6.45	#N/A	Yes	4%	100%	100%	IL TRM
1156	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	6.45	#N/A	Yes	4%	100%	100%	IL TRM
1157	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	6.40	#N/A	Yes	40%	100%	100%	IL TRM
1158	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Atti c Insulation	R60 Ceiling/Atti c Insulation	R49 Ceiling/Atti c Insulation	New Constructi on	6.40	#N/A	Yes	47%	100%	100%	IL TRM
1159	All	Electric Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	0.67	#N/A	No	6%	30%	100%	IL TRM

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Ivieasure	Sub Soctor	Building	Endlico	Measure	Nieasure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
1160		Electric	Appliances	CEE Tier 1	CEE Tier 1	ENERGY	New	0.67		Vos	fype 6%	angle and a second seco	100%	
	All	Heating	Аррнансез	and ENERGY STAR V3.0 Room Air Conditione r	ett her I and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	Constructi on	0.07	#N/A	163	076	3078	100%	
1161	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	Time of Sale	0.67	#N/A	No	94%	30%	100%	IL TRM
1162	All	Gas Heating	Appliances	CEE Tier 1 and ENERGY STAR V3.0 Room Air Conditione r	CEE Tier 1 and ENERGY STAR V3.0 without louvered sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvered sides and reverse cycle < 14000 Btu/h	New Constructi on	0.67	#N/A	Yes	94%	30%	100%	IL TRM
1163	Multifamily	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	2.20	#N/A	No	4%	100%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1164	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	2.24	#N/A	No	1%	100%	100%	IL TRM
1165	Multifamily	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	2.06	#N/A	No	4%	100%	100%	IL TRM
1166	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	2.09	#N/A	No	1%	100%	100%	IL TRM
1167	Multifamily	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	1.94	#N/A	No	4%	100%	100%	IL TRM
1168	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	1.96	#N/A	No	1%	100%	100%	IL TRM
1169	Multifamily	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	1.82	#N/A	No	4%	100%	100%	IL TRM

					Efficient				Measure Included in Economic	Measure Included in Achievable	Applicabilit		Not-Yet-	
Measure		Building		Measure	Measure	Baseline	Measure	Measu	Potential	Potential	Building	Technical	Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Туре*	Feasibility*	Rate*	
1170	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance with AC/dual baseline = heat pump	Early Replaceme nt	1.85	#N/A	No	1%	100%	100%	IL TRM
1171	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	1.62	#N/A	Yes	5%	100%	100%	IL TRM
1172	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	1.64	#N/A	Yes	0%	100%	100%	IL TRM
1173	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	2.10	#N/A	Yes	5%	100%	100%	IL TRM
1174	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	2.14	#N/A	Yes	0%	100%	100%	IL TRM
1175	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	2.51	#N/A	Yes	5%	100%	100%	IL TRM
1176	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	2.57	#N/A	Yes	0%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1177	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	2.87	#N/A	Yes	5%	100%	100%	IL TRM
1178	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	2.93	#N/A	Yes	0%	100%	100%	IL TRM
1179	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	1.62	#N/A	No	5%	100%	100%	IL TRM
1180	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	1.64	#N/A	No	0%	100%	100%	IL TRM
1181	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	2.10	#N/A	No	5%	100%	100%	IL TRM
1182	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	2.14	#N/A	No	0%	100%	100%	IL TRM
1183	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	2.51	#N/A	No	5%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1184	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	2.57	#N/A	No	0%	100%	100%	IL TRM
1185	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	2.87	#N/A	No	5%	100%	100%	IL TRM
1186	SingleFamily &Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	2.93	#N/A	No	0%	100%	100%	IL TRM
1187	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing air source heat pump	Early Replaceme nt	0.70	#N/A	No	5%	100%	64%	IL TRM
1188	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing air source heat pump	Early Replaceme nt	0.71	#N/A	No	0%	100%	64%	IL TRM
1189	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing AC, electric heating	Early Replaceme nt	1.14	#N/A	No	4%	100%	64%	IL TRM
1190	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing AC, electric heating	Early Replaceme nt	1.22	#N/A	No	1%	100%	64%	IL TRM
1191	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.53	#N/A	No	5%	100%	64%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Tvpe	End Use	Name	Definition	Definition	Type	re TRC	Analysis	Analysis	Type*	Feasibilitv*	Rate*	References
1192	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.53	#N/A	No	0%	100%	64%	IL TRM
1193	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.44	#N/A	Yes	5%	100%	64%	IL TRM
1194	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.44	#N/A	Yes	0%	100%	64%	IL TRM
1195	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.69	#N/A	No	4%	100%	64%	IL TRM
1196	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	4.03	#N/A	No	1%	100%	64%	IL TRM
1197	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	New Constructi on	3.56	#N/A	Yes	4%	100%	64%	IL TRM
1198	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Federal standard central AC, electric resistance heating	New Constructi on	3.69	#N/A	Yes	1%	100%	64%	IL TRM
1199	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replaceme nt	0.72	#N/A	No	5%	100%	64%	IL TRM

Measure	Sub-Sector	Building Type	Fnd Lise	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Bate*	References
1200	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replaceme nt	0.73	#N/A	No	0%	100%	64%	IL TRM
1201	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing AC, electric heating	Early Replaceme nt	1.15	#N/A	No	4%	100%	64%	IL TRM
1202	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing AC, electric heating	Early Replaceme nt	1.24	#N/A	No	1%	100%	64%	IL TRM
1203	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.37	#N/A	No	5%	100%	64%	IL TRM
1204	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.37	#N/A	No	0%	100%	64%	IL TRM
1205	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.53	#N/A	Yes	5%	100%	64%	IL TRM
1206	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.53	#N/A	Yes	0%	100%	64%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1207	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.39	#N/A	No	4%	100%	64%	IL TRM
1208	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.42	#N/A	No	1%	100%	64%	IL TRM
1209	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	3.69	#N/A	Yes	4%	100%	64%	IL TRM
1210	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Federal standard central AC, electric resistance heating	New Constructi on	4.03	#N/A	Yes	1%	100%	64%	IL TRM
1211	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing air source heat pump	Early Replaceme nt	0.81	#N/A	No	5%	100%	64%	IL TRM
1212	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing air source heat pump	Early Replaceme nt	0.82	#N/A	No	0%	100%	64%	IL TRM
1213	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing AC, electric heating	Early Replaceme nt	1.19	#N/A	No	4%	100%	64%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1214	Sub-Sector SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Name Ground Source Heat Pump	Definition ENERGY STAR Water to water - Closed Loop	Definition Existing AC, electric heating	Type Early Replaceme nt	<u>re TRC</u> 1.33	Analysis #N/A	Analysis No	Type* 1%	Feasibility*	Rate* 64%	IL TRM
1215	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.53	#N/A	No	5%	100%	64%	IL TRM
1216	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.54	#N/A	No	0%	100%	64%	IL TRM
1217	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.37	#N/A	Yes	5%	100%	64%	IL TRM
1218	SingleFamily &Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Constructi on	0.37	#N/A	Yes	0%	100%	64%	IL TRM
1219	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.66	#N/A	No	4%	100%	64%	IL TRM
1220	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric resistance heating	Time of Sale	3.80	#N/A	No	1%	100%	64%	IL TRM
1221	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric resistance heating	New Constructi on	3.39	#N/A	Yes	4%	100%	64%	IL TRM

#### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition re TRC Analysis Analysis Type\* Feasibility\* Rate\* Type 1222 SingleFamily AC/Electric HVAC Ground ENERGY Federal New 3.42 #N/A Yes 1% 100% 64% IL TRM &Duplex Resistance Source STAR standard Constructi Heat Heat Pump Water to central AC, on water electric Open Loop resistance heating 1223 0.64 #N/A 5% 100% 64% Multifamily HVAC Ground ENERGY Early No IL TRM Heat Pump Existing air Source STAR Replaceme source Heat Pump Water to heat pump nt water -Open Loop 1224 SingleFamily Heat Pump HVAC Ground ENERGY Existing air Early 0.66 #N/A No 0% 100% 64% IL TRM &Duplex Source Replaceme STAR source Heat Pump Water to heat pump nt water -Open Loop 1225 Multifamily AC/Electric HVAC Ground ENERGY Existing Early 1.14 #N/A No 4% 100% 64% IL TRM Resistance Source STAR AC. electric Replaceme Heat Heat Pump Water to heating nt water -Open Loop 1226 ENERGY 1.17 #N/A 1% 100% 64% IL TRM SingleFamily AC/Electric HVAC Ground Existing Early No &Duplex Resistance Source STAR AC, electric Replaceme Heat Heat Pump Water to heating nt water -Open Loop 1227 SingleFamily HVAC 0.38 #N/A 0% 100% 98% IL TRM Heat Pump Ductless 1.5-Ton Existing Retrofit No &Duplex Heat Pump Ductless ducted Heat Pump ASHP (first installed in home) 1228 Multifamily Heat Pump HVAC Ductless 1.5-Ton Existing Retrofit 0.24 #N/A No 5% 100% 98% IL TRM Ductless ducted Heat Pump Heat Pump ASHP (first installed in home) 1229 HVAC 1.5-Ton 0.77 #N/A 0% 100% 98% IL TRM SingleFamily Electric Ductless Existing Retrofit No &Duplex Resistance Heat Pump **Ductless** electric Heat/No Heat Pump resistance CAC (first heating (no installed in AC) home)

Appendix D: Residential Measure Assumptions

#### Appendix D: Residential Measure Assumptions Measure Measure Applicabilit Included in Included in Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1230 Multifamily Electric HVAC Ductless 1.5-Ton Existing Retrofit 0.50 #N/A No 4% 100% 98% IL TRM Resistance Heat Pump **Ductless** electric Heat/No Heat Pump resistance CAC (first heating (no installed in AC) home) 1231 AC/Electric 1.5-Ton 1.10 #N/A 1% 100% 98% SingleFamily HVAC Ductless Existing Yes IL TRM Retrofit &Duplex Resistance Heat Pump electric Ductless Heat Heat Pump resistance (first heating installed in with PTAC/PTHP home) 1232 #N/A 100% Multifamily AC/Electric HVAC Ductless 1.5-Ton Retrofit 0.71 4% 98% IL TRM Existing No Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with PTAC/PTHP home) #N/A 98% 1233 SingleFamily AC/Electric HVAC 1.14 Yes 1% 100% Ductless 1.5-Ton Existing Retrofit IL TRM &Duplex Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating with room installed in AC home) 1234 Multifamily AC/Electric HVAC Ductless 1.5-Ton Existing Retrofit 0.74 #N/A No 4% 100% 98% IL TRM Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with room home) AC 1.5-Ton 1235 AC/Electric HVAC 0.94 #N/A 1% 100% 98% IL TRM SingleFamily Ductless Existing Retrofit Yes &Duplex Resistance Heat Pump **Ductless** electric Heat Heat Pump resistance (first heating installed in with SPVAC/SPV home) HP < 65kBtu/hr

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 1236	Sub-Sector Multifamily	Type AC/Electric Resistance Heat	End Use HVAC	Name Ductless Heat Pump	Definition 1.5-Ton Ductless Heat Pump (first installed in home)	Definition Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Type Retrofit	re TRC 0.61	Analysis #N/A	Analysis No	Type* 4%	Feasibility* 100%	Rate* 98%	IL TRM
1237	SingleFamily &Duplex	Heat Pump	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump	Existing ducted ASHP	Retrofit	0.08	#N/A	No	0%	100%	98%	IL TRM
1238	SingleFamily &Duplex	Heat Pump	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	0.32	#N/A	No	0%	100%	98%	IL TRM
1239	Multifamily	Heat Pump	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	0.20	#N/A	No	5%	100%	98%	IL TRM
1240	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	0.65	#N/A	No	0%	100%	98%	IL TRM
1241	Multifamily	Electric Resistance Heat/No CAC	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	0.42	#N/A	No	4%	100%	98%	IL TRM
1242	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	0.92	#N/A	Yes	1%	100%	98%	IL TRM

#### Measure Measure Applicabilit Included in Included in Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1243 Multifamily AC/Electric HVAC Ductless 1-Ton Existing Retrofit 0.60 #N/A No 4% 100% 98% IL TRM Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with home) PTAC/PTHP #N/A 1% 100% 98% 1244 SingleFamily AC/Electric HVAC Ductless 1-Ton Existing 0.96 Yes IL TRM Retrofit &Duplex Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with room AC home) 1245 Multifamily AC/Electric HVAC Ductless Existing Retrofit 0.62 #N/A 4% 100% 98% IL TRM 1-Ton No Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with room AC home) 98% 1246 SingleFamily AC/Electric HVAC 0.79 #N/A Yes 1% 100% Ductless 1-Ton Existing Retrofit IL TRM &Duplex Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with SPVAC/SPV home) HP < 65kBtu/hr 1247 Multifamily AC/Electric HVAC Ductless 1-Ton Existing Retrofit 0.51 #N/A No 4% 100% 98% IL TRM Resistance Heat Pump Ductless electric Heat Heat Pump resistance (first heating installed in with SPVAC/SPV home) HP < 65kBtu/hr 1248 SingleFamily HVAC Ductless 2-Ton 0.34 #N/A No 0% 100% 98% IL TRM Heat Pump Existing Retrofit &Duplex Heat Pump Ductless ducted ASHP Heat Pump (first installed in home)

#### Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1249	Multifamily	Heat Pump	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	0.22	#N/A	No	5%	100%	98%	IL TRM
1250	SingleFamily &Duplex	Electric Resistance Heat/No CAC	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	0.66	#N/A	No	0%	100%	98%	IL TRM
1251	Multifamily	Electric Resistance Heat/No CAC	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	0.43	#N/A	No	4%	100%	98%	IL TRM
1252	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	1.03	#N/A	Yes	1%	100%	98%	IL TRM
1253	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	0.66	#N/A	No	4%	100%	98%	IL TRM
1254	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	1.08	#N/A	Yes	1%	100%	98%	IL TRM
1255	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	0.70	#N/A	No	4%	100%	98%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1256	SingleFamily &Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	2-10n Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Ketrofit	0.85	#N/A	Yes	1%	100%	98%	IL I RM
1257	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Retrofit	0.55	#N/A	No	4%	100%	98%	IL TRM
1258	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Time of Sale	1.31	#N/A	Yes	8%	100%	100%	IL TRM
1259	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	New Constructi on	1.31	#N/A	Yes	8%	100%	100%	IL TRM
1260	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Retrofit	0.83	#N/A	No	8%	100%	100%	IL TRM
1261	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Time of Sale	0.89	#N/A	Yes	20%	100%	100%	IL TRM
1262	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	New Constructi on	0.89	#N/A	Yes	20%	100%	100%	IL TRM

Measure	Sub-Sector	Building Type	Fnd Lise	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Bate*	References
1263	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Retrofit	0.57	#N/A	No	20%	100%	100%	IL TRM
1264	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Time of Sale	1.45	#N/A	Yes	1%	100%	100%	IL TRM
1265	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	New Constructi on	1.45	#N/A	Yes	1%	100%	100%	IL TRM
1266	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Retrofit	0.92	#N/A	No	1%	100%	100%	IL TRM
1267	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Time of Sale	1.00	#N/A	Yes	4%	100%	100%	IL TRM
1268	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	New Constructi on	1.00	#N/A	Yes	4%	100%	100%	IL TRM
1269	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Retrofit	0.63	#N/A	No	4%	100%	100%	IL TRM

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 1270	Sub-Sector SingleFamily	Type Electric	End Use Hot Water	Name Heat Pump	Definition Heat Pump	Definition Electric	Type Time of	re TRC 1.32	Analysis #N/A	Analysis Yes	Type* 8%	Feasibility* 100%	Rate* 100%	IL TRM
	&Duplex	DHW w/Electric Heating Rate		Water Heaters	Water Heater EF 2.35	Water Heater	Sale	-	,					
1271	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	New Constructi on	1.32	#N/A	Yes	8%	100%	100%	IL TRM
1272	SingleFamily &Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Retrofit	0.88	#N/A	No	8%	100%	100%	IL TRM
1273	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Time of Sale	0.89	#N/A	Yes	20%	100%	100%	IL TRM
1274	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	New Constructi on	0.89	#N/A	Yes	20%	100%	100%	IL TRM
1275	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Retrofit	0.59	#N/A	No	20%	100%	100%	IL TRM
1276	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Time of Sale	1.45	#N/A	Yes	1%	100%	100%	IL TRM
1277	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	New Constructi on	1.45	#N/A	Yes	1%	100%	100%	IL TRM

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1278	SingleFamily &Duplex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Retrofit	0.97	#N/A	No	1%	100%	100%	IL TRM
1279	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Time of Sale	1.00	#N/A	Yes	4%	100%	100%	IL TRM
1280	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	New Constructi on	1.00	#N/A	Yes	4%	100%	100%	IL TRM
1281	Multifamily	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Retrofit	0.66	#N/A	No	4%	100%	100%	IL TRM
1282	SingleFamily &Duplex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participant s - currently receiving HER	Retrofit	6.97	#N/A	Yes	98%	100%	100%	ICF
1283	Multifamily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participant s - currently receiving HER	Retrofit	3.18	#N/A	Yes	87%	100%	100%	ICF
1284	SingleFamily &Duplex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participant s - currently receiving HER	Retrofit	16.15	#N/A	Yes	2%	100%	100%	ICF

#### Appendix D: Residential Measure Assumptions Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Building Measure Measure Measure Baseline Measure Measu Potential Potential Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1285 Multifamily Electric Other Residential 1.93% Legacy Retrofit 7.50 #N/A Yes 13% 100% 100% ICF Heating Mailed Program Energy-Use Reduction Home Participant Energy s -Report currently (HER) receiving HER 5.32 #N/A 98% 100% 100% ICF 1286 SingleFamily Gas Other Residential Average 6% Retrofit Yes &Duplex Heating Mailed Behavioral Expansion Home Whole-Program Participant Energy house Report Energy-Use in 2017 -(HER) Reduction first year of Expansion Participant in 2017 6% 1287 Multifamily Gas Other Residential Average Retrofit 2.43 #N/A Yes 87% 100% 100% ICF Heating Mailed Behavioral Expansion Home Whole-Program Participant Energy house Report Energy-Use in 2017 -Reduction first year (HER) of Expansion Participant in 2017 6% 2% ICF 1288 SingleFamily Other Residential Retrofit 12.33 #N/A 100% 100% Electric Average Yes &Duplex Heating Mailed Behavioral Expansion Home Whole-Program Energy house Participant Report Energy-Use in 2017 first year (HER) Reduction of Expansion Participant in 2017

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1289	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - first year	Retrofit	5.73	#N/A	Yes	13%	100%	100%	ICF
1290	SingleFamily &Duplex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	7.46	#N/A	Yes	98%	100%	100%	ICF
1291	Multifamily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	3.40	#N/A	Yes	87%	100%	100%	ICF
1292	SingleFamily &Duplex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	17.27	#N/A	Yes	2%	100%	100%	ICF

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1293	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2017	6% Expansion Program Participant in 2017 - second year	Retrofit	8.02	#N/A	Yes	13%	100%	100%	ICF
1294	SingleFamily &Duplex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	5.32	#N/A	Yes	98%	100%	100%	ICF
1295	Multifamily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	2.43	#N/A	Yes	87%	100%	100%	ICF
1296	SingleFamily &Duplex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	12.33	#N/A	Yes	2%	100%	100%	ICF
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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1297	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- first year	Retrofit	5.73	#N/A	Yes	13%	100%	100%	ICF
1298	SingleFamily &Duplex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	7.46	#N/A	Yes	98%	100%	100%	ICF
1299	Multifamily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	3.40	#N/A	Yes	87%	100%	100%	ICF
1300	SingleFamily &Duplex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	17.27	#N/A	Yes	2%	100%	100%	ICF

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analvsis	Measure Included in Achievable Potential Analvsis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1301	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2020	6% Expansion Program Participant in 2020- second year	Retrofit	8.02	#N/A	Yes	13%	100%	100%	ICF
1302	SingleFamily &Duplex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	5.32	#N/A	Yes	98%	100%	100%	ICF
1303	Multifamily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	2.43	#N/A	Yes	87%	100%	100%	ICF
1304	SingleFamily &Duplex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	12.33	#N/A	Yes	2%	100%	100%	ICF

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Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1305	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- first year	Retrofit	5.73	#N/A	Yes	13%	100%	100%	ICF
1306	SingleFamily &Duplex	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	7.46	#N/A	Yes	98%	100%	100%	ICF
1307	Multifamily	Gas Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	3.40	#N/A	Yes	87%	100%	100%	ICF
1308	SingleFamily &Duplex	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	17.27	#N/A	Yes	2%	100%	100%	ICF

Measure		Building	Follow	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1309	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	Average Behavioral Whole- house Energy-Use Reduction of Expansion Participant in 2023	Expansion Program Participant in 2023 - remaining customers- second year	Retrofit	8.02	#N/A	Yes	13%	100%	100%	ICF
1310	SingleFamily &Duplex	Gas Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	Legacy Program Participant S - currently enrolled in C3 platform w/eHER	Retrofit	7.30	#N/A	No	98%	100%	100%	ICF
1311	Multifamily	Gas Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	Legacy Program Participant S - currently opt-in C3 platform w/eHER	Retrofit	3.33	#N/A	No	87%	100%	100%	ICF
1312	SingleFamily &Duplex	Electric Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	Legacy Program Participant S - currently opt-in C3 platform w/eHER	Retrofit	16.91	#N/A	No	2%	100%	100%	ICF
1313	Multifamily	Electric Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	Legacy Program Participant S - currently opt-in C3 platform w/eHER	Retrofit	7.85	#N/A	No	13%	100%	100%	ICF

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1314	SingleFamily &Duplex	Gas Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	13.73	#N/A	Yes	98%	100%	100%	ICF
1315	Multifamily	Gas Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	6.27	#N/A	Yes	87%	100%	100%	ICF
1316	SingleFamily &Duplex	Electric Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	31.81	#N/A	Yes	2%	100%	100%	ICF
1317	Multifamily	Electric Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - first 3 years	Retrofit	14.77	#N/A	Yes	13%	100%	100%	ICF
1318	SingleFamily &Duplex	Gas Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - Year 4th and after	Retrofit	7.30	#N/A	Yes	98%	100%	100%	ICF

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1319	Multifamily	Gas Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - Year 4th and after	Retrofit	3.33	#N/A	Yes	87%	100%	100%	ICF
1320	SingleFamily &Duplex	Electric Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - Year 4th and after	Retrofit	16.91	#N/A	Yes	2%	100%	100%	ICF
1321	Multifamily	Electric Heating	Other	Residential Web-based Platform with eHER	Energy-Use Reduction	New Customers enroll to Web-based Platform with eHER - Year 4th and after	Retrofit	7.85	#N/A	Yes	13%	100%	100%	ICF
1322	All	Gas Heating	Other	Smart WiFi Thermosta t	Smart WiFi Thermosta t	Non- programm able Thermosta t	Retrofit	0.86	#N/A	Yes	94%	100%	100%	ICF
1323	All	Gas Heating	Other	Connected homes - Old Remove	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.00	#N/A	No	94%	100%	100%	ICF

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1324	SingleFamily &Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.86	#N/A	Yes	2%	100%	100%	ICF
1325	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.12	#N/A	Yes	13%	100%	100%	ICF
1326	SingleFamily &Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.86	#N/A	Yes	2%	100%	100%	ICF
1327	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.12	#N/A	Yes	13%	100%	100%	ICF
1328	SingleFamily &Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.86	#N/A	Yes	98%	100%	100%	ICF

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Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1329	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.52	#N/A	Yes	87%	100%	100%	ICF
1330	SingleFamily &Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.86	#N/A	Yes	98%	100%	100%	ICF
1331	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.52	#N/A	Yes	87%	100%	100%	ICF
1332	SingleFamily &Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.86	#N/A	Yes	2%	100%	100%	ICF
1333	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.12	#N/A	Yes	13%	100%	100%	ICF

Measure ID	Sub-Sector	Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measu re TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicabilit y to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1334	SingleFamily &Duplex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.27	#N/A	Yes	0%	100%	100%	ICF
1335	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.74	#N/A	Yes	5%	100%	100%	ICF
1336	SingleFamily &Duplex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.27	#N/A	Yes	0%	100%	100%	ICF
1337	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.74	#N/A	Yes	5%	100%	100%	ICF
1338	SingleFamily &Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.68	#N/A	Yes	98%	100%	100%	ICF

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Measure	Sub Soctor	Building	Endling	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building Tymo*	Technical	Not-Yet- Adopted	References
1220	Sub-Sector	Type	Other	Corrected	Comparison	Definition	Detrofit		Analysis	Anarysis	o Type		100%	
1339	Multifamily	Gas Heating	Other	homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	W/no web- based plattform and non- programm able Thermosta t	Retrofit	0.44	₩N/A	Yes	87%	100%	100%	ICF
1340	SingleFamily &Duplex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	1.27	#N/A	Yes	0%	100%	100%	ICF
1341	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermosta t + Web- based platform with eHER	Home w/no web- based plattform and non- programm able Thermosta t	Retrofit	0.74	#N/A	Yes	5%	100%	100%	ICF
1342	SingleFamily &Duplex	Gas Heating	Other	Home Energy Audit & Retrofit Single Family: Tier 2	Home Energy Audit & Retrofit Single Family: Tier 2	Home Energy Audit & Retrofit Single Family: Tier 2	Retrofit	0.00	#N/A	Yes	98%	100%	100%	ICF
1343	Multifamily	Gas Heating	Other	Home Energy Audit & Retrofit Multifamil y: Tier 1	0	Home Energy Audit & Retrofit Multifamil y: Tier 1	Direct Install	0.00	#N/A	Yes	87%	100%	100%	ICF

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		Duilding			Efficient	Deseline		N 4	Economic	Achievable	y to	Taskaisal	Not-Yet-	
Ivieasure	Sub Sactor	Building	End Lico	Mamo	Nieasure	Baseline	Ivieasure	Measu	Potential	Potential	Building	Technical	Adopted	References
1244	SingleEamily	Eloctric	Othor	Homo	Homo	Homo	Potrofit			Analysis	79/E	100%	100%	ICE
1344	& Dunley	Heating	Other	Fnergy	Energy	Energy	Retront	0.00	#N/A	Tes	270	10078	100%	
	abapter	ricuting		Audit &	Audit &	Audit &								
				Retrofit	Retrofit	Retrofit								
				Single	Single	Single								
				Family:	Family:	Family:								
				Tier 2	Tier 2	Tier 2								
1345	Multifamily	Electric	Other	Home	0	Home	Direct	0.00	#N/A	Yes	13%	100%	100%	ICF
		Heating		Energy		Energy	Install							
				Audit &		Audit &								
				Retrofit		Retrofit								
				Wultifamii		Multifamii								
1346	All	Gas	Other	Jow-	Program	Jow-	Retrofit	0.00	#N/A	Yes	94%	100%	100%	ICE
1510	7.01	Heating	other	Income	Level	Income	netrone	0.00		105	5170	100/0	100/0	
		575 8		Residential	Average	Residential								
				Retrofit	Upgrades	Retrofit								
				Program -		Program -								
				LI		LI								
				Post2015		Post2015								
				savings		savings								
1347	All	Electric	Other	Low-	Program	Low-	Retrofit	0.00	#N/A	Yes	6%	100%	100%	ICF
		Heating		Residential	Lever	Income								
				Retrofit	Lingrades	Retrofit								
				Program -	Opgrades	Program -								
				LI		LI								
				Post2015		Post2015								
				savings		savings								
1348	All	Gas	Other	Public	Program	Public	Retrofit	0.03	#N/A	Yes	94%	100%	100%	ICF
		Heating		Housing	Level	Housing								
				Authority	Average	Authority								
				Efficient	Upgrades	Efficient								
				Living -		Living -								
				PRAEL Post2015		PRAEL								
				savings		savings								
1349	All	Electric	Other	Public	Program	Public	Retrofit	0.03	#N/A	Yes	6%	100%	100%	ICF
		Heating		Housing	Level	Housing								
				Authority	Average	Authority								
				Efficient	Upgrades	Efficient								
				Living -		Living -								
				PHAEL		PHAEL								
				Post2015		Post2015								
				savings		savings								

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1350	All	Gas Heating	Other	EE Affordable Housing Constructi on - EEAHC Post2015 savings	Program Level Average Upgrades	EE Affordable Housing Constructi on - EEAHC Post2015 savings	New Constructi on	0.04	#Naiysis #N/A	Analysis Yes	94%	100%	Rate" 100%	ICF
1351	All	Electric Heating	Other	EE Affordable Housing Constructi on - EEAHC Post2015 savings	Program Level Average Upgrades	EE Affordable Housing Constructi on - EEAHC Post2015 savings	New Constructi on	0.04	#N/A	Yes	6%	100%	100%	ICF
1352	All	Gas Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	7.05	#N/A	No	94%	100%	47%	IL TRM
1353	All	Electric Heating	Lighting	Omnidirect ional A- type LED lamps	37.2 W LED installed in year 2019	Pre 2020 lamp of 72W; switching to 45.4W EISA post- 2020 compliant lamp	Time of Sale	6.64	#N/A	No	6%	100%	47%	IL TRM
1354	All	Gas Heating	Other	Pool Pumps	Single Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	10.18	#N/A	Yes	94%	6%	87%	ICF
1355	All	Electric Heating	Other	Pool Pumps	Single Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	10.18	#N/A	Yes	6%	6%	87%	ICF

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Type End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1356 All Gas Other Pool Two Speed Baseline Retrofit 3.01 #N/A Yes 94% 6% 87% ICF Heating Pumps High Pool Pump Efficiency as Pool Pump specified in Ameren MO 1357 All 3.01 #N/A Yes 6% 6% 87% ICF Electric Other Pool Two Speed Baseline Retrofit Heating Pumps High Pool Pump Efficiency as Pool Pump specified in Ameren MO 1358 All #N/A 94% 87% ICF Gas Other Pool VFD on Retrofit 3.49 6% Baseline Yes Heating Pumps Swimming Pool Pump Pool Pump as specified in Ameren MO 1359 All VFD on #N/A 6% 6% 87% Electric Other Pool 3.49 Yes ICF Baseline Retrofit Heating Pumps Swimming Pool Pump Pool Pump as specified in Ameren мо 1360 All Electric Consumer ENERGY ENERGY ENERGY Time of 14.82 #N/A No 6% 100% 100% ICF Heating Electronics STAR 6.0 **STAR 6.0 STAR 4.0** Sale TV + 20% TV + 20% TV + 20% (21-30") (21-30") (21-30") 1361 All ENERGY ENERGY 22.16 #N/A 6% 100% 100% ICF Electric Consumer ENERGY Time of No **STAR 6.0** STAR 4.0 Sale Heating Electronics **STAR 6.0** TV + 20% TV + 20% TV + 20% (31-40") (31-40") (31-40") 1362 All ENERGY ENERGY 33.01 #N/A 6% 100% 100% Electric Consumer ENERGY Time of No ICF **STAR 6.0 STAR 6.0 STAR 4.0** Sale Heating Electronics TV + 20% TV + 20% TV + 20% (41-50") (41-50") (41-50") 1363 All ENERGY 50.21 #N/A 6% 100% 100% ICF Electric Consumer ENERGY ENERGY Time of No Heating Electronics **STAR 6.0 STAR 6.0 STAR 4.0** Sale TV + 20% TV + 20% TV + 20% (51-60") (51-60") (51-60")

### Appendix D: Residential Measure Assumptions

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Measure Building Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1364 All Electric Consumer ENERGY ENERGY ENERGY Time of 79.10 #N/A No 6% 100% 100% ICF **STAR 6.0 STAR 4.0** Heating Electronics **STAR 6.0** Sale TV + 20% TV + 20% TV + 20% (>60") (>60") (>60") 1365 All ENERGY 15.15 #N/A 6% 100% 100% ICF Electric ENERGY ENERGY Time of No Consumer Heating Electronics STAR 6.0 **STAR 6.0 STAR 4.0** Sale TV + 35% TV + 35% TV + 35% (21-30") (21-30") (21-30") 1366 All Electric Consumer ENERGY ENERGY ENERGY Time of 22.47 #N/A No 6% 100% 100% ICF Heating Electronics **STAR 6.0 STAR 6.0 STAR 4.0** Sale TV + 35% TV + 35% TV + 35% (31-40") (31-40") (31-40") 1367 All Electric ENERGY ENERGY ENERGY Time of 33.35 #N/A No 6% 100% 100% ICF Consumer **STAR 6.0 STAR 4.0** Heating Electronics **STAR 6.0** Sale TV + 35% TV + 35% TV + 35% (41-50") (41-50") (41-50") 1368 All ENERGY ENERGY ENERGY Time of 50.55 #N/A No 6% 100% 100% ICF Electric Consumer **STAR 6.0 STAR 4.0** Sale Heating Electronics **STAR 6.0** TV + 35% TV + 35% TV + 35% (51-60") (51-60") (51-60") 79.44 #N/A 6% 100% 100% 1369 All Electric Consumer ENERGY ENERGY ENERGY Time of No ICF Electronics **STAR 6.0 STAR 6.0 STAR 4.0** Sale Heating TV + 35% TV + 35% TV + 35% (>60") (>60") (>60") #N/A 1370 All Electric Electronics ENERGY ENERGY ENERGY Time of 5.06 No 6% 100% 100% ICF Heating STAR + STAR + STAR Sale 10% 10% Display Display Display 1371 All Electric Electronics ENERGY ENERGY ENERGY Time of 7.77 #N/A No 6% 100% 100% ICF Heating STAR + STAR + STAR Sale 30% 30% Display Display Display

### Appendix D: Residential Measure Assumptions

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 1372	Sub-Sector All	Type Electric Heating	End Use Consumer Electronics	Name ENERGY STAR + 50 % Display	Definition ENERGY STAR + 50 % Display	Definition ENERGY STAR Display	Type Time of Sale	re TRC 10.48	Analysis #N/A	Analysis No	Туре* 6%	Feasibility* 100%	Rate* 100%	ICF
1373	All	Electric Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventio nal PC	Time of Sale	16.22	#N/A	No	6%	100%	54%	ICF
1374	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (21-30")	ENERGY STAR 6.0 TV + 20% (21-30")	ENERGY STAR 4.0 TV + 20% (21-30")	Time of Sale	14.82	#N/A	No	94%	100%	100%	ICF
1375	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (31-40")	ENERGY STAR 6.0 TV + 20% (31-40")	ENERGY STAR 4.0 TV + 20% (31-40")	Time of Sale	22.16	#N/A	No	94%	100%	100%	ICF
1376	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (41-50")	ENERGY STAR 6.0 TV + 20% (41-50")	ENERGY STAR 4.0 TV + 20% (41-50")	Time of Sale	33.01	#N/A	No	94%	100%	100%	ICF
1377	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (51-60")	ENERGY STAR 6.0 TV + 20% (51-60")	ENERGY STAR 4.0 TV + 20% (51-60")	Time of Sale	50.21	#N/A	No	94%	100%	100%	ICF
1378	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 6.0 TV + 20% (>60")	ENERGY STAR 4.0 TV + 20% (>60")	Time of Sale	79.10	#N/A	No	94%	100%	100%	ICF
1379	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (21-30")	ENERGY STAR 6.0 TV + 35% (21-30")	ENERGY STAR 4.0 TV + 35% (21-30")	Time of Sale	15.15	#N/A	No	94%	100%	100%	ICF

Measure	Cub Costor	Building	Endline	Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
1380	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (31-40")	ENERGY STAR 6.0 TV + 35% (31-40")	ENERGY STAR 4.0 TV + 35% (31-40")	Time of Sale	22.47	#N/A	No	94%	100%	100%	ICF
1381	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (41-50")	ENERGY STAR 6.0 TV + 35% (41-50")	ENERGY STAR 4.0 TV + 35% (41-50")	Time of Sale	33.35	#N/A	No	94%	100%	100%	ICF
1382	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (51-60")	ENERGY STAR 6.0 TV + 35% (51-60")	ENERGY STAR 4.0 TV + 35% (51-60")	Time of Sale	50.55	#N/A	No	94%	100%	100%	ICF
1383	All	Gas Heating	Consumer Electronics	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 6.0 TV + 35% (>60")	ENERGY STAR 4.0 TV + 35% (>60")	Time of Sale	79.44	#N/A	No	94%	100%	100%	ICF
1384	All	Gas Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	Time of Sale	5.06	#N/A	No	94%	100%	100%	ICF
1385	All	Gas Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	Time of Sale	7.77	#N/A	No	94%	100%	100%	ICF
1386	All	Gas Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	Time of Sale	10.48	#N/A	No	94%	100%	100%	ICF
1387	All	Gas Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventio nal PC	Time of Sale	16.22	#N/A	No	94%	100%	54%	ICF

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1388	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	14.82	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				1V + 20%	1V + 20%	IV + 20%	on							
				(21-30)	(21-30)	(21-30)								
1389	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	22.16	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 20%	TV + 20%	TV + 20%	on							
				(31-40")	(31-40")	(31-40")								
1390	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	33.01	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 20%	TV + 20%	TV + 20%	on							
				(41-50")	(41-50")	(41-50")								
1391	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	50.21	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi		-					
				TV + 20%	TV + 20%	TV + 20%	on							
				(51-60")	(51-60")	(51-60")								
1392	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	79.10	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 20%	TV + 20%	TV + 20%	on							
				(>60")	(>60")	(>60")								
1393	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	15.15	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(21-30")	(21-30")	(21-30")								
1394	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	22.47	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(31-40")	(31-40")	(31-40")								
1395	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	33.35	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(41-50")	(41-50")	(41-50")								

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID	Sub-Sector	Туре	End Use	Name	Definition	Definition	Туре	re TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
1396	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	50.55	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				(51-60")	(51-60")	(51-60")	UII							
				(51 00 )	(51 00 )	(51 00 )								
1397	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	79.44	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(>60")	(>60'')	(>60")								
1398	All	Electric	Electronics	ENERGY	ENERGY	ENERGY	New	5.06	#N/A	No	6%	100%	100%	ICF
		Heating		STAR +	STAR +	STAR	Constructi							
				10%	10%	Display	on							
				Display	Display									
1399	All	Electric	Electronics	ENERGY	ENERGY	ENERGY	New	7.77	#N/A	No	6%	100%	100%	ICF
		Heating		STAR +	STAR +	STAR	Constructi							
				30%	30%	Display	on							
				Display	Display									
1400	All	Electric	Consumer	ENERGY	ENERGY	ENERGY	New	10.48	#N/A	No	6%	100%	100%	ICF
		Heating	Electronics	STAR + 50	STAR + 50	STAR	Constructi							
				% Display	% Display	Display	on							
1401	All	Electric	Consumer	ENERGY	ENERGY	Conventio	New	16.22	#N/A	No	6%	100%	54%	ICF
		Heating	Electronics	STAR PC	STAR PC	nal PC	Constructi							
							on							
1402	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	14.82	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				IV + 20%	IV + 20%	1V + 20%	on							
				(21-30)	(21-30)	(21-30)								
1403	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	22.16	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 20%	TV + 20%	TV + 20%	on							
				(31-40")	(31-40")	(31-40")								

Measure		Building		Measure	Efficient Measure	Baseline	Measure	Measu	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicabilit y to Building	Technical	Not-Yet- Adopted	References
ID 1 10 1	Sub-Sector	Type	End Use	Name	Definition	Definition	Туре	reTRC	Analysis	Analysis	Type*	Feasibility*	Rate*	165
1404	All	Gas	Consumer			ENERGY	New	33.01	#N/A	NO	94%	100%	100%	ICF
		пеация	Electronics	TV + 20%	TV + 20%	TV + 20%	on							
				(41-50")	(41-50")	(41-50")	on							
				(1200)	(12 00 )	(12 00 )								
1405	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	50.21	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 20%	TV + 20%	TV + 20%	on							
				(51-60")	(51-60")	(51-60")								
1406	A 11	Gar	Consumar	ENERCY	ENERCY	ENERCY	Now	70.10	#NI/A	No	0.4%	100%	100%	
1400	All	Uds Heating	Electronics	STAR 6 0	STAR 6.0	STAR 4 0	Constructi	79.10	#N/A	NO	94%	100%	100%	ICF
		neating	Liectionics	TV + 20%	TV + 20%	TV + 20%	on							
				(>60")	(>60")	(>60")	on							
				(* 66 )	(* 88 7	(* 66 )								
1407	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	15.15	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(21-30")	(21-30")	(21-30")								
1408	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	22.47	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				IV + 35%	IV + 35%	IV + 35%	on							
				(31-40)	(31-40)	(31-40)								
1409	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	33.35	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(41-50")	(41-50")	(41-50")								
1/10	٨١	Gas	Consumer	ENERGY	ENERGY	ENERGY	Now	50 55	#N/A	No	91%	100%	100%	ICE
1410		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4 0	Constructi	50.55		NO	5470	100%	10076	
		ricuting	Licetronics	TV + 35%	TV + 35%	TV + 35%	on							
				(51-60")	(51-60")	(51-60")	011							
				(,	(,	()								
1411	All	Gas	Consumer	ENERGY	ENERGY	ENERGY	New	79.44	#N/A	No	94%	100%	100%	ICF
		Heating	Electronics	STAR 6.0	STAR 6.0	STAR 4.0	Constructi							
				TV + 35%	TV + 35%	TV + 35%	on							
				(>60")	(>60")	(>60")								

### Measure Measure Included in Included in Applicabilit Efficient Economic Achievable y to Not-Yet-Building Measure Measure Measure Baseline Measure Measu Potential Potential Building Technical Adopted References Sub-Sector Туре End Use Name Definition Definition Type re TRC Analysis Analysis Type\* Feasibility\* Rate\* 1412 All Gas Electronics ENERGY ENERGY ENERGY New 5.06 #N/A No 94% 100% 100% ICF STAR + STAR + STAR Heating Constructi 10% 10% Display on Display Display 1413 All ENERGY ENERGY 7.77 #N/A 94% 100% 100% ICF Gas Electronics ENERGY New No STAR + STAR Constructi Heating STAR + 30% 30% Display on Display Display 1414 All Gas Consumer ENERGY ENERGY ENERGY New 10.48 #N/A No 94% 100% 100% ICF Heating Electronics STAR + 50 STAR + 50 STAR Constructi % Display % Display Display on 1415 All Gas ENERGY ENERGY New 16.22 #N/A No 94% 100% 54% ICF Consumer Conventio STAR PC STAR PC nal PC Heating Electronics Constructi on 1416 SingleFamily AC/Electric HVAC AC Tune-SEER 10 Central Air Retrofit 0.21 #N/A No 1% 100% 100% IL TRM &Duplex Resistance Conditioni up Heat w/iManifol ng Unit d device HVAC 0.21 #N/A 100% 100% 1417 SingleFamily AC/Gas AC Tune-SEER 10 Central Air Retrofit No 86% IL TRM &Duplex Heat Conditioni up w/iManifol ng Unit d device #N/A 1418 Multifamily AC/Electric HVAC AC Tune-SEER 10 **Central Air** Retrofit 0.10 No 4% 100% 100% IL TRM Resistance Conditioni up w/iManifol Heat ng Unit d device 1419 Multifamily AC/Gas HVAC AC Tune-SEER 10 **Central Air** Retrofit 0.10 #N/A No 40% 100% 100% IL TRM Heat up Conditioni w/iManifol ng Unit d device

# Appendix D: Residential Measure Assumptions

ComEd Energy Efficiency Potential Study Report, 2017-2030

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
1	AII/AII	Refrigeration	Automatic Door Closer for Walk-in Coolers and Freezers	Walk-in cooler w/ automatic, hydraulic enclosure	Walk-in cooler w/o automatic enclosure	Retrofit	per unit	8	\$156.8	943	0.137	0.0
2	AII/AII	Refrigeration	Automatic Door Closer for Walk-in Coolers and Freezers	Walk-in freezer w/ automatic, hydraulic enclosure	Walk-in freezer w/o automatic enclosure	Retrofit	per unit	8	\$156.8	2307	0.309	0.0
3	AII/AII	Refrigeration	Beverage and Snack Machine Controls	Standard efficiency refrigerated vending machine w/ control system	Standard efficiency refrigerated vending machine w/o control system	Retrofit	per unit	5	\$180.0	1613	0.000	0.0
4	AII/AII	Refrigeration	Beverage and Snack Machine Controls	Standard efficiency non- refrigerated snack vending machine w/ control system	Standard efficiency non- refrigerated snack vending machine w/o control system	Retrofit	per unit	5	\$80.0	343	0.000	0.0
5	AII/AII	Refrigeration	Beverage and Snack Machine Controls	Glass front refrigerated cooler w/ control system	Glass front refrigerated cooler w/o control system	Retrofit	per unit	5	\$180.0	1210	0.000	0.0
6	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial glass door cooler w/ standard heated door w/ humidity controls	Commercial glass door cooler w/ standard heated door w/o controls - low temp (-35-0)	Retrofit	per unit	12	\$300.0	2555	0.000	0.0
7	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial refrigerator w/ standard heated door w/ humidity controls	Commercial refrigerator w/ standard heated door w/o controls - medium temp (0-20)	Retrofit	per unit	12	\$300.0	1082	0.000	0.0
8	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial refrigerator w/ standard heated door w/ humidity controls	Commercial refrigerator w/ standard heated door w/o controls - high temp (20-45)	Retrofit	per unit	12	\$300.0	1019	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
9	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial glass door cooler w/ standard heated door w/ conductivity controls	Commercial glass door cooler w/ standard heated door w/o controls - low temp (-35-0)	Retrofit	per unit	12	\$200.0	3252	0.000	0.0
10	Ali/Ali	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial refrigerator w/ standard heated door w/ conductivity controls	Commercial refrigerator w/ standard heated door w/o controls - medium temp (0-20)	Retrofit	per unit	12	\$200.0	1377	0.000	0.0
11	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial refrigerator w/ standard heated door w/ conductivity controls	Commercial refrigerator w/ standard heated door w/o controls - high temp (20-45)	Retrofit	per unit	12	\$200.0	1298	0.000	0.0
12	Restaurant/All	Refrigeration	Electronically Commutated Motors (ECM) for Walk-in and Reach- in Coolers/Freezers	Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	Baseline - Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	Retrofit	per motor	15	\$50.0	411	0.033	0.0
13	Grocery/All	Refrigeration	Electronically Commutated Motors (ECM) for Walk-in and Reach- in Coolers/Freezers	Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	Baseline - Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	Retrofit	per motor	15	\$50.0	392	0.051	0.0
14	AII/AII	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w/o software	Existing standard vending machine - average # of cans	Time of Sale	per unit	14	\$500.0	1310	0.000	0.0
15	AII/AII	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w software	Existing standard vending machine - average # of cans	Time of Sale	per unit	14	\$500.0	1842	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
16	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w/o software	New standard vending machine - average # of cans	New Construct ion	per unit	14	\$500.0	1310	0.000	0.0
17	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w/ software	New standard vending machine - average # of cans	New Construct ion	per unit	14	\$500.0	1842	0.000	0.0
18	All/All	Refrigeration	Evaporator Fan Control	Evaporator fan controller that reduces fan power	Cooler w/ continuously running evaporator fan	Retrofit	per unit	16	\$291.0	481	0.060	0.0
19	AII/AII	Refrigeration	Strip Curtain for Walk-in Coolers and Freezers	Polyethylene strip curtain added to a walk- in freezer	Walk-in freezer w/ no strip curtain or old, ineffective strip curtain	Retrofit	per unit	6	\$286.2	2974	0.340	0.0
20	AII/AII	Refrigeration	Strip Curtain for Walk-in Coolers and Freezers	Polyethylene strip curtain added to a walk- in cooler	Walk-in cooler w/ no strip curtain or old, ineffective strip curtain	Retrofit	per unit	6	\$286.2	422	0.050	0.0
21	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, hermetic/semi- hermetic condenser	Retrofit	per unit	15	\$2,558.0	6426	3.265	0.0
22	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, scroll condenser	Retrofit	per unit	15	\$2,558.0	5686	2.889	0.0
23	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, discus condenser	Retrofit	per unit	15	\$2,558.0	5401	2.744	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
24	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Vertical Open, Remote Condensing, Medium Temperature (35F - 55F)	Retrofit	per unit	5	\$126.0	393	0.000	0.0
25	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Vertical Open, Remote Condensing, Low Temperature (0F - 30F)	Retrofit	per unit	5	\$126.0	888	0.000	0.0
26	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Vertical Open, Self-Contained Medium Temperature (35F - 55F)	Retrofit	per unit	5	\$126.0	756	0.000	0.0
27	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Remote Condensing, Medium Temperature (35F - 55F)	Retrofit	per unit	5	\$126.0	120	0.000	0.0
28	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Remote Condensing, Low Temperature (OF - 30F)	Retrofit	per unit	5	\$126.0	273	0.000	0.0
29	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Self- Contained, Medium Temperature (35F - 55F)	Retrofit	per unit	5	\$126.0	363	0.000	0.0
30	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Self- Contained, Low Temperature (OF - 30F)	Retrofit	per unit	5	\$126.0	741	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
31	All/All	Refrigeration	Refrigerated Beverage Vending Machine	to ENERGY STAR specifications - w/o software	Existing Standard vending machine unit - < 500 cans	Sale	per unit	14	Ş500.0	1310	0.000	0.0
32	All/All	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	Rebuilt unit built to ENERGY STAR specifications - w/ software	Existing Standard vending machine unit - 800+ cans	Time of Sale	per unit	14	\$500.0	1842	0.000	0.0
33	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New ENERGY STAR Unit - w/o software	New Standard vending machine unit	New Construct ion	per unit	14	\$500.0	1310	0.000	0.0
34	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New ENERGY STAR Unit - w/ software	New Standard vending machine unit	New Construct ion	per unit	14	\$500.0	1842	0.000	0.0
35	Warehouse/Total >100 kW	Miscellaneous	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - single shift	Modulating compressor with blow down <= 40 hp - single shift	Time of Sale	per unit	10	\$2,081.0	1645	0.791	0.0
36	Warehouse/Total >100 kW	Miscellaneous	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - 2 shift	Modulating compressor with blow down <= 40 hp - 2 shift	Time of Sale	per unit	10	\$2,081.0	3290	0.791	0.0
37	Warehouse/Total >100 kW	Miscellaneous	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - 3 shift	Modulating compressor with blow down <= 40 hp - 3 shift	Time of Sale	per unit	10	\$2,081.0	4935	0.791	0.0
38	Warehouse/Total >100 kW	Miscellaneous	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - 4 shift	Modulating compressor with blow down <= 40 hp - 4 shift	Time of Sale	per unit	10	\$2,081.0	6926	0.791	0.0
39	All/Small Load (<=100 kW)	Miscellaneous	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - single shift	Compressor w/ any control	Time of Sale	per unit	5	\$1,000.0	74	0.039	0.0
40	All/Small Load (<=100 kW)	Miscellaneous	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - 2 shift	Compressor w/ any control	Time of Sale	per unit	5	\$1,000.0	147	0.039	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
41	All/Small Load (<=100 kW)	Miscellaneous	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - 3 shift	Compressor w/ any control	Time of Sale	per unit	5	\$1,000.0	221	0.039	0.0
42	All/Small Load (<=100 kW)	Miscellaneous	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - 4 shift	Compressor w/ any control	Time of Sale	per unit	5	\$1,000.0	310	0.039	0.0
43	All/Total >100 kW	Miscellaneous	Compressed Air No- Loss Condensate Drains	Installation of no-loss condensate drains	Standard condensate drains (open valve, timer, or both)	Retrofit	per unit	10	\$700.0	1970	0.338	0.0
44	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, gas heating	Roof insulation equal to code requirements	Retrofit	per ft2	20	\$1.4	0	0.000	0.0
45	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, electric resistance heating	Roof insulation equal to code requirements	Retrofit	per ft2	20	\$1.4	0	0.000	0.0
46	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, heat pump heating	Roof insulation equal to code requirements	Retrofit	per ft2	20	\$1.4	0	0.000	0.0
47	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, gas heating	Roof insulation equal to code requirements	New Construct ion	per ft2	20	\$1.4	0	0.000	0.0
48	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, electric resistance heating	Roof insulation equal to code requirements	New Construct ion	per ft2	20	\$1.4	0	0.000	0.0
49	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, heat pump heating	Roof insulation equal to code requirements	New Construct ion	per ft2	20	\$1.4	0	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
50	AII/AII	Miscellaneous	Computer Power Management Software	Computer network with power management software	Computer network without software enforcing the power management capabilities in existing computers and monitors	Retrofit	per unit	5	\$29.0	161	0.000	0.0
51	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	4-Lamp 32W HPT8 with High- BF Ballast	200W Pulse Start Metal- Halide	Retrofit	per fixture	2	\$200.0	478	0.081	0.0
52	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	6-Lamp 32W HPT8 with High- BF Ballast	320W Pulse Start Metal- Halide	Retrofit	per fixture	4	\$225.0	717	0.122	0.0
53	AII/AII	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	8-Lamp 32W HPT8 with High- BF Ballast	Proportionally Adjusted according to 6- Lamp HPT8 Equivalent to 320 PSMH	Retrofit	per fixture	4	\$250.0	1090	0.185	0.0
54	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	2-lamp High- Performance HPT8 Troffer	3-Lamp F32T8 w/ Elec. Ballast	Retrofit	per fixture	4	\$100.0	217	0.037	0.0
55	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	1-Lamp 32W HPT8 with Low- BF Ballast	1-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per fixture	4	\$50.0	39	0.007	0.0
56	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	2-Lamp 32W HPT8 with Low- BF Ballast	2-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per fixture	4	\$55.0	56	0.009	0.0
57	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	3-Lamp 32W HPT8 with Low- BF Ballast	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per fixture	4	\$60.0	89	0.015	0.0
58	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	4-Lamp 32W HPT8 with Low- BF Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per fixture	4	\$65.0	111	0.019	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
59	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Indirect	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Time of Sale	per fixture	4	\$30.0	72	0.012	0.0
60	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Indirect	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Retrofit	per fixture	4	\$175.0	72	0.012	0.0
61	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Strip	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Time of Sale	per fixture	4	\$30.0	72	0.012	0.0
64	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Strip	1-Lamp F40T12 w/ EEMag Ballast	Retrofit	per fixture	4	\$70.0	96	0.016	0.0
65	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Strip	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Retrofit	per fixture	4	\$70.0	72	0.012	0.0
66	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Troffer/Wrap	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Time of Sale	per fixture	4	\$40.0	72	0.012	0.0
67	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Troffer/Wrap	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Retrofit	per fixture	4	\$100.0	72	0.012	0.0
68	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 High- Bay	200 Watt Pulse Start Metal- Halide	Time of Sale	per fixture	4	\$100.0	313	0.051	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
69	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Indirect	3-Lamp F32T8 Equivalent w/ Elec. Ballast	Time of Sale	per fixture	4	\$30.0	144	0.024	0.0
70	AII/AII	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Indirect	3-Lamp F32T8 Equivalent w/ Elec. Ballast	Retrofit	per fixture	4	\$175.0	144	0.024	0.0
71	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Strip	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per fixture	4	\$30.0	144	0.024	0.0
72	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Strip	2-Lamp F40T12 w/ EEMag Ballast	Retrofit	per fixture	4	\$70.0	180	0.030	0.0
75	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Strip	3-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	per fixture	4	\$70.0	144	0.024	0.0
76	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Troffer/Wrap	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per fixture	4	\$40.0	144	0.024	0.0
77	AII/AII	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Troffer/Wrap	3-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	per fixture	4	\$100.0	144	0.024	0.0
78	All/All	Lighting	T5 Fixtures and Lamps	3-Lamp T5 High- Bay	200 Watt Pulse Start Metal- Halide	Time of Sale	per fixture	4	\$100.0	313	0.051	0.0
79	AII/AII	Lighting	T5 Fixtures and Lamps	3-Lamp T5 High- Bay	200 Watt Pulse Start Metal- Halide	Retrofit	per fixture	4	\$200.0	313	0.051	0.0
80	AII/AII	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Strip	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Time of Sale	per fixture	4	\$30.0	216	0.036	0.0

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83	All/All	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Strip	3-Lamp F40T12 w/ EEMag Ballast	Retrofit	per fixture	4	\$70.0	156	0.026	0.0
84	All/All	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Strip	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Retrofit	per fixture	4	\$70.0	216	0.036	0.0
85	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 High- Bay	320 Watt Pulse- Start Metal Halide	Time of Sale	per fixture	4	\$100.0	661	0.109	0.0
86	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 High- Bay	320 Watt Pulse- Start Metal Halide	Retrofit	per fixture	4	\$225.0	661	0.109	0.0
87	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Strip	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Time of Sale	per fixture	4	\$30.0	301	0.049	0.0
88	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Strip	4-Lamp F40T12 w/ EEMag Ballast	Retrofit	per fixture	4	\$70.0	325	0.053	0.0
91	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Strip	Proportionally Adjusted according to 2- Lamp T5 Equivalent to 3- Lamp T8	Retrofit	per fixture	4	\$70.0	301	0.049	0.0
92	All/All	Lighting	T5 Fixtures and Lamps	6-Lamp T5 High- Bay	Proportionally Adjusted according to 6- Lamp HPT8 Equivalent to 320 PSMH	Time of Sale	per fixture	4	\$100.0	697	0.115	0.0

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93	All/All	Lighting	T5 Fixtures and Lamps	6-Lamp T5 High- Bay	Proportionally Adjusted according to 6- Lamp HPT8 Equivalent to 320 PSMH	Retrofit	per fixture	4	\$250.0	697	0.115	0.0
94	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Red Round Signal	Incandescent	Retrofit	per signal	2	\$114.2	299	0.034	0.0
95	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Round Signal	Incandescent	Retrofit	per signal	2	\$150.2	694	0.079	0.0
96	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Retrofit	per signal	2	\$114.2	272	0.034	0.0
97	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Red Flashing Signal	Incandescent	Retrofit	per signal	2	\$150.2	631	0.079	0.0
98	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Round Signal	Incandescent	Retrofit	per signal	2	\$114.2	258	0.001	0.0
99	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Round Signal	Incandescent	Retrofit	per signal	2	\$150.2	600	0.003	0.0
100	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Retrofit	per signal	2	\$114.2	10	0.030	0.0
101	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Flashing Signal	Incandescent	Retrofit	per signal	2	\$150.2	24	0.069	0.0
102	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Green Round Signal	Incandescent	Retrofit	per signal	2	\$114.2	226	0.026	0.0

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103	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Round Signal	Incandescent	Retrofit	per signal	2	\$150.2	520	0.059	0.0
104	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Turn Arrow	Incandescent	Retrofit	per signal	11	\$114.2	76	0.003	0.0
105	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Turn Arrow	Incandescent	Retrofit	per signal	11	\$150.2	75	0.003	0.0
106	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Turn Arrow	Incandescent	Retrofit	per signal	11	\$114.2	76	0.011	0.0
107	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Turn Arrow	Incandescent	Retrofit	per signal	11	\$150.2	76	0.011	0.0
108	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Hand/Man Pedestrian Signal	Incandescent	Retrofit	per signal	1	\$87.2	946	0.081	0.0
109	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Round Signal	Incandescent	Time of Sale	per signal	2	\$51.2	299	0.034	0.0
110	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Round Signal	Incandescent	Time of Sale	per signal	2	\$87.2	694	0.079	0.0
111	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Time of Sale	per signal	2	\$51.2	272	0.034	0.0
112	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Flashing Signal	Incandescent	Time of Sale	per signal	2	\$87.2	631	0.079	0.0
113	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Round Signal	Incandescent	Time of Sale	per signal	2	\$51.2	258	0.001	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
114	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Round Signal	Incandescent	Time of Sale	per signal	2	\$87.2	600	0.003	0.0
115	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Time of Sale	per signal	2	\$51.2	10	0.030	0.0
116	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Flashing Signal	Incandescent	Time of Sale	per signal	2	\$87.2	24	0.069	0.0
117	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Round Signal	Incandescent	Time of Sale	per signal	2	\$51.2	226	0.026	0.0
118	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Round Signal	Incandescent	Time of Sale	per signal	2	\$87.2	520	0.059	0.0
119	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Turn Arrow	Incandescent	Time of Sale	per signal	11	\$51.2	76	0.003	0.0
120	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Turn Arrow	Incandescent	Time of Sale	per signal	11	\$87.2	75	0.003	0.0
121	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Turn Arrow	Incandescent	Time of Sale	per signal	11	\$51.2	76	0.011	0.0
122	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Turn Arrow	Incandescent	Time of Sale	per signal	11	\$87.2	76	0.011	0.0
123	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Hand/Man Pedestrian Signal	Incandescent	Time of Sale	per signal	1	\$24.2	946	0.081	0.0
124	All/All	Lighting	Delamping	1-Lamp Standard 32W T8 w/ Elec Ballast	2-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	per sensor	8	\$50.0	150	0.025	0.0

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125	All/All	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	3-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	per sensor	8	\$55.0	161	0.027	0.0
126	All/All	Lighting	Delamping	3-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	per sensor	8	\$60.0	145	0.025	0.0
127	All/All	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	per sensor	8	\$55.0	306	0.052	0.0
128	All/All	Lighting	Delamping	1-Lamp Standard 32W T8 w/ Elec Ballast	2-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per sensor	8	\$4.4	150	0.025	0.0
129	All/All	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per sensor	8	\$5.6	161	0.027	0.0
130	All/All	Lighting	Delamping	3-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per sensor	8	\$6.8	145	0.025	0.0
131	All/All	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	per sensor	8	\$5.6	306	0.052	0.0
132	All/All	Lighting	LED Exit Signs	LED exit sign	non-LED light- source	Retrofit	per exit sign	1	\$30.0	250	0.034	0.0
133	All/Total >100 kW	Lighting	Commercial Standard CFL	15 W CFL	43W EISA compliant lamp	Time of Sale	per lamp	2	\$1.5	251	0.027	0.0
134	All/Total >100 kW	Lighting	Commercial Standard CFL	21 W CFL replacing EISA- exempt incandescent lamp	79W EISA- exempt incandescent lamp	Time of Sale	per lamp	2	\$5.0	322	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
135	All/All	Lighting	LED Bulbs and Fixtures	12.5 W Omni- directional Energystar LED	43W EISA compliant lamp	Retrofit	per lamp	2	\$2.5	270	0.029	0.0
136	All/All	Lighting	LED Bulbs and Fixtures	19 W LED replacing EISA- exempt incandescent lamp	79W EISA- exempt incandescent lamp	Retrofit	per lamp	2	\$10.0	341	0.000	0.0
137	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacem ent	per unit	6	\$716.0	710	0.103	953.5
138	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacem ent	per unit	6	\$802.0	710	0.103	989.4
139	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacem ent	per unit	6	\$1,038.0	710	0.103	1,025.2
140	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacem ent	per unit	6	\$1,275.0	710	0.103	1,061.0
141	All/All	Lighting	LED Bulbs and Fixtures	75 W Outdoor LED lamp	182W Equivalent Fixture per TRM	Time of Sale	per lamp	0	\$50.0	617	0.132	0.0
142	All/All	Lighting	LED Bulbs and Fixtures	75 W Outdoor LED lamp	182W Equivalent Fixture per TRM	Retrofit	per lamp	0	\$50.0	617	0.132	0.0
143	All/All	Lighting	LED Bulbs and Fixtures	LED 2x2 Recessed Light Fixture	T8 U-Tube 2L- FB32 w/ Elec - 2'	Time of Sale	per lamp	11	\$18.1	76	0.016	0.0
144	All/All	Lighting	LED Bulbs and Fixtures	LED 1.5x4 Recessed Light Fixture	T8 2.5L-F32 w/ Elec - 4'	Time of Sale	per lamp	11	\$5.8	145	0.031	0.0
Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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145	AII/AII	Lighting	Delamping	4' T8 Lamp Removal with Reflector	4' T8 Lamp	Time of Sale	per lamp	11	\$25.0	175	0.030	0.0
146	AII/AII	Lighting	Delamping	8' T8 Lamp Removal with Reflector	8' T8 Lamp	Time of Sale	per lamp	11	\$30.0	350	0.059	0.0
147	AII/AII	Lighting	LED Bulbs and Fixtures	LED 2x2 Recessed Light Fixture	T8 U-Tube 2L- FB32 w/ Elec - 2'	Retrofit	per lamp	11	\$48.0	76	0.016	0.0
148	AII/AII	Lighting	LED Bulbs and Fixtures	LED 1.5x4 Recessed Light Fixture	T8 2.5L-F32 w/ Elec - 4'	Retrofit	per lamp	11	\$55.0	145	0.031	0.0
149	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacem ent	per unit	6	\$1,511.0	710	0.103	1,096.9
150	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacem ent	per unit	6	\$1,747.0	710	0.103	1,132.7
151	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacem ent	per unit	11	\$716.0	710	0.103	25.7
152	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacem ent	per unit	11	\$802.0	710	0.103	51.3
153	AII/AII	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacem ent	per unit	11	\$1,038.0	710	0.103	77.0
154	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacem ent	per unit	11	\$1,275.0	710	0.103	102.6
155	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacem ent	per unit	11	\$1,511.0	710	0.103	128.3

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
156	AII/AII	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacem ent	per unit	11	\$1,747.0	710	0.103	153.9
157	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 10 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Time of Sale	per unit	5	\$1,050.0	7905	0.900	0.0
158	All/Small Load (<=100 kW)	Hot Water	Low Flow Faucet Aerators - Electric DHW fuel	Bathroom faucet aerator, < 1.5 GPM	Bathroom faucet aerator, 2.25 GPM	Direct Install	per unit	9	\$8.0	122	0.032	0.0
159	All/Small Load (<=100 kW)	Hot Water	Low Flow Faucet Aerators - Electric DHW fuel	Kitchen faucet aerator, < 2.2 GPM	Kitchen faucet aerator, 2.75 GPM	Direct Install	per unit	9	\$8.0	149	0.039	0.0
160	All/Small Load (<=100 kW)	Hot Water	Low Flow Showerheads - Electric DHW fuel	Energy efficient showerhead rated at 2.0 GPM	Standard showerhead rated at 2.5 GPM	Direct Install	per unit	10	\$12.0	748	0.031	0.0
161	All/Small Load (<=100 kW)	Hot Water	Low Flow Showerheads - Electric DHW fuel	Energy efficient showerhead rated at 1.75 GPM	Standard showerhead rated at 2.5 GPM	Direct Install	per unit	10	\$12.0	1027	0.042	0.0
162	All/Small Load (<=100 kW)	Hot Water	Low Flow Showerheads - Electric DHW fuel	Energy efficient showerhead rated at 1.50 GPM	Standard showerhead rated at 2.5 GPM	Direct Install	per unit	10	\$12.0	1306	0.054	0.0
163	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 10 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Retrofit	per unit	5	\$1,050.0	7905	0.900	0.0
165	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 15 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Time of Sale	per unit	5	\$1,950.0	12879	1.470	0.0
166	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 15 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Retrofit	per unit	5	\$1,950.0	12879	1.470	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
168	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 5 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Time of Sale	per unit	5	\$1,050.0	2992	0.340	0.0
169	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 5 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Retrofit	per unit	5	\$1,050.0	2992	0.340	0.0
171	All/Total >100 kW	Hot Water	Storage Water Heater	Electric, Storage Capacity = 50 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 50 gallons, input wattage: 12 kW - 54 kW	Time of Sale	per unit	5	\$1,050.0	1781	0.200	148.0
172	All/Total >100 kW	Hot Water	Ozone Laundry	Ozone Laundry System	Ozone Laundry System	Time of Sale	per lb capacity	10	\$79.8	3	0.000	37.9
173	All/Total >100 kW	Hot Water	Ozone Laundry	Ozone Laundry System	Ozone Laundry System	Retrofit	per lb capacity	10	\$79.8	3	0.000	37.9
174	All/Total >100 kW	Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Time of Sale	per unit	15	\$1,200.0	651	0.000	2,962.7
175	All/Total >100 kW	Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Retrofit	per unit	15	\$1,200.0	651	0.000	2,962.7
176	All/Small Load (<=100 kW)	Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	New Construct ion	per unit	15	\$1,200.0	651	0.000	2,962.7
177	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$166.0	1272	0.136	0.0
178	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$166.0	1272	0.136	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
179	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$166.0	3872	0.414	0.0
180	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$166.0	3872	0.414	0.0
181	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$407.0	6794	0.726	0.0
182	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$407.0	6794	0.726	0.0
183	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$142.0	1563	0.167	0.0
184	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$142.0	1563	0.167	0.0
185	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$166.0	139	0.015	0.0
186	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$166.0	139	0.015	0.0
187	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$166.0	1729	0.185	0.0
188	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$166.0	1729	0.185	0.0
189	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$407.0	3494	0.374	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
190	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$407.0	3494	0.374	0.0
191	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Freezer	Existing EPAct 2005-Compliant Freezer	Time of Sale	per unit	12	\$142.0	458	0.049	0.0
192	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construct ion	per unit	12	\$142.0	458	0.049	0.0
193	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$164.0	672	0.072	0.0
194	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$164.0	672	0.072	0.0
195	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$164.0	729	0.078	0.0
196	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$164.0	729	0.078	0.0
197	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$249.0	891	0.095	0.0
198	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$249.0	891	0.095	0.0
199	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$143.0	721	0.077	0.0
200	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$143.0	721	0.077	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
201	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$164.0	459	0.049	0.0
202	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$164.0	459	0.049	0.0
203	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$164.0	791	0.085	0.0
204	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$164.0	791	0.085	0.0
205	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$249.0	1105	0.118	0.0
206	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$249.0	1105	0.118	0.0
207	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005-Compliant Refrigerator	Time of Sale	per unit	12	\$143.0	260	0.028	0.0
208	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construct ion	per unit	12	\$143.0	260	0.028	0.0
209	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 3 pans	non-ENERGY STAR commercial steamer at end of life - 3 pans	Time of Sale	per unit	12	\$2,490.0	4876	0.897	0.0
210	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 4 pans	non-ENERGY STAR commercial steamer at end of life - 4 pans	Time of Sale	per unit	12	\$2,490.0	5752	1.059	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
211	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 5 pans	non-ENERGY STAR commercial steamer at end of life - 5 pans	Time of Sale	per unit	12	\$2,490.0	6668	1.227	0.0
212	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 6 pans	non-ENERGY STAR commercial steamer at end of life - 6 pans	Time of Sale	per unit	12	\$2,490.0	7554	1.390	0.0
213	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - under counter	non- ENERGYSTAR dishwasher at end of life - low temp - under counter - electric building and booster water heating	Time of Sale	per unit	10	\$530.0	1213	0.185	0.0
214	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - door type	non- ENERGYSTAR dishwasher at end of life - low temp - door type - electric building and booster water heating	Time of Sale	per unit	15	\$530.0	12135	1.846	0.0
215	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - single tank conventional - electric building and booster water heating	Time of Sale	per unit	20	\$170.0	11384	1.732	0.0

Measure	Sub-Sector/Building	Endlise	Measure Name	Efficient Measure Definition	Baseline	Measure	Measure Unit Name	Measure Life (Years)	Total Incremental	Annual Energy Savings (kw/b)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
216	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - multi tank conventional - electric building and booster water beating	Time of Sale	per unit	20	\$0.0	17465	2.656	0.0
217	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - under counter	non- ENERGYSTAR dishwasher at end of life - high temp - under counter - electric building and booster water heating	Time of Sale	0	10	\$1,000.0	7471	1.136	0.0
218	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - door type	non- ENERGYSTAR dishwasher at end of life - high temp - door type - electric building and booster water heating	Time of Sale	0	15	\$500.0	14143	2.151	0.0
219	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - single tank conventional - electric building and booster water heating	Time of Sale	0	20	\$270.0	19235	2.926	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
220	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - multi tank conventional - electric building and booster water heating	Time of Sale	0	20	\$0.0	34153	5.195	0.0
221	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - under counter	non- ENERGYSTAR dishwasher at end of life - low temp - under counter - electric building and natural gas booster water heating	Time of Sale	per unit	10	\$530.0	9089	1.382	0.0
222	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - door type	non- ENERGYSTAR dishwasher at end of life - low temp - door type - electric building and natural gas booster water heating	Time of Sale	per unit	15	\$530.0	21833	3.321	0.0
223	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - single tank conventional - electric building and natural gas booster water heating	Time of Sale	per unit	20	\$170.0	24470	3.722	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
224	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - multi tank conventional - electric building and natural gas booster water heating	Time of Sale	per unit	20	\$0.0	29718	4.520	0.0
225	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - under counter	non- ENERGYSTAR dishwasher at end of life - high temp - under counter - electric building and natural gas booster water heating	Time of Sale	0	10	\$1,000.0	7208	1.096	110.0
226	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - door type	non- ENERGYSTAR dishwasher at end of life - high temp - door type - electric building and natural gas booster water heating	Time of Sale	0	15	\$500.0	19436	2.956	205.0
227	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - single tank conventional - electric building and natural gas booster water heating	Time of Sale	0	20	\$270.0	29792	4.531	258.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
228	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - multi tank conventional - electric building and natural gas booster water heating	Time of Sale	0	20	\$0.0	34974	5.320	503.0
229	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Electric Convection Oven	ENERGY STAR Electric Convection Oven	ENERGY STAR Electric Convection Oven	Time of Sale	per unit	12	\$900.0	2200	0.402	0.0
230	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Griddle	ENERGY STAR electric griddle with efficiency > 70%	Non- ENERGYSTAR electric griddle at end of use	Time of Sale	per unit	12	\$0.0	5811	0.535	0.0
231	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Hot Food Holding Cabinets	ENERGY STAR HFHC - Full Size (20 ft3)	Non- ENERGYSTAR electric HFHC at end of life	Time of Sale	per unit	12	\$1,200.0	9314	0.686	0.0
232	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Hot Food Holding Cabinets	ENERGY STAR HFHC - 3/4 Size (12 ft3)	Non- ENERGYSTAR electric HFHC at end of life	Time of Sale	per unit	12	\$1,800.0	3945	0.290	0.0
233	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Hot Food Holding Cabinets	ENERGY STAR HFHC - 1/2 Size (8 ft3)	Non- ENERGYSTAR electric HFHC at end of life	Time of Sale	per unit	12	\$1,500.0	2630	0.194	0.0
234	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head <450 lbs made per day	Ice Making Head <450 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$312.0	388	0.073	0.0
235	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head >=450 lbs made per day	Ice Making Head >=450 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$1,485.0	875	0.164	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
236	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser <1000 lbs made per day	Remote Condensing Unit, w/o remote compressor <1000 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$981.0	677	0.127	0.0
237	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser >=1000 lbs made per day	Remote Condensing Unit, w/o remote compressor >=1000 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$1,821.0	1437	0.269	0.0
238	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser <934 Ibs made per day	Remote Condensing Unit, w/ remote compressor <934 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$981.0	642	0.120	0.0
239	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser >=934 lbs made per day	Remote Condensing Unit, w/ remote compressor >=934 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$1,821.0	1400	0.263	0.0
240	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser <175 Ibs made per day	Self Contained Unit <175 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$296.0	185	0.035	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
241	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser >=175 lbs made per day	Self Contained Unit >=175 lbs made per day meeting min. federal equipment standards	Time of Sale	per unit	10	\$312.0	376	0.071	0.0
242	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head <450 lbs made per day	Ice Making Head <450 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$312.0	388	0.073	0.0
243	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head >=450 lbs made per day	Ice Making Head >=450 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$1,485.0	875	0.164	0.0
244	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser <1000 lbs made per day	Remote Condensing Unit, w/o remote compressor <1000 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$981.0	677	0.127	0.0
245	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser >=1000 lbs made per day	Remote Condensing Unit, w/o remote compressor >=1000 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$1,821.0	1437	0.269	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
246	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser <934 Ibs made per day	Remote Condensing Unit, w/ remote compressor <934 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$981.0	642	0.120	0.0
247	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser >=934 lbs made per day	Remote Condensing Unit, w/ remote compressor >=934 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$1,821.0	1400	0.263	0.0
248	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser <175 Ibs made per day	Self Contained Unit <175 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$296.0	185	0.035	0.0
249	Restaurant/Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser >=175 lbs made per day	Self Contained Unit >=175 lbs made per day meeting min. federal equipment standards	New Construct ion	per unit	10	\$312.0	376	0.071	0.0
250	Restaurant/Small Load (<=100 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.6 gpm	Existing pre- rinse spray valve w/ flow rate of 1.6 gpm	Time of Sale	per unit	5	\$100.0	890	0.000	39.3
251	Restaurant/Medium Load (Over 100 kW <= 400 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.6 gpm	Existing pre- rinse spray valve w/ flow rate of 1.6 gpm	Time of Sale	per unit	5	\$100.0	2671	0.000	117.9
252	Restaurant/Large Load (Over 400 kW <= 1,000 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.6 gpm	Existing pre- rinse spray valve w/ flow rate of 1.6 gpm	Time of Sale	per unit	5	\$100.0	5341	0.000	235.8

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
253	Restaurant/Small Load (<=100 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Retrofit	per unit	5	\$100.0	1385	0.000	61.1
254	Restaurant/Medium Load (Over 100 kW <= 400 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Retrofit	per unit	5	\$100.0	4154	0.000	183.4
255	Restaurant/Large Load (Over 400 kW <= 1,000 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Retrofit	per unit	5	\$100.0	8309	0.000	366.8
256	Restaurant/Small Load (<=100 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Direct Install	per unit	5	\$100.0	1385	0.000	61.1
257	Restaurant/Medium Load (Over 100 kW <= 400 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Direct Install	per unit	5	\$100.0	4154	0.000	183.4
258	Restaurant/Large Load (Over 400 kW <= 1,000 kW)	Food Service Equipment	High Efficiency Pre- Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Direct Install	per unit	5	\$100.0	8309	0.000	366.8
259	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Kitchen Demand Ventilation Controls	Control system with sensors to vary exhaust rate	Kitchen ventilation with constant speed ventilation motor	Time of Sale	per fan	15	\$1,988.0	4486	0.760	7,529.0
260	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Kitchen Demand Ventilation Controls	Control system with sensors to vary exhaust rate	Kitchen ventilation with constant speed ventilation motor	New Construct ion	per fan	15	\$1,000.0	4486	0.760	7,529.0
261	Warehouse/Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Miscellaneous	Engine Block Timer for Agricultural Equipment	Engine block heater operated by plug-in timer	Engine block heater manually plugged in	Retrofit	per unit	3	\$10.2	664	0.000	0.0
262	Warehouse/Medium Load (Over 100 kW <= 400 kW)	Miscellaneous	High Volume Low Speed Fans	20' Fan classified as HVLS and has a VFD	Multiple non- HVLS fans	Time of Sale	per unit	10	\$4,150.0	6577	2408.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
263	Warehouse/Large Load (Over 400 kW <= 1,000 kW)	Miscellaneous	High Volume Low Speed Fans	22' Fan classified as HVLS and has a VFD	Multiple non- HVLS fans	Time of Sale	per unit	10	\$4,180.0	8543	3128.000	0.0
264	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Volume Low Speed Fans	24' Fan classified as HVLS and has a VFD	Multiple non- HVLS fans	Time of Sale	per unit	10	\$4,225.0	10018	3668.000	0.0
265	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	24-35" 14.0cfm/W at 0.10 static pressure exhaust fan	24-35" exhaust fan	Time of Sale	per unit	7	\$150.0	372	0.118	0.0
266	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	36-47" 17.1 cfm/W at 0.10 static pressure exhaust fan	36-47" exhaust fan	Time of Sale	per unit	7	\$150.0	625	0.198	0.0
267	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	48-71" 20.3 cfm/W at 0.10 static pressure exhaust fan	48-71" exhaust fan	Time of Sale	per unit	7	\$150.0	1122	0.356	0.0
268	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	24-35" 14.0cfm/W at 0.10 static pressure ventilation fan	24-35" ventilation fan	Time of Sale	per unit	7	\$150.0	372	0.118	0.0
269	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	36-47" 17.1 cfm/W at 0.10 static pressure ventilation fan	36-47" ventilation fan	Time of Sale	per unit	7	\$150.0	625	0.198	0.0
270	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	48-71" 20.3 cfm/W at 0.10 static pressure ventilation fan	48-71" ventilation fan	Time of Sale	per unit	7	\$150.0	1122	0.356	0.0
271	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	24-35" 12.5 lbf/kW circulation fan	24-35" circulation fan	Time of Sale	per unit	7	\$150.0	372	0.118	0.0
272	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	36-47" 18.2 lbf/kW circulation fan	36-47" circulation fan	Time of Sale	per unit	7	\$150.0	625	0.198	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
273	Warehouse/Small Load (<=100 kW)	Miscellaneous	High Speed Fans	48-71" 23.0 lbf/kW circulation fan	48-71" circulation fan	Time of Sale	per unit	7	\$150.0	1122	0.356	0.0
274	Warehouse/Small Load (<=100 kW)	Miscellaneous	Live Stock Waterer	Electrically heated thermally insulated waterer w/ thermostat	Electric open waterer w/ sinking or floating water heater	Time of Sale	per unit	10	\$787.5	1593	0.525	0.0
275	All/Total >100 kW	HVAC	Air Conditioner Tune-up	Certified technician performs a package of services on unitary or split system air conditioner, 36 kBTU/h - 65 kBTU/h	Existing AC system w/o standing maintenance contract or tune up in last 3 years, 36 kBTU/h - 65 kBTU/h	Retrofit	per unit	3	\$400.0	4412	3.958	0.0
276	AII/AII	HVAC	Air Conditioner Tune-up	Certified technician performs a package of services on unitary or split system air conditioner, > 65 kBTU/h	Existing AC system w/o standing maintenance contract or tune up in last 3 years, > 65 kBTU/h	Retrofit	per unit	3	\$35.0	79	0.071	0.0
277	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, No Economizer	New Construct ion	per unit	20	\$127.0	428	0.049	0.0
278	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	New Construct ion	per unit	20	\$127.0	137	0.049	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
279	All/All	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - VAV Reheat, Economizer	New Construct ion	per unit	20	\$127.0	126	0.049	0.0
280	All/All	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water-cooled Reciprocating Chiller meeting IECC 2009 Standards - CV Reheat, No Economizer	New Construct ion	per unit	20	\$22.0	266	0.049	0.0
281	All/All	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water-cooled Reciprocating Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	New Construct ion	per unit	20	\$22.0	85	0.049	0.0
282	All/All	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - VAV, Economizer	Water-cooled Reciprocating Chiller meeting IECC 2009 Standards - VAV, Economizer	New Construct ion	per unit	20	\$22.0	79	0.049	0.0
283	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, No Economizer	New Construct ion	per unit	20	\$128.0	266	0.049	0.0
284	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, Economizer	New Construct ion	per unit	20	\$128.0	85	0.049	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
285	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - VAV Reheat, Economizer	New Construct ion	per unit	20	\$128.0	79	0.049	0.0
286	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	New Construct ion	per unit	20	\$70.0	266	0.049	0.0
287	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	New Construct ion	per unit	20	\$70.0	85	0.049	0.0
288	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	New Construct ion	per unit	20	\$70.0	79	0.049	0.0
289	All/All	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	Water-cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	New Construct ion	per unit	20	\$48.0	266	0.049	0.0

				Efficient			Measure	Measure	Total	Annual Energy	Annual PJM	Annual Gas
Measure	Sub-Sector/Building			Measure	Baseline	Measure	Unit	Life	Incremental	Savings	Capacity	Savings
ID	Type	End Use	Measure Name	Definition	Definition	Туре	Name	(Years)	Cost (\$)	(kWh)	Savings (kW)	(therms)
290	All/All	HVAC	Electric Chillers	Water-cooled	Water-cooled	New	per unit	20	\$48.0	85	0.049	0.0
				Rotary and	Rotary and	Construct						
				Screw Chiller	Screw Chiller	ion						
				exceeding IECC	meeting IECC							
				2009 Standards	2009 Standards							
				>= 300 tons - CV	>= 300 tons - CV							
				Reheat,	Reheat,							
				Economizer	Economizer							
291	All/All	HVAC	Electric Chillers	Water-cooled	Water-cooled	New	per unit	20	\$48.0	79	0.049	0.0
				Rotary and	Rotary and	Construct						
				Screw Chiller	Screw Chiller	ion						
				exceeding IECC	meeting IECC							
				2009 Standards	2009 Standards							
				>= 300 tons -	>= 300 tons -							
				VAV Refleat,	VAV Reneat,							
202	A11/A11		Electric Chillore	Air coolod	Air cooled	Time of	norunit	20	¢127.0	429	0.040	0.0
292	AII/AII	HVAC	Electric Unillers	Alf-cooled	Alf-cooled	Time or	per unit	20	\$127.0	428	0.049	0.0
				crimer	LECC 2000	Sale						
				2009 Standards -	Standards - CV							
				CV Reheat No	Reheat No							
				Economizer	Fconomizer							
293	All/All	HVAC	Electric Chillers	Air-cooled	Air-cooled	Time of	per unit	20	\$127.0	137	0.049	0.0
255	7 11 7 11	in the		Chiller	Chiller meeting	Sale	per unit	20	<i><b>Q12</b>7.0</i>	137	0.015	0.0
				exceeding IECC	IECC 2009							
				2009 Standards -	Standards - CV							
				CV Reheat,	Reheat,							
				Economizer	Economizer							
294	All/All	HVAC	Electric Chillers	Air-cooled	Air-cooled	Time of	per unit	20	\$127.0	126	0.049	0.0
				Chiller	Chiller meeting	Sale						
				exceeding IECC	IECC 2009							
				2009 Standards -	Standards - VAV							
				VAV Reheat,	Reheat,							
				Economizer	Economizer							
295	All/All	HVAC	Electric Chillers	Water-cooled	Water-cooled	Time of	per unit	20	\$22.0	266	0.049	0.0
				Reciprocating	Reciprocating	Sale						
				Chiller	Chiller meeting							
				exceeding IECC	IECC 2009							
				2009 Standards -	Standards - CV							
				CV Reheat, No	Reheat, No							
				Economizer	Economizer							

Measure	Sub-Sector/Building			Efficient Measure	Baseline	Measure	Measure Unit	Measure Life	Total Incremental	Annual Energy Savings	Annual PJM Capacity	Annual Gas Savings
ID	Туре	End Use	Measure Name	Definition	Definition	Туре	Name	(Years)	Cost (\$)	(kWh)	Savings (kW)	(therms)
296	Ali/Ali	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water-cooled Reciprocating Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	Time of Sale	per unit	20	\$22.0	85	0.049	0.0
297	AII/AII	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - VAV, Economizer	Water-cooled Reciprocating Chiller meeting IECC 2009 Standards - VAV, Economizer	Time of Sale	per unit	20	\$22.0	79	0.049	0.0
298	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, No Economizer	Time of Sale	per unit	20	\$128.0	266	0.049	0.0
299	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, Economizer	Time of Sale	per unit	20	\$128.0	85	0.049	0.0
300	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - VAV Reheat, Economizer	Time of Sale	per unit	20	\$128.0	79	0.049	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
301	Ali/Ali	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	Time of Sale	per unit	20	\$70.0	266	0.049	0.0
302	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	Time of Sale	per unit	20	\$70.0	85	0.049	0.0
303	Ali/Ali	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	Water-cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	Time of Sale	per unit	20	\$70.0	79	0.049	0.0
304	All/All	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	Water-cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	Time of Sale	per unit	20	\$48.0	266	0.049	0.0
305	Ali/Ali	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, Economizer	Water-cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, Economizer	Time of Sale	per unit	20	\$48.0	85	0.049	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
306	All/All	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - VAV Reheat, Economizer	Water-cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - VAV Reheat, Economizer	Time of Sale	per unit	20	\$48.0	79	0.049	0.0
307	All/All	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - < 8000 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - < 8000 Btu/H	Time of Sale	per unit	9	\$40.0	15	0.028	0.0
308	AII/AII	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - 8000 to 13999 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - 8000 to 13999 Btu/H	Time of Sale	per unit	9	\$40.0	29	0.054	0.0
309	All/All	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - 14000 to 19999 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - 14000 to 19999 Btu/H	Time of Sale	per unit	9	\$40.0	44	0.083	0.0
310	All/All	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - >= 20000 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - >= 20000 Btu/H	Time of Sale	per unit	9	\$40.0	69	0.129	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
311	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Electric Resistance Heating	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	829	0.093	0.0
312	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Gas Heating	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	85	0.093	32.6
313	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTHP	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	387	0.093	0.0
314	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Electric Resistance Heating	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	234	0.082	0.0
315	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Gas Heating	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	142	0.082	4.1
316	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTHP	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	177	0.082	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
317	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, Central Hot Water Fan Coil w/ Electric Resistance Heating	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	201	0.056	0.0
318	Hotel/Motel/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, Central Hot Water Fan Coil w/ Gas Heating	Manual heating/cooling temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	per room	15	\$260.0	109	0.056	4.1
319	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - < 65,000 Btu/h	Time of Sale	per unit	15	\$100.0	270	0.112	0.0
320	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 65,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - 65,000 - 135,000 Btu/h	Time of Sale	per unit	15	\$249.5	230	0.184	0.0
321	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 135,000 - 240,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - 135,000 - 240,000 Btu/h	Time of Sale	per unit	15	\$290.1	188	0.210	0.0
322	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - > 240,000 exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - 240,000 - 760,000	Time of Sale	per unit	15	\$362.4	278	0.310	0.0
323	All/All	HVAC	Heat Pump Systems	Water-source Heat Pump - < 17,000 Btu/h exceeding IECC 2012	IECC 2012 Water- sourceHeat Pump - < 17,000 Btu/h	Time of Sale	per unit	15	\$100.0	163	0.095	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
324	AII/AII	HVAC	Heat Pump Systems	Water-source Heat Pump - 17,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Water-source Heat Pump - 17,000 - 135,000 Btu/h	Time of Sale	per unit	15	\$100.0	104	0.061	0.0
325	AII/AII	HVAC	Heat Pump Systems	Groundwater- source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwater- sourceHeat Pump - < 135,000 Btu/h	Time of Sale	per unit	15	\$100.0	78	0.046	0.0
326	AII/AII	HVAC	Heat Pump Systems	Ground-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Ground- sourceHeat Pump - < 135,000 Btu/h	Time of Sale	per unit	15	\$100.0	238	0.139	0.0
327	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - < 65,000 Btu/h	New Construct ion	per unit	15	\$100.0	270	0.112	0.0
328	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 65,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - 65,000 - 135,000 Btu/h	New Construct ion	per unit	15	\$249.5	230	0.184	0.0
329	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 135,000 - 240,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - 135,000 - 240,000 Btu/h	New Construct ion	per unit	15	\$290.1	188	0.210	0.0
330	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - > 240,000 exceeding IECC 2012	IECC 2012 Air- cooled Heat Pump - 240,000 - 760,000	New Construct ion	per unit	15	\$362.4	278	0.310	0.0
331	AII/AII	HVAC	Heat Pump Systems	Water-source Heat Pump - < 17,000 Btu/h exceeding IECC 2012	IECC 2012 Water- sourceHeat Pump - < 17,000 Btu/h	New Construct ion	per unit	15	\$100.0	163	0.095	0.0
332	AII/AII	HVAC	Heat Pump Systems	Water-source Heat Pump - 17,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Water-source Heat Pump - 17,000 - 135,000 Btu/h	New Construct ion	per unit	15	\$100.0	104	0.061	0.0

Measure	Sub-Sector/Building	Endlice	Measure Name	Efficient Measure Definition	Baseline	Measure	Measure Unit	Measure Life	Total Incremental	Annual Energy Savings (k)(k)	Annual PJM Capacity Savings (VW)	Annual Gas Savings (therms)
333	All/All	HVAC	Heat Pump Systems	Groundwater- source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwater- sourceHeat Pump - < 135,000 Btu/h	New Construct ion	per unit	15	\$100.0	78	0.046	0.0
334	All/All	HVAC	Heat Pump Systems	Ground-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Ground- sourceHeat Pump - < 135,000 Btu/h	New Construct ion	per unit	15	\$100.0	238	0.139	0.0
335	AII/AII	HVAC	High Efficiency Furnace	AFUE 90% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$630.0	710	0.103	288.6
336	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$716.0	710	0.103	317.4
337	AII/AII	HVAC	High Efficiency Furnace	AFUE 92% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$802.0	710	0.103	346.3
338	AII/AII	HVAC	High Efficiency Furnace	AFUE 93% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$1,038.0	710	0.103	375.1
339	AII/AII	HVAC	High Efficiency Furnace	AFUE 94% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$1,275.0	710	0.103	404.0
340	AII/AII	HVAC	High Efficiency Furnace	AFUE 95% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$1,511.0	710	0.103	432.8
341	All/All	HVAC	High Efficiency Furnace	AFUE 96% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$1,747.0	710	0.103	461.7

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
342	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity = 50 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 50 gallons, input wattage: 12 kW - 54 kW	Retrofit	per unit	5	\$1,050.0	1781	0.200	148.0
344	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity =80 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 80 gallons, input wattage: 12 kW - 54 kW	Time of Sale	per unit	5	\$1,050.0	4963	0.570	148.0
345	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity =80 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 80 gallons, input wattage: 12 kW - 54 kW	Retrofit	per unit	5	\$1,050.0	4963	0.570	148.0
347	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity >= 100 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity >= 100 gallons, input wattage: 12 kW - 54 kW	Time of Sale	per unit	5	\$1,950.0	8274	0.940	148.0
348	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity >= 100 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity >= 100 gallons, input wattage: 12 kW - 54 kW	Retrofit	per unit	5	\$1,950.0	8274	0.940	148.0
351	All/All	Lighting	LED Bulbs and Fixtures	LED High- and Low-Bay Fixtures	MH 250 W CWA Pulse Start	Retrofit	per lamp	3	\$160.0	638	0.136	0.0
353	All/All	Lighting	LED Bulbs and Fixtures	LED High- and Low-Bay Fixtures	MH 250 W CWA Pulse Start	Time of Sale	per lamp	3	\$100.0	638	0.136	0.0
354	Hotel/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	Time of Sale	per unit	15	\$84.0	182	0.140	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
355	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	Time of Sale	per unit	15	\$84.0	188	0.140	0.0
356	Hotel/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012 w/ elec res htg	Time of Sale	per unit	15	\$84.0	4089	0.057	0.0
357	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012 w/ elec res htg	Time of Sale	per unit	15	\$84.0	3685	0.057	0.0
358	Hotel/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	Time of Sale	per unit	15	\$84.0	394	0.057	0.0
359	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	Time of Sale	per unit	15	\$84.0	364	0.057	0.0
360	Hotel/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	New Construct ion	per unit	15	\$84.0	182	0.140	0.0
361	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	New Construct ion	per unit	15	\$84.0	188	0.140	0.0
362	Hotel/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012	New Construct ion	per unit	15	\$84.0	4089	0.057	0.0
363	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012	New Construct ion	per unit	15	\$84.0	3685	0.057	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
364	Hotel/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	New Construct ion	per unit	15	\$84.0	152	0.057	0.0
365	AII/AII	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	New Construct ion	per unit	15	\$84.0	147	0.057	0.0
366	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled AC - < 65,000 Btu/h	Time of Sale	per unit	15	\$100.0	150	0.059	0.0
367	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Air- cooled AC - >= 760,000 , all other heating type	Time of Sale	per unit	15	\$100.0	106	0.041	0.0
368	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - >= 760,000, electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	74	0.029	0.0
369	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled condensing units - >135,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled condensing units	Time of Sale	per unit	15	\$100.0	334	0.131	0.0
370	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Small-duct high- velocity - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Small- duct high- velocity - < 65,000 Btu/h	Time of Sale	per unit	15	\$100.0	419	0.164	0.0
371	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Through-the- wall AC - < 30,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Through- the-wall AC - < 30,000 Btu/h	Time of Sale	per unit	15	\$100.0	174	0.068	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
372	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Evaporatively cooled condensing units	Time of Sale	per unit	15	\$100.0	24	0.009	0.0
373	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Evaporatively- cooled AC - < 65,000 Btu/h	Time of Sale	per unit	15	\$100.0	164	0.064	0.0
374	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Evaporatively- cooled AC - >= 760,000 , all other heating type	Time of Sale	per unit	15	\$100.0	212	0.083	0.0
375	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - >= 760,000 , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	191	0.075	0.0
376	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporatively- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	Time of Sale	per unit	15	\$100.0	180	0.070	0.0
377	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	159	0.062	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
378	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Evaporatively- cooled AC - 240,000 - 760,000 , all other heating section type	Time of Sale	per unit	15	\$100.0	139	0.055	0.0
379	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	170	0.066	0.0
380	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporatively- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	Time of Sale	per unit	15	\$100.0	170	0.066	0.0
381	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	149	0.058	0.0
382	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Water-cooled AC - < 65,000 Btu/h	Time of Sale	per unit	15	\$100.0	164	0.064	0.0
383	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Water-cooled AC - >= 760,000, all other heating type	Time of Sale	per unit	15	\$100.0	159	0.062	0.0

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Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
384	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - >= 760,000 , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	159	0.062	0.0
385	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	Time of Sale	per unit	15	\$100.0	129	0.051	0.0
386	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	110	0.043	0.0
387	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Water-cooled AC - 240,000 - 760,000 , all other heating section type	Time of Sale	per unit	15	\$100.0	139	0.055	0.0
388	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	120	0.047	0.0
389	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	Time of Sale	per unit	15	\$100.0	170	0.066	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
390	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	Time of Sale	per unit	15	\$100.0	149	0.058	0.0
391	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Water-cooled condensing units	Time of Sale	per unit	15	\$100.0	24	0.009	0.0
392	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled AC - < 65,000 Btu/h	New Construct ion	per unit	15	\$100.0	150	0.059	0.0
393	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Through-the- wall AC - < 30,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Through- the-wall AC - < 30,000 Btu/h	New Construct ion	per unit	15	\$100.0	174	0.068	0.0
394	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Small-duct high- velocity - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled Small- duct high- velocity - < 65,000 Btu/h	New Construct ion	per unit	15	\$100.0	419	0.164	0.0
395	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - >= 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	74	0.029	0.0
396	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Air- cooled AC - >= 760,000 , all other heating type	New Construct ion	per unit	15	\$100.0	106	0.041	0.0
397	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Water-cooled AC - < 65,000 Btu/h	New Construct ion	per unit	15	\$100.0	164	0.064	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
398	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	149	0.058	0.0
399	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	170	0.066	0.0
400	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	110	0.043	0.0
401	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	129	0.051	0.0
402	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	120	0.047	0.0
403	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Water-cooled AC - 240,000 - 760,000 , all other heating section type	New Construct ion	per unit	15	\$100.0	139	0.055	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
404	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water-cooled AC - >= 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	159	0.062	0.0
405	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Water-cooled AC - >= 760,000, all other heating type	New Construct ion	per unit	15	\$100.0	159	0.062	0.0
406	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Evaporatively- cooled AC - < 65,000 Btu/h	New Construct ion	per unit	15	\$100.0	164	0.064	0.0
407	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	149	0.058	0.0
408	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporatively- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	170	0.066	0.0
409	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	159	0.062	0.0
Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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410	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporatively- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	180	0.070	0.0
411	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	170	0.066	0.0
412	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Evaporatively- cooled AC - 240,000 - 760,000 , all other heating section type	New Construct ion	per unit	15	\$100.0	139	0.055	0.0
413	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporatively- cooled AC - >= 760,000, electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	191	0.075	0.0
414	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Evaporatively- cooled AC - >= 760,000 , all other heating type	New Construct ion	per unit	15	\$100.0	212	0.083	0.0
415	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled condensing units - >135,000 Btu/h exceeding IECC 2012	IECC 2012 Air- cooled condensing units	New Construct ion	per unit	15	\$100.0	334	0.131	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
416	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Water-cooled condensing units	New Construct ion	per unit	15	\$100.0	24	0.009	0.0
417	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Evaporatively cooled condensing units	New Construct ion	per unit	15	\$100.0	24	0.009	0.0
418	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type - 2018	Time of Sale	per unit	15	\$100.0	139	0.053	0.0
419	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none) -2018	Time of Sale	per unit	15	\$100.0	135	0.043	0.0
420	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 240,000 - 760,000 , all other heating section type - 2018	Time of Sale	per unit	15	\$100.0	184	0.057	0.0
421	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 240,000 - 760,000 , electric resistance heating (or none) - 2018	Time of Sale	per unit	15	\$100.0	178	0.045	0.0

Measure ID	Sub-Sector/Building Түре	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
422	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type - 2018	Time of Sale	per unit	15	\$100.0	129	0.043	0.0
423	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none) -2018	Time of Sale	per unit	15	\$100.0	125	0.034	0.0
424	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	125	0.034	0.0
425	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	129	0.043	0.0
426	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	135	0.043	0.0
427	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	139	0.053	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
428	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	178	0.045	0.0
429	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 240,000 - 760,000 , all other heating section type	New Construct ion	per unit	15	\$100.0	184	0.057	0.0
432	Grocery/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	1328	0.000	0.0
433	Grocery/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	151	0.000	0.0
434	Office/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	2836	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
435	Office/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	227	0.000	0.0
438	Restaurant/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	251	0.000	0.0
439	Restaurant/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	70	0.000	0.0
440	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	727	0.000	0.0
441	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	76	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
442	Retail/Service/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	280	0.000	0.0
443	Retail/Service/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	per unit	4	\$181.0	51	0.000	0.0
448	Grocery/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	1328	0.000	0.0
449	Grocery/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	151	0.000	0.0
450	Office/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	2836	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
451	Office/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	227	0.000	0.0
452	Miscellaneous/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	647	0.000	0.0
453	Miscellaneous/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	45	0.000	0.0
454	Restaurant/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	251	0.000	0.0
455	Restaurant/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	70	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
456	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	727	0.000	0.0
457	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	76	0.000	0.0
458	Retail/Service/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Continuous fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	280	0.000	0.0
459	Retail/Service/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmable thermostat with Intermittent fan model during operation	Non- programmable thermostat requiring manual intervention to change temperature setpoint	DI	per unit	4	\$181.0	51	0.000	0.0
462	Office/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	456	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
463	Office/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	431	0.000	0.0
464	Office/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	450	0.000	0.0
465	Miscellaneous/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	509	0.000	0.0
466	Restaurant/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	515	0.000	0.0
467	Retail/Service/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	625	0.000	0.0
469	Grocery/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	603	0.000	0.0
470	School (K-12)/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	327	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
472	College/University/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	410	0.000	0.0
473	Medical/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	358	0.000	0.0
474	Hotel/Motel/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	578	0.000	0.0
475	Miscellaneous/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupant of OA ventilation	Retrofit	per unit	10	\$1,500.0	482	0.000	0.0
480	Grocery/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	1328	0.000	0.0
482	Office/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	2836	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
484	Miscellaneous/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	647	0.000	0.0
486	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	251	0.000	0.0
487	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Intermittent fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	70	0.000	0.0
488	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	727	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
489	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Intermittent fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	76	0.000	0.0
490	Retail/Service/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	280	0.000	0.0
491	Retail/Service/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Intermittent fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	per unit	2	\$70.3	51	0.000	0.0
496	Grocery/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	1328	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
498	Office/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	2836	0.000	0.0
500	Miscellaneous/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	647	0.000	0.0
502	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	251	0.000	0.0
503	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Intermittent fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	70	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
504	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	727	0.000	0.0
505	Restaurant/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Intermittent fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	76	0.000	0.0
506	Retail/Service/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Continuous fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	280	0.000	0.0
507	Retail/Service/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmable thermostat or BAS with Intermittent fan model during operation, reprogrammed to match actual facility occupancy	Commercial programmable thermostat or BAS that do not align with a facilities actual occupancy	DI	per unit	2	\$70.3	51	0.000	0.0
510	AII/AII	HVAC	Small Business Furnace Tune-Up	Approved technician must complete the tune-up requirements	Furnace assumed not to have had a tune- up in the past 2 years	Retrofit	per unit	2	\$35.0	77	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
511	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,330.0	4527	0.000	0.0
512	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,330.0	4388	0.778	0.0
513	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,330.0	2424	0.338	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
514	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,330.0	1911	0.354	0.0
515	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,330.0	982	0.075	0.0
516	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,622.0	6809	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
517	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,622.0	6600	1.170	0.0
518	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,622.0	3645	0.509	0.0
519	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,622.0	2875	0.532	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
520	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,622.0	1477	0.114	0.0
521	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	10 hp VSD - 10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	Time of Sale	per motor	10	\$1,898.0	9072	0.000	0.0
522	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,330.0	4527	0.000	0.0

Measure ID	Sub-Sector/Building Түре	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
523	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,330.0	4388	0.778	0.0
524	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,330.0	2424	0.338	0.0
525	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,330.0	1911	0.354	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
526	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,330.0	982	0.075	0.0
527	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,622.0	6809	0.000	0.0
528	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,622.0	6600	1.170	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
529	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,622.0	3645	0.509	0.0
530	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,622.0	2875	0.532	0.0
531	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,622.0	1477	0.114	0.0

Measure ID	Sub-Sector/Building Түре	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
532	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	10 hp VSD - 10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	New Construct ion	per motor	10	\$1,898.0	9072	0.000	0.0
533	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type - 2023	Time of Sale	per unit	15	\$100.0	174	0.053	0.0
534	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none) - 2023	Time of Sale	per unit	15	\$100.0	170	0.043	0.0
535	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 240,000 - 760,000 , all other heating section type - 2023	Time of Sale	per unit	15	\$100.0	200	0.057	0.0
536	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 240,000 - 760,000 , electric resistance heating (or none) - 2023	Time of Sale	per unit	15	\$100.0	194	0.045	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
537	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type - 2023	Time of Sale	per unit	15	\$100.0	180	0.043	0.0
538	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none) - 2023	Time of Sale	per unit	15	\$100.0	176	0.034	0.0
539	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	176	0.034	0.0
540	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	180	0.043	0.0
541	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	170	0.043	0.0
542	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	174	0.053	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
543	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	194	0.045	0.0
544	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 240,000 - 760,000 , all other heating section type	New Construct ion	per unit	15	\$100.0	200	0.057	0.0
545	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	239	0.093	0.0
546	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h, all other heating section type	New Construct ion	per unit	15	\$100.0	246	0.096	0.0
547	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	198	0.078	0.0
548	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construct ion	per unit	15	\$100.0	205	0.080	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
549	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construct ion	per unit	15	\$100.0	274	0.107	0.0
550	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 240,000 - 760,000 , all other heating section type	New Construct ion	per unit	15	\$100.0	284	0.111	0.0
551	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type - Current	Time of Sale	per unit	15	\$100.0	205	0.080	0.0
552	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none) - Current	Time of Sale	per unit	15	\$100.0	198	0.078	0.0
553	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 240,000 - 760,000 , all other heating section type - Current	Time of Sale	per unit	15	\$100.0	284	0.111	0.0
554	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 240,000 - 760,000 , electric resistance heating (or none) - Current	Time of Sale	per unit	15	\$100.0	274	0.107	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
555	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type - Current	Time of Sale	per unit	15	\$100.0	246	0.096	0.0
556	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none) - Current	Time of Sale	per unit	15	\$100.0	239	0.093	0.0
557	AII/AII	Lighting	Occupancy Sensor Lighting Controls	Wall-mounted passive infrared, ultrasonic detectors, and/or fixture- mounted sensors	Lighting System Uncontrolled by Occupancy	Retrofit	per sensor	8	\$42.0	814	0.261	0.0
558	AII/AII	Lighting	Occupancy Sensor Lighting Controls	Remote- mounted passive infrared, ultrasonic detectors, and/or fixture- mounted sensors	Lighting System Uncontrolled by Occupancy	Retrofit	per sensor	8	\$66.0	1366	0.437	0.0
559	AII/AII	Lighting	Occupancy Sensor Lighting Controls	Fixture-mounted passive infrared, ultrasonic detectors, and/or fixture- mounted sensors	Lighting System Uncontrolled by Occupancy	Retrofit	per sensor	8	\$125.0	124	0.054	0.0
560	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	RWT8 - F32/25W T8/T5 Extra Lamp Life	F32 T8 standard lamp	Time of Sale	per fixture	3	\$2.0	17	0.003	0.0
561	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	RWT8 - F32/25W T8/T5 Extra Lamp Life	F32 T8 standard lamp	Retrofit	per fixture	3	\$4.5	17	0.003	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
562	All/Medium Load (Over 100 kW <= 400 kW)	Lighting	Commercial Custom Measure	Custom Lighting Upgrades	Custom Lighting Baseline	Retrofit	per project	15	\$15,062.0	38325	4.400	0.0
563	All/Total >100 kW	Miscellaneous	Commercial Custom Measure	Custom Non- Ligthing Upgrades	Custom Non- Lighting Baseline	Retrofit	per project	15	\$44,572.0	159187	6.900	0.0
564	All/Small Load (<=100 kW)	Lighting	Small Business Program Lighting Upgrades	Alternative SB Lighting Approach Saving 22773 kWh gross	Regular Lighting Approach	Retrofit	per project	11	\$3,257.6	22773	3.867	0.0
565	All/Small Load (<=100 kW)	Refrigeration	Small Business Program Refrigeration Upgrades	Alternative SB Refrigeration Approach Saving 2530 kWh gross	Regular Refrigeration Approach	Retrofit	per project	15	\$307.8	2530	0.203	0.0
566	All/Small Load (<=100 kW)	Miscellaneous	Sm New Const <=100K sq ft	More Efficient than IECC2015 construction	IECC2015 Code construction - Sm New Const	New Construct ion	per sq ft	15	\$0.4	4	0.001	0.0
567	All/Total >100 kW	Miscellaneous	Lrg New Const >100K sq ft	More Efficient than IECC2015 construction	IECC2015 Code construction - Lrg New Const	New Construct ion	per sq ft	15	\$0.4	2	0.001	0.0
4223	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2 airflow	Retrofit	per building	12	\$41,851.9	496692	57.000	0.0
4224	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2 airflow	Retrofit	per building	12	\$83,703.7	1379700	158.000	0.0
4225	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 airflow	Retrofit	per building	12	\$209,259.3	2385436	272.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
4226	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 airflow	Retrofit	per building	12	\$418,518.5	4763250	544.000	0.0
4227	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with application optimization and load balancing - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2	Retrofit	per building	12	\$24,814.8	115895	13.000	0.0
4228	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with application optimization and load balancing - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2	Retrofit	per building	12	\$49,629.6	197100	23.000	0.0
4229	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with application optimization and load balancing - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2	Retrofit	per building	12	\$124,074.1	493538	56.000	0.0
4230	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with application optimization and load balancing - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2	Retrofit	per building	12	\$248,148.1	985500	113.000	0.0
4231	Miscellaneous/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 No economizer	Retrofit	per building	12	\$370,370.4	1316102	150.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
4232	Miscellaneous/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 No economizer	Retrofit	per building	12	\$740,740.7	2628000	300.000	0.0
4233	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2 airflow	New Construct ion	per building	12	\$13,452.4	1545264	176.000	0.0
4234	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2 airflow	New Construct ion	per building	12	\$25,111.1	4599000	525.000	0.0
4235	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 airflow	New Construct ion	per building	12	\$62,777.8	7951452	908.000	0.0
4236	Miscellaneous/All	HVAC	Air Flow Management	High-efficiency airflow configuration - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 airflow	New Construct ion	per building	12	\$125,555.6	15877500	1813.000	0.0
4237	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with transformerless PDU's and load balancing - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2	New Construct ion	per building	12	\$12,963.0	331128	38.000	0.0
4238	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with transformerless PDU's and load balancing - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2	New Construct ion	per building	12	\$22,222.2	657000	75.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
4239	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with transformerless PDU's and load balancing - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2	New Construct ion	per building	12	\$55,555.6	1645128	188.000	0.0
4240	Miscellaneous/All	Miscellaneous	Load Distribution	Data center with transformerless PDU's and load balancing - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2	New Construct ion	per building	12	\$111,111.1	3285000	375.000	0.0
4241	Miscellaneous/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 No economizer	New Construct ion	per building	12	\$111,111.1	4387008	501.000	0.0
4242	Miscellaneous/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 No economizer	New Construct ion	per building	12	\$222,222.2	8760000	1000.000	0.0
4246	All/Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Other	RetroCommissioning	Data Center RCx	Data Center RCx - Baseline	Retrofit	per sqft	5	\$0.3	5	0.000	0.0
4247	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissioning	Education RCx	Education RCx - Baseline	Retrofit	per sqft	5	\$0.1	1	0.000	0.0
4248	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissioning	Hospital RCx	Hospital RCx - Baseline	Retrofit	per sqft	5	\$0.1	1	0.000	0.0
4249	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissioning	Lodging RCx	Lodging RCx - Baseline	Retrofit	per sqft	5	\$0.1	1	0.000	0.0

Measure ID	Sub-Sector/Building Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure Unit Name	Measure Life (Years)	Total Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
4250	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissioning	Office RCx	Office RCx - Baseline	Retrofit	per sqft	5	\$0.1	1	0.000	0.0
4251	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissioning	Other RCx	Other RCx - Baseline	Retrofit	per sqft	5	\$0.0	0	0.000	0.0
4252	All/Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Other	RetroCommissioning	Small Building - Data Center RCx	Small Building - Data Center RCx - Baseline	Retrofit	per sqft	5	\$0.1	3	0.000	0.0
4253	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissioning	Small Building - Education RCx	Small Building - Education RCx - Baseline	Retrofit	per sqft	5	\$0.1	1	0.000	0.0
4254	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissioning	Small Building - Hospital RCx	Small Building - Hospital RCx - Baseline	Retrofit	per sqft	5	\$0.0	1	0.000	0.0
4255	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissioning	Small Building - Lodging RCx	Small Building - Lodging RCx - Baseline	Retrofit	per sqft	5	\$0.0	0	0.000	0.0
4256	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissioning	Small Building - Office RCx	Small Building - Office RCx - Baseline	Retrofit	per sqft	5	\$0.0	1	0.000	0.0
4257	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissioning	Small Building - Other RCx	Small Building - Other RCx - Baseline	Retrofit	per sqft	5	\$0.0	0	0.000	0.0
4258	All/Large Load (Over 400 kW <= 1,000 kW)	Other	DCEO Commercial	0	0	Retrofit	Program	10	\$28,252,781	\$131,942,34 4	19344.251	0.0
629	Multifamily/Gas Heating	Lighting	MF DI Lighting	0	0	Direct Install	per lamp	4	\$31	\$62	0.003	0.0
630	Multifamily/Electric Heating	Lighting	MF DI Lighting	0	0	Direct Install	per lamp	4	\$31	\$54	0.003	0.0

Appendix			re Assumptions	)									
Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
1	All/All	Refrigeration	Automatic Door Closer for Walk- in Coolers and Freezers	Walk-in cooler w/ automatic, hydraulic enclosure	Walk-in cooler w/o automatic enclosure	Retrofit	2.98	Yes	Yes	100%	12%	94%	IL TRM
2	All/All	Refrigeration	Automatic Door Closer for Walk- in Coolers and Freezers	Walk-in freezer w/ automatic, hydraulic enclosure	Walk-in freezer w/o automatic enclosure	Retrofit	7.30	Yes	Yes	100%	7%	94%	IL TRM
3	All/All	Refrigeration	Beverage and Snack Machine Controls	Standard efficiency refrigerated vending machine w/ control system	Standard efficiency refrigerated vending machine w/o control system	Retrofit	2.81	Yes	Yes	100%	4%	64%	IL TRM
4	AII/AII	Refrigeration	Beverage and Snack Machine Controls	Standard efficiency non- refrigerated snack vending machine w/ control system	Standard efficiency non- refrigerated snack vending machine w/o control system	Retrofit	1.34	Yes	Yes	100%	96%	64%	IL TRM
5	All/All	Refrigeration	Beverage and Snack Machine Controls	Glass front refrigerated cooler w/ control system	Glass front refrigerated cooler w/o control system	Retrofit	2.11	Yes	Yes	100%	100%	64%	IL TRM
6	All/All	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial glass door cooler w/ standard heated door w/ humidity controls	Commercial glass door cooler w/ standard heated door w/o controls - low temp (- 35-0)	Retrofit	6.07	Yes	Yes	100%	100%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
7	All/All	Refrigeration	Door Heater	Commercial	Commercial	Retrofit	2.57	Yes	Yes	100%	100%	33%	IL TRM
			Controls for Cooler or Freezer	refrigerator w/ standard heated door w/ humidity controls	v/ standard heated door w/o controls - medium temp (0-20)								
8	All/All	Refrigeration	Door Heater	Commercial	Commercial	Retrofit	2.42	Yes	Yes	100%	100%	33%	IL TRM
			Cooler or Freezer	w/ standard heated door w/ humidity controls	w/ standard heated door w/o controls - high temp (20-45)								
9	All/All	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial glass door cooler w/ standard heated door w/ conductivity controls	Commercial glass door cooler w/ standard heated door w/o controls - low temp (- 35-0)	Retrofit	11.59	Yes	Yes	100%	100%	33%	IL TRM
10	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial refrigerator w/ standard heated door w/ conductivity controls	Commercial refrigerator w/ standard heated door w/o controls - medium temp (0-20)	Retrofit	4.90	Yes	Yes	100%	100%	33%	IL TRM
11	AII/AII	Refrigeration	Door Heater Controls for Cooler or Freezer	Commercial refrigerator w/ standard heated door w/ conductivity controls	Commercial refrigerator w/ standard heated door w/o controls - high temp (20-45)	Retrofit	4.62	Yes	Yes	100%	100%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
12	Restaurant/ All	Refrigeration	Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freez ers	Baseline - Electronicall Y Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Free zers	Retrofit	7.03	Yes	Yes	100%	73%	100%	IL TRM
13	Grocery/All	Refrigeration	Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freez ers	Baseline - Electronicall Y Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Free zers	Retrofit	6.71	Yes	Yes	100%	64%	100%	IL TRM
14	All/All	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w/o software	Existing standard vending machine - average # of cans	Time of Sale	2.12	Yes	Yes	100%	4%	64%	IL TRM
15	Ali/Ali	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w software	Existing standard vending machine - average # of cans	Time of Sale	2.98	Yes	Yes	100%	4%	64%	IL TRM
16	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w/o software	New standard vending machine - average # of cans	New Construc tion	2.12	Yes	No	92%	4%	64%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
17	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New or rebuilt to ENERGY STAR specifications - w/ software	New standard vending machine - average # of cans	New Construc tion	2.98	Yes	No	92%	4%	64%	IL TRM
18	AII/AII	Refrigeration	Evaporator Fan Control	Evaporator fan controller that reduces fan power	Cooler w/ continuously running evaporator fan	Retrofit	1.49	Yes	Yes	100%	100%	99%	IL TRM
19	Ali/Ali	Refrigeration	Strip Curtain for Walk-in Coolers and Freezers	Polyethylene strip curtain added to a walk-in freezer	Walk-in freezer w/ no strip curtain or old, ineffective strip curtain	Retrofit	3.91	Yes	Yes	100%	7%	62%	IL TRM
20	All/All	Refrigeration	Strip Curtain for Walk-in Coolers and Freezers	Polyethylene strip curtain added to a walk-in cooler	Walk-in cooler w/ no strip curtain or old, ineffective strip curtain	Retrofit	0.55	No	Yes	100%	12%	62%	IL TRM
21	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, hermetic/se mi-hermetic condenser	Retrofit	2.15	Yes	Yes	92%	13%	100%	IL TRM
22	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, scroll condenser	Retrofit	1.90	Yes	Yes	92%	13%	100%	IL TRM
Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
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23	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, discus condenser	Retrofit	1.81	Yes	Yes	92%	13%	100%	IL TRM
24	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Vertical Open, Remote Condensing, Medium Temperature (35F - 55F)	Retrofit	0.98	No	Yes	100%	45%	100%	IL TRM
25	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Vertical Open, Remote Condensing, Low Temperature (0F - 30F)	Retrofit	2.21	Yes	Yes	100%	45%	100%	IL TRM
26	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Vertical Open, Self- Contained Medium Temperature (35F - 55F)	Retrofit	1.88	Yes	Yes	100%	45%	100%	IL TRM
27	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Remote Condensing, Medium Temperature (35F - 55F)	Retrofit	0.30	No	Yes	100%	45%	100%	IL TRM
28	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Remote Condensing, Low Temperature (0F - 30F)	Retrofit	0.68	No	Yes	100%	45%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
29	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Self- Contained, Medium Temperature (35F - 55F)	Retrofit	0.90	No	Yes	100%	45%	100%	IL TRM
30	Grocery/All	Refrigeration	Night Covers for Open Refrigerated Display Cases	Curtains or covers on top of open refrigerated or freezer display cases	Horizontal Open, Self- Contained, Low Temperature (OF - 30F)	Retrofit	1.84	Yes	Yes	100%	45%	100%	IL TRM
31	AII/AII	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	Rebuilt unit built to ENERGY STAR specifications - w/o software	Existing Standard vending machine unit - < 500 cans	Time of Sale	2.12	Yes	Yes	100%	4%	64%	IL TRM
32	All/All	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	Rebuilt unit built to ENERGY STAR specifications - w/ software	Existing Standard vending machine unit - 800+ cans	Time of Sale	2.98	Yes	Yes	100%	4%	64%	IL TRM
33	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New ENERGY STAR Unit - w/o software	New Standard vending machine unit	New Construc tion	2.12	Yes	No	92%	4%	64%	IL TRM
34	All/Small Load (<=100 kW)	Refrigeration	ENERGY STAR Refrigerated Beverage Vending Machine	New ENERGY STAR Unit - w/ software	New Standard vending machine unit	New Construc tion	2.98	Yes	No	92%	4%	64%	IL TRM
35	Warehouse /Total >100 kW	Miscellaneo us	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - single shift	Modulating compressor with blow down <= 40 hp - single shift	Time of Sale	0.55	No	Yes	10%	100%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
36	Warehouse /Total >100 kW	Miscellaneo us	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - 2 shift	Modulating compressor with blow down <= 40 hp - 2 shift	Time of Sale	1.09	Yes	Yes	10%	100%	100%	IL TRM
37	Warehouse /Total >100 kW	Miscellaneo us	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - 3 shift	Modulating compressor with blow down <= 40 hp - 3 shift	Time of Sale	1.64	Yes	Yes	10%	100%	100%	IL TRM
38	Warehouse /Total >100 kW	Miscellaneo us	VSD Air Compressor	Compressor <= 40 hp w/ variable speed control - 4 shift	Modulating compressor with blow down <= 40 hp - 4 shift	Time of Sale	2.30	Yes	Yes	10%	100%	100%	IL TRM
39	All/Small Load (<=100 kW)	Miscellaneo us	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - single shift	Compressor w/ any control	Time of Sale	0.03	No	No	92%	100%	100%	IL TRM
40	All/Small Load (<=100 kW)	Miscellaneo us	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - 2 shift	Compressor w/ any control	Time of Sale	0.05	No	No	92%	100%	100%	IL TRM
41	All/Small Load (<=100 kW)	Miscellaneo us	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - 3 shift	Compressor w/ any control	Time of Sale	0.08	No	No	92%	100%	100%	IL TRM
42	All/Small Load (<=100 kW)	Miscellaneo us	Compressed Air Low Pressure Drop Filters	Compressor w/ any control - 4 shift	Compressor w/ any control	Time of Sale	0.11	No	No	92%	100%	100%	IL TRM
43	All/Total >100 kW	Miscellaneo us	Compressed Air No-Loss Condensate Drains	Installation of no-loss condensate drains	Standard condensate drains (open valve, timer, or both)	Retrofit	1.95	Yes	Yes	8%	100%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
44	All/Small Load (<=100 kW)	Miscellaneo us	Roof Insulation	Roof insulation above code requirements, gas heating	Roof insulation equal to code requirement s	Retrofit	0.12	No	No	92%	100%	100%	IL TRM
45	All/Small Load (<=100 kW)	Miscellaneo us	Roof Insulation	Roof insulation above code requirements, electric resistance heating	Roof insulation equal to code requirement s	Retrofit	0.56	No	No	92%	100%	100%	IL TRM
46	All/Small Load (<=100 kW)	Miscellaneo us	Roof Insulation	Roof insulation above code requirements, heat pump heating	Roof insulation equal to code requirement s	Retrofit	0.34	No	No	92%	100%	100%	IL TRM
47	All/Small Load (<=100 kW)	Miscellaneo us	Roof Insulation	Roof insulation above code requirements, gas heating	Roof insulation equal to code requirement s	New Construc tion	0.05	No	No	92%	100%	100%	IL TRM
48	All/Small Load (<=100 kW)	Miscellaneo us	Roof Insulation	Roof insulation above code requirements, electric resistance heating	Roof insulation equal to code requirement s	New Construc tion	0.23	No	No	92%	100%	100%	IL TRM
49	All/Small Load (<=100 kW)	Miscellaneo us	Roof Insulation	Roof insulation above code requirements, heat pump heating	Roof insulation equal to code requirement s	New Construc tion	0.12	No	No	92%	100%	100%	IL TRM

Measure	Sub- Sector/Buil	Endline	Mooruro Nomo	Efficient Measure	Baseline	Measure	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Building	Technical	Not-Yet- Adopted	References
50	All/All	Miscellaneo us	Computer Power Management Software	Computer network with power management software	Computer network without software enforcing the power managemen t capabilities in existing computers and monitors	Retrofit	1.76	Yes	Yes	100%	100%	100%	IL TRM
51	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	4-Lamp 32W HPT8 with High-BF Ballast	200W Pulse Start Metal- Halide	Retrofit	0.83	No	No	8%	58%	100%	IL TRM
52	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	6-Lamp 32W HPT8 with High-BF Ballast	320W Pulse Start Metal- Halide	Retrofit	1.11	Yes	No	8%	58%	100%	IL TRM
53	AII/AII	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	8-Lamp 32W HPT8 with High-BF Ballast	Proportionall y Adjusted according to 6-Lamp HPT8 Equivalent to 320 PSMH	Retrofit	1.52	Yes	Yes	100%	58%	100%	IL TRM
54	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	2-lamp High- Performance HPT8 Troffer	3-Lamp F32T8 w/ Elec. Ballast	Retrofit	0.76	No	No	8%	58%	100%	IL TRM
55	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	1-Lamp 32W HPT8 with Low-BF Ballast	1-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	0.27	No	No	8%	58%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
56	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	2-Lamp 32W HPT8 with Low-BF Ballast	2-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	0.35	No	No	8%	58%	100%	IL TRM
57	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	3-Lamp 32W HPT8 with Low-BF Ballast	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	0.52	No	No	8%	58%	100%	IL TRM
58	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	4-Lamp 32W HPT8 with Low-BF Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	0.60	No	No	8%	58%	100%	IL TRM
59	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Indirect	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	2.29	Yes	Yes	100%	10%	59%	IL TRM
60	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Indirect	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Retrofit	0.39	No	Yes	100%	10%	59%	IL TRM
61	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Stri p	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	2.26	Yes	Yes	100%	10%	59%	IL TRM
64	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Stri p	1-Lamp F40T12 w/ EEMag Ballast	Retrofit	1.22	Yes	Yes	100%	10%	59%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
65	Ali/Ali	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Stri p	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Retrofit	0.98	No	Yes	100%	10%	59%	IL TRM
66	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Troffer/Wrap	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	1.70	Yes	Yes	100%	10%	59%	IL TRM
67	AII/AII	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Troffer/Wrap	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Retrofit	0.69	No	Yes	100%	10%	59%	IL TRM
68	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 High-Bay	200 Watt Pulse Start Metal-Halide	Time of Sale	2.98	Yes	Yes	100%	10%	59%	IL TRM
69	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Indirect	3-Lamp F32T8 Equivalent w/ Elec. Ballast	Time of Sale	4.60	Yes	Yes	100%	10%	59%	IL TRM
70	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Indirect	3-Lamp F32T8 Equivalent w/ Elec. Ballast	Retrofit	0.79	No	Yes	100%	10%	59%	IL TRM
71	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Stri p	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	4.57	Yes	Yes	100%	10%	59%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
72	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Stri p	2-Lamp F40T12 w/ EEMag Ballast	Retrofit	2.28	Yes	Yes	100%	10%	59%	IL TRM
75	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Stri p	3-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	1.97	Yes	Yes	100%	10%	59%	IL TRM
76	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Troffer/Wrap	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	3.43	Yes	Yes	100%	10%	59%	IL TRM
77	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Troffer/Wrap	3-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	1.38	Yes	Yes	100%	10%	59%	IL TRM
78	AII/AII	Lighting	T5 Fixtures and Lamps	3-Lamp T5 High-Bay	200 Watt Pulse Start Metal-Halide	Time of Sale	2.98	Yes	Yes	100%	10%	59%	IL TRM
79	AII/AII	Lighting	T5 Fixtures and Lamps	3-Lamp T5 High-Bay	200 Watt Pulse Start Metal-Halide	Retrofit	1.49	Yes	Yes	100%	10%	59%	IL TRM
80	AII/AII	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Stri p	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	6.88	Yes	Yes	100%	10%	59%	IL TRM
83	All/All	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Stri p	3-Lamp F40T12 w/ EEMag Ballast	Retrofit	1.86	Yes	Yes	100%	10%	59%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
84	Ali/Ali	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Stri p	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Retrofit	2.96	Yes	Yes	100%	10%	59%	IL TRM
85	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 High-Bay	320 Watt Pulse-Start Metal Halide	Time of Sale	6.32	Yes	Yes	100%	10%	59%	IL TRM
86	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 High-Bay	320 Watt Pulse-Start Metal Halide	Retrofit	2.81	Yes	Yes	100%	10%	59%	IL TRM
87	AII/AII	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Stri p	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	9.57	Yes	Yes	100%	10%	59%	IL TRM
88	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Stri p	4-Lamp F40T12 w/ EEMag Ballast	Retrofit	4.05	Yes	Yes	100%	10%	59%	IL TRM
91	Ali/Ali	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Stri p	Proportionall y Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Retrofit	4.11	Yes	Yes	100%	10%	59%	IL TRM
92	Ali/Ali	Lighting	T5 Fixtures and Lamps	6-Lamp T5 High-Bay	Proportionall y Adjusted according to 6-Lamp HPT8 Equivalent to 320 PSMH	Time of Sale	6.67	Yes	Yes	100%	10%	59%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
93	All/All	Lighting	T5 Fixtures and Lamps	6-Lamp T5 High-Bay	Proportionall y Adjusted according to 6-Lamp HPT8 Equivalent to 320 PSMH	Retrofit	2.67	Yes	Yes	100%	10%	59%	IL TRM
94	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Red Round Signal	Incandescent	Retrofit	0.77	No	Yes	100%	55%	100%	IL TRM
95	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Red Round Signal	Incandescent	Retrofit	1.36	Yes	Yes	100%	55%	100%	IL TRM
96	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Retrofit	0.70	No	Yes	100%	55%	100%	IL TRM
97	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Red Flashing Signal	Incandescent	Retrofit	1.24	Yes	Yes	100%	55%	100%	IL TRM
98	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Round Signal	Incandescent	Retrofit	0.67	No	Yes	100%	55%	100%	IL TRM
99	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Round Signal	Incandescent	Retrofit	1.18	Yes	Yes	100%	55%	100%	IL TRM
100	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Retrofit	0.03	No	Yes	100%	55%	100%	IL TRM

Measure ID 101	Sub- Sector/Buil ding Type All/All	End Use Lighting	Measure Name LED Traffic and Pedestrian	Efficient Measure Definition 12" Yellow Flashing Signal	Baseline Definition Incandescent	Measure Type Retrofit	Measure TRC 0.05	Measure Included in Economic Potential Analysis No	Measure Included in Achievable Potential Analysis Yes	Applicability to Building Type* 100%	Technical Feasibility* 55%	Not-Yet- Adopted Rate* 100%	References IL TRM
			Signals										
102	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Green Round Signal	Incandescent	Retrofit	0.58	No	Yes	100%	55%	100%	IL TRM
103	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Green Round Signal	Incandescent	Retrofit	1.02	Yes	Yes	100%	55%	100%	IL TRM
104	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Turn Arrow	Incandescent	Retrofit	0.20	No	Yes	100%	55%	100%	IL TRM
105	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Turn Arrow	Incandescent	Retrofit	0.15	No	Yes	100%	55%	100%	IL TRM
106	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Turn Arrow	Incandescent	Retrofit	0.20	No	Yes	100%	55%	100%	IL TRM
107	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Turn Arrow	Incandescent	Retrofit	0.15	No	Yes	100%	55%	100%	IL TRM
108	Ali/Ali	Lighting	LED Traffic and Pedestrian Signals	12" Hand/Man Pedestrian Signal	Incandescent	Retrofit	3.19	Yes	Yes	100%	55%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analvsis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
109	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Round Signal	Incandescent	Time of Sale	1.72	Yes	Yes	100%	55%	100%	IL TRM
110	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Red Round Signal	Incandescent	Time of Sale	2.34	Yes	Yes	100%	55%	100%	IL TRM
111	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Time of Sale	1.56	Yes	Yes	100%	55%	100%	IL TRM
112	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Red Flashing Signal	Incandescent	Time of Sale	2.13	Yes	Yes	100%	55%	100%	IL TRM
113	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Round Signal	Incandescent	Time of Sale	1.49	Yes	Yes	100%	55%	100%	IL TRM
114	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Round Signal	Incandescent	Time of Sale	2.03	Yes	Yes	100%	55%	100%	IL TRM
115	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Time of Sale	0.06	No	Yes	100%	55%	100%	IL TRM
116	Ali/Ali	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Flashing Signal	Incandescent	Time of Sale	0.08	No	Yes	100%	55%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
117	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Round Signal	Incandescent	Time of Sale	1.30	Yes	Yes	100%	55%	100%	IL TRM
118	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Green Round Signal	Incandescent	Time of Sale	1.76	Yes	Yes	100%	55%	100%	IL TRM
119	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Turn Arrow	Incandescent	Time of Sale	0.44	No	Yes	100%	55%	100%	IL TRM
120	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Turn Arrow	Incandescent	Time of Sale	0.25	No	Yes	100%	55%	100%	IL TRM
121	AII/AII	Lighting	LED Traffic and Pedestrian Signals	8" Green Turn Arrow	Incandescent	Time of Sale	0.44	No	Yes	100%	55%	100%	IL TRM
122	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Green Turn Arrow	Incandescent	Time of Sale	0.26	No	Yes	100%	55%	100%	IL TRM
123	AII/AII	Lighting	LED Traffic and Pedestrian Signals	12" Hand/Man Pedestrian Signal	Incandescent	Time of Sale	11.52	Yes	Yes	100%	55%	100%	IL TRM
124	AII/AII	Lighting	Delamping	1-Lamp Standard 32W T8 w/ Elec Ballast	2-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	1.67	Yes	Yes	100%	100%	59%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
125	All/All	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	3-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	1.63	Yes	Yes	100%	100%	59%	IL TRM
126	AII/AII	Lighting	Delamping	3-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	1.34	Yes	Yes	100%	100%	59%	IL TRM
127	AII/AII	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Retrofit	3.08	Yes	Yes	100%	100%	59%	IL TRM
128	AII/AII	Lighting	Delamping	1-Lamp Standard 32W T8 w/ Elec Ballast	2-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	18.84	Yes	Yes	100%	100%	59%	IL TRM
129	AII/AII	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	15.93	Yes	Yes	100%	100%	59%	IL TRM
130	AII/AII	Lighting	Delamping	3-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	11.77	Yes	Yes	100%	100%	59%	IL TRM
131	AII/AII	Lighting	Delamping	2-Lamp Standard 32W T8 w/ Elec Ballast	4-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	30.20	Yes	Yes	100%	100%	59%	IL TRM
132	Ali/Ali	Lighting	LED Exit Signs	LED exit sign	non-LED light-source	Retrofit	3.56	Yes	Yes	100%	85%	59%	ICF

Measure ID 133	Sub- Sector/Buil ding Type All/Total	End Use Lighting	Measure Name Commercial	Efficient Measure Definition 15 W CFL	Baseline Definition 43W EISA	Measure Type Time of	Measure TRC 21.71	Measure Included in Economic Potential Analysis Yes	Measure Included in Achievable Potential Analysis No	Applicability to Building Type* 8%	Technical Feasibility* 45%	Not-Yet- Adopted Rate* 52%	References IL TRM
	>100 kW		Standard CFL		compliant lamp	Sale							
134	All/Total >100 kW	Lighting	Commercial Standard CFL	21 W CFL replacing EISA-exempt incandescent lamp	79W EISA- exempt incandescent lamp	Time of Sale	8.36	Yes	No	8%	45%	52%	IL TRM
135	AII/AII	Lighting	LED Bulbs and Fixtures	12.5 W Omni- directional Energystar LED	43W EISA compliant lamp	Retrofit	37.61	Yes	Yes	100%	96%	92%	IL TRM
136	All/All	Lighting	LED Bulbs and Fixtures	19 W LED replacing EISA-exempt incandescent lamp	79W EISA- exempt incandescent lamp	Retrofit	11.90	Yes	Yes	100%	96%	92%	IL TRM
137	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replace ment	2.86	No	No	100%	94%	100%	IL TRM
138	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replace ment	2.64	No	No	100%	94%	100%	IL TRM
139	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replace ment	2.11	No	No	100%	94%	100%	IL TRM
140	AII/AII	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replace ment	1.77	No	No	100%	94%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
141	All/All	Lighting	LED Bulbs and Fixtures	75 W Outdoor LED lamp	182W Equivalent Fixture per TRM	Time of Sale	3.06	Yes	Yes	100%	55%	92%	IL TRM
142	All/All	Lighting	LED Bulbs and Fixtures	75 W Outdoor LED lamp	182W Equivalent Fixture per TRM	Retrofit	3.06	Yes	Yes	100%	55%	92%	IL TRM
143	AII/AII	Lighting	LED Bulbs and Fixtures	LED 2x2 Recessed Light Fixture	T8 U-Tube 2L-FB32 w/ Elec - 2'	Time of Sale	4.37	Yes	Yes	100%	6%	98%	IL TRM
144	AII/AII	Lighting	LED Bulbs and Fixtures	LED 1.5x4 Recessed Light Fixture	T8 2.5L-F32 w/ Elec - 4'	Time of Sale	25.68	Yes	Yes	100%	6%	98%	IL TRM
145	AII/AII	Lighting	Delamping	4' T8 Lamp Removal with Reflector	4' T8 Lamp	Time of Sale	5.18	Yes	Yes	100%	100%	59%	IL TRM
146	AII/AII	Lighting	Delamping	8' T8 Lamp Removal with Reflector	8' T8 Lamp	Time of Sale	8.63	Yes	Yes	100%	100%	59%	IL TRM
147	AII/AII	Lighting	LED Bulbs and Fixtures	LED 2x2 Recessed Light Fixture	T8 U-Tube 2L-FB32 w/ Elec - 2'	Retrofit	1.64	Yes	Yes	100%	6%	98%	IL TRM
148	All/All	Lighting	LED Bulbs and Fixtures	LED 1.5x4 Recessed Light Fixture	T8 2.5L-F32 w/ Elec - 4'	Retrofit	2.72	Yes	Yes	100%	6%	98%	IL TRM

Measure ID 149	Sub- Sector/Buil ding Type All/All	End Use HVAC	Measure Name High Efficiency	Efficient Measure Definition AFUE 91%	Baseline Definition AFUE 90%	Measure Type Early	Measure TRC 1.54	Measure Included in Economic Potential Analysis No	Measure Included in Achievable Potential Analysis No	Applicability to Building Type* 100%	Technical Feasibility* 94%	Not-Yet- Adopted Rate* 100%	References IL TRM
			Furnace	Furnace - Early Replacement	Furnace	Replace ment							
150	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replace ment	1.37	No	No	100%	94%	100%	IL TRM
151	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replace ment	0.40	No	No	100%	94%	100%	IL TRM
152	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replace ment	0.42	No	No	100%	94%	100%	IL TRM
153	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replace ment	0.37	No	No	100%	94%	100%	IL TRM
154	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replace ment	0.34	No	No	100%	94%	100%	IL TRM
155	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replace ment	0.32	No	No	100%	94%	100%	IL TRM
156	AII/AII	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replace ment	0.30	No	No	100%	94%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
157	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 10 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Time of Sale	2.58	Yes	Yes	8%	30%	99%	IL TRM
158	All/Small Load (<=100 kW)	Hot Water	Low Flow Faucet Aerators - Electric DHW fuel	Bathroom faucet aerator, < 1.5 GPM	Bathroom faucet aerator, 2.25 GPM	Direct Install	9.30	Yes	Yes	92%	100%	68%	IL TRM
159	All/Small Load (<=100 kW)	Hot Water	Low Flow Faucet Aerators - Electric DHW fuel	Kitchen faucet aerator, < 2.2 GPM	Kitchen faucet aerator, 2.75 GPM	Direct Install	11.34	Yes	Yes	92%	100%	68%	IL TRM
160	All/Small Load (<=100 kW)	Hot Water	Low Flow Showerheads - Electric DHW fuel	Energy efficient showerhead rated at 2.0 GPM	Standard showerhead rated at 2.5 GPM	Direct Install	41.69	Yes	Yes	92%	1%	68%	IL TRM
161	All/Small Load (<=100 kW)	Hot Water	Low Flow Showerheads - Electric DHW fuel	Energy efficient showerhead rated at 1.75 GPM	Standard showerhead rated at 2.5 GPM	Direct Install	57.24	Yes	Yes	92%	1%	68%	IL TRM
162	All/Small Load (<=100 kW)	Hot Water	Low Flow Showerheads - Electric DHW fuel	Energy efficient showerhead rated at 1.50 GPM	Standard showerhead rated at 2.5 GPM	Direct Install	72.80	Yes	Yes	92%	1%	68%	IL TRM
163	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 10 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Retrofit	2.58	Yes	Yes	8%	30%	99%	IL TRM

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165	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 15 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Time of Sale	2.27	Yes	Yes	8%	30%	99%	IL TRM
166	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 15 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Retrofit	2.27	Yes	Yes	8%	30%	99%	IL TRM
168	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 5 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Time of Sale	0.98	No	Yes	8%	30%	99%	IL TRM
169	All/Total >100 kW	Hot Water	Tankless Water Heater	Electric tankless hot water heater, EF >= 0.98, output = 5 GPM	Electric commercial- grade tanked water heater > 50 gal, EF=< 0.9	Retrofit	0.98	No	Yes	8%	30%	99%	IL TRM
171	All/Total >100 kW	Hot Water	Storage Water Heater	Electric, Storage Capacity = 50 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 50 gallons, input wattage: 12 kW - 54 kW	Time of Sale	0.86	No	Yes	8%	30%	100%	IL TRM
172	All/Total >100 kW	Hot Water	Ozone Laundry	Ozone Laundry System	Ozone Laundry System	Time of Sale	1.78	Yes	Yes	8%	100%	100%	IL TRM
173	All/Total >100 kW	Hot Water	Ozone Laundry	Ozone Laundry System	Ozone Laundry System	Retrofit	1.78	Yes	Yes	8%	100%	100%	IL TRM

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174	All/Total >100 kW	Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Time of Sale	13.42	Yes	Yes	8%	100%	100%	IL TRM
175	All/Total >100 kW	Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Retrofit	13.42	Yes	Yes	8%	100%	100%	IL TRM
176	All/Small Load (<=100 kW)	Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	Controls for Central Domestic Hot Water	New Construc tion	13.42	Yes	No	92%	100%	100%	IL TRM
177	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	5.46	Yes	No	93%	100%	65%	IL TRM
178	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	5.46	Yes	No	93%	100%	65%	IL TRM
179	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	16.62	Yes	Yes	93%	100%	65%	IL TRM
180	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	16.62	Yes	No	93%	100%	65%	IL TRM
181	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	11.89	Yes	Yes	93%	100%	65%	IL TRM

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182	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	11.89	Yes	No	93%	100%	65%	IL TRM
183	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	7.84	Yes	Yes	93%	100%	65%	IL TRM
184	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	7.84	Yes	No	93%	100%	65%	IL TRM
185	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	0.60	No	Yes	93%	100%	65%	IL TRM
186	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	0.60	No	No	93%	100%	65%	IL TRM
187	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	7.42	Yes	No	93%	100%	65%	IL TRM
188	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	7.42	Yes	No	93%	100%	65%	IL TRM
189	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	6.12	Yes	No	93%	100%	65%	IL TRM

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190	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	6.12	Yes	No	93%	100%	65%	IL TRM
191	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Freezer	Existing EPAct 2005- Compliant Freezer	Time of Sale	2.30	Yes	No	93%	100%	65%	IL TRM
192	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Freezer	EPAct 2005- Compliant Freezer	New Construc tion	2.30	Yes	No	93%	100%	65%	IL TRM
193	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	2.92	Yes	No	93%	97%	65%	IL TRM
194	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 15 to 30ft3 capacity	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	2.92	Yes	No	93%	97%	65%	IL TRM
195	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	3.17	Yes	No	93%	97%	65%	IL TRM
196	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	3.17	Yes	No	93%	97%	65%	IL TRM
197	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	2.55	Yes	No	93%	97%	65%	IL TRM

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198	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - greater than 50 ft3 capacity	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	2.55	Yes	No	93%	97%	65%	IL TRM
199	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	3.59	Yes	No	93%	97%	65%	IL TRM
200	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Glass Door - up to 15 ft3 capacity	ENERGY STAR Glass Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	3.59	Yes	No	93%	97%	65%	IL TRM
201	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	2.00	Yes	No	93%	97%	65%	IL TRM
202	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 15 to 30ft3 capacity	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	2.00	Yes	No	93%	97%	65%	IL TRM
203	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	3.44	Yes	No	93%	97%	65%	IL TRM
204	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - 30 to 50 ft3	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	3.44	Yes	No	93%	97%	65%	IL TRM
205	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - greater than 50 ft3 capacity	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	3.16	Yes	No	93%	97%	65%	IL TRM

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206	Restaurant/	Food Service	Commercial	ENERGY STAR	EPAct 2005-	New	3.16	Yes	No	93%	97%	65%	IL TRM
	Small Load (<=100 kW)	Equipment	Refrigerators - Solid Door - greater than 50 ft3 capacity	Solid Door Refrigerator	Compliant Refrigerator	Construc tion							
207	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Refrigerator	Existing EPAct 2005- Compliant Refrigerator	Time of Sale	1.29	Yes	No	93%	97%	65%	IL TRM
208	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Refrigerators - Solid Door - up to 15 ft3 capacity	ENERGY STAR Solid Door Refrigerator	EPAct 2005- Compliant Refrigerator	New Construc tion	1.29	Yes	No	93%	97%	65%	IL TRM
209	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 3 pans	non-ENERGY STAR commercial steamer at end of life - 3 pans	Time of Sale	1.40	Yes	No	93%	9%	82%	IL TRM
210	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 4 pans	non-ENERGY STAR commercial steamer at end of life - 4 pans	Time of Sale	1.65	Yes	No	93%	9%	82%	IL TRM
211	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Commercial Steam Cooker	ENERGY STAR qualified electric steam cooker with cooking efficiency >= 50% - 5 pans	non-ENERGY STAR commercial steamer at end of life - 5 pans	Time of Sale	1.91	Yes	No	93%	9%	82%	IL TRM

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212	Small Load (<=100 kW)	Equipment	Steam Cooker	qualified electric steam cooker with cooking efficiency >= 50% - 6 pans	STAR commercial steamer at end of life - 6 pans	Sale	2.10	res	NU	93%	976	8270	IL TRIVI
213	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - under counter	non- ENERGYSTAR dishwasher at end of life - low temp - under counter - electric building and booster water heating	Time of Sale	1.39	Yes	Yes	93%	9%	33%	IL TRM
214	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - door type	non- ENERGYSTAR dishwasher at end of life - low temp - door type - electric building and booster water heating	Time of Sale	19.59	Yes	Yes	93%	9%	33%	IL TRM
215	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - single tank conventional - electric building and booster water heating	Time of Sale	70.83	Yes	No	93%	9%	33%	IL TRM

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216	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - multi tank conventional - electric building and booster water heating	Time of Sale	86.94	Yes	No	93%	9%	33%	IL TRM
217	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - under counter	non- ENERGYSTAR dishwasher at end of life - high temp - under counter - electric building and booster water heating	Time of Sale	4.54	Yes	No	93%	9%	33%	IL TRM
218	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - door type	non- ENERGYSTAR dishwasher at end of life - high temp - door type - electric building and booster water heating	Time of Sale	24.20	Yes	No	93%	9%	33%	IL TRM

<sup>\*</sup>Commercial applicability factors were developed only for measures included in the potential analyses.

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219	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - single tank conventional - electric building and booster water heating	Time of Sale	75.36	Yes	No	93%	9%	33%	IL TRM
220	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - multi tank conventional - electric building and booster water heating	Time of Sale	107.04	Yes	No	93%	9%	33%	IL TRM
221	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - under counter	non- ENERGYSTAR dishwasher at end of life - low temp - under counter - electric building and natural gas booster water beating	Time of Sale	10.43	Yes	Yes	93%	9%	33%	IL TRM

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222	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - door type	non- ENERGYSTAR dishwasher at end of life - low temp - door type - electric building and natural gas booster water heating	Time of Sale	35.25	Yes	Yes	93%	9%	33%	IL TRM
223	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - single tank conventional - electric building and natural gas booster water heating	Time of Sale	152.26	Yes	Yes	93%	9%	33%	IL TRM
224	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - low temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - low temp - multi tank conventional - electric building and natural gas booster water heating	Time of Sale	147.93	Yes	Yes	93%	9%	33%	IL TRM

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225	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - under counter	non- ENERGYSTAR dishwasher at end of life - high temp - under counter - electric building and natural gas booster water heating	Time of Sale	4.79	Yes	Yes	93%	9%	33%	IL TRM
226	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - door type	non- ENERGYSTAR dishwasher at end of life - high temp - door type - electric building and natural gas booster water heating	Time of Sale	35.40	Yes	Yes	93%	9%	33%	IL TRM
227	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - single tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - single tank conventional - electric building and natural gas booster water heating	Time of Sale	122.93	Yes	Yes	93%	9%	33%	IL TRM

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228	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Dishwasher	ENERGY STAR certified dishwasher - high temp - multi tank conventional	non- ENERGYSTAR dishwasher at end of life - high temp - multi tank conventional - electric building and natural gas booster water heating	Time of Sale	119.31	Yes	Yes	93%	9%	33%	IL TRM
229	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Electric Convection Oven	ENERGY STAR Electric Convection Oven	ENERGY STAR Electric Convection Oven	Time of Sale	1.74	Yes	Yes	93%	100%	100%	IL TRM
230	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Griddle	ENERGY STAR electric griddle with efficiency > 70%	Non- ENERGYSTAR electric griddle at end of use	Time of Sale	41,400.8 0	Yes	Yes	93%	9%	33%	IL TRM
231	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Hot Food Holding Cabinets	ENERGY STAR HFHC - Full Size (20 ft3)	Non- ENERGYSTAR electric HFHC at end of life	Time of Sale	5.53	Yes	Yes	93%	9%	33%	IL TRM
232	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Hot Food Holding Cabinets	ENERGY STAR HFHC - 3/4 Size (12 ft3)	Non- ENERGYSTAR electric HFHC at end of life	Time of Sale	1.56	Yes	Yes	93%	9%	33%	IL TRM
233	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Hot Food Holding Cabinets	ENERGY STAR HFHC - 1/2 Size (8 ft3)	Non- ENERGYSTAR electric HFHC at end of life	Time of Sale	1.25	Yes	Yes	93%	9%	33%	IL TRM

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234	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head <450 lbs made per day	Ice Making Head <450 Ibs made per day meeting min. federal equipment standards	Time of Sale	0.76	No	No	93%	63%	100%	IL TRM
235	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head >=450 Ibs made per day	Ice Making Head >=450 Ibs made per day meeting min. federal equipment standards	Time of Sale	0.36	No	No	93%	63%	100%	IL TRM
236	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser <1000 lbs made per day	Remote Condensing Unit, w/o remote compressor <1000 lbs made per day meeting min. federal equipment standards	Time of Sale	0.42	Νο	Νο	93%	63%	100%	IL TRM
237	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser >=1000 lbs made per day	Remote Condensing Unit, w/o remote compressor >=1000 lbs made per day meeting min. federal equipment standards	Time of Sale	0.48	No	No	93%	63%	100%	IL TRM

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238	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser <934 lbs made per day	Remote Condensing Unit, w/ remote compressor <934 lbs made per day meeting min. federal equipment standards	Time of Sale	0.40	No	No	93%	63%	100%	IL TRM
239	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser >=934 lbs made per day	Remote Condensing Unit, w/ remote compressor >=934 lbs made per day meeting min. federal equipment standards	Time of Sale	0.47	No	No	93%	63%	100%	IL TRM
240	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser <175 lbs made per day	Self Contained Unit <175 lbs made per day meeting min. federal equipment standards	Time of Sale	0.38	No	No	93%	63%	100%	IL TRM
241	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser >=175 lbs made per day	Self Contained Unit >=175 Ibs made per day meeting min. federal equipment standards	Time of Sale	0.73	No	No	93%	63%	100%	IL TRM

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242	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head <450 lbs made per day	Ice Making Head <450 Ibs made per day meeting min. federal equipment standards	New Construc tion	0.76	No	No	93%	63%	100%	IL TRM
243	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Ice Making Head >=450 Ibs made per day	Ice Making Head >=450 Ibs made per day meeting min. federal equipment standards	New Construc tion	0.36	No	No	93%	63%	100%	IL TRM
244	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser <1000 lbs made per day	Remote Condensing Unit, w/o remote compressor <1000 lbs made per day meeting min. federal equipment standards	New Construc tion	0.42	Νο	Νο	93%	63%	100%	IL TRM
245	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/o remote condenser >=1000 lbs made per day	Remote Condensing Unit, w/o remote compressor >=1000 lbs made per day meeting min. federal equipment standards	New Construc tion	0.48	No	Νο	93%	63%	100%	IL TRM

Measure	Sub- Sector/Buil	5		Efficient Measure	Baseline	Measure	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Building	Technical	Not-Yet- Adopted	References
246	ding Type Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Measure Name ENERGY STAR Ice Maker	Definition ENERGY STAR Remote Condensing Unit, w/ remote condenser <934 lbs made per day	Definition Remote Condensing Unit, w/ remote compressor <934 lbs made per day meeting min. federal equipment standards	Iype New Construc tion	0.40	Analysis No	Analysis No	93%	Feasibility* 63%	Rate* 100%	IL TRM
247	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Remote Condensing Unit, w/ remote condenser >=934 lbs made per day	Remote Condensing Unit, w/ remote compressor >=934 lbs made per day meeting min. federal equipment standards	New Construc tion	0.47	No	No	93%	63%	100%	IL TRM
248	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser <175 lbs made per day	Self Contained Unit <175 lbs made per day meeting min. federal equipment standards	New Construc tion	0.38	No	No	93%	63%	100%	IL TRM
249	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	ENERGY STAR Ice Maker	ENERGY STAR Self Contained Unit, w/ remote condenser >=175 lbs made per day	Self Contained Unit >=175 Ibs made per day meeting min. federal equipment standards	New Construc tion	0.73	No	No	93%	63%	100%	IL TRM
250	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.6 gpm	Existing pre- rinse spray valve w/ flow rate of 1.6 gpm	Time of Sale	3.99	Yes	Yes	93%	9%	68%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
251	Restaurant/ Medium Load (Over 100 kW <= 400 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.6 gpm	Existing pre- rinse spray valve w/ flow rate of 1.6 gpm	Time of Sale	11.97	Yes	Yes	7%	9%	68%	IL TRM
252	Restaurant/ Large Load (Over 400 kW <= 1,000 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.6 gpm	Existing pre- rinse spray valve w/ flow rate of 1.6 gpm	Time of Sale	23.94	Yes	Yes	0%	9%	68%	IL TRM
253	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Retrofit	6.21	Yes	Yes	93%	9%	68%	IL TRM
254	Restaurant/ Medium Load (Over 100 kW <= 400 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Retrofit	18.62	Yes	Yes	7%	9%	68%	IL TRM
255	Restaurant/ Large Load (Over 400 kW <= 1,000 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Retrofit	37.24	Yes	Yes	0%	9%	68%	IL TRM
256	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Direct Install	6.21	Yes	Yes	93%	9%	68%	IL TRM
257	Restaurant/ Medium Load (Over 100 kW <= 400 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Direct Install	18.62	Yes	Yes	7%	12%	68%	IL TRM
258	Restaurant/ Large Load (Over 400 kW <= 1,000 kW)	Food Service Equipment	High Efficiency Pre-Rinse Spray Valve	New pre-rinse spray valve w/ flow rate of < 1.9 gpm	Existing pre- rinse spray valve w/ flow rate of 1.9 gpm	Direct Install	37.24	Yes	Yes	0%	12%	68%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
259	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Kitchen Demand Ventilation Controls	Control system with sensors to vary exhaust rate	Kitchen ventilation with constant speed ventilation motor	Time of Sale	22.00	Yes	Yes	93%	9%	100%	IL TRM
260	Restaurant/ Small Load (<=100 kW)	Food Service Equipment	Kitchen Demand Ventilation Controls	Control system with sensors to vary exhaust rate	Kitchen ventilation with constant speed ventilation motor	New Construc tion	43.73	Yes	No	93%	9%	100%	IL TRM
261	Warehouse /Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Miscellaneo us	Engine Block Timer for Agricultural Equipment	Engine block heater operated by plug-in timer	Engine block heater manually plugged in	Retrofit	6.34	Yes	Yes	0%	100%	100%	IL TRM
262	Warehouse /Medium Load (Over 100 kW <= 400 kW)	Miscellaneo us	High Volume Low Speed Fans	20' Fan classified as HVLS and has a VFD	Multiple non-HVLS fans	Time of Sale	1.10	Yes	Yes	8%	100%	100%	IL TRM
263	Warehouse /Large Load (Over 400 kW <= 1,000 kW)	Miscellaneo us	High Volume Low Speed Fans	22' Fan classified as HVLS and has a VFD	Multiple non-HVLS fans	Time of Sale	1.41	Yes	No	2%	100%	100%	IL TRM
264	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Volume Low Speed Fans	24' Fan classified as HVLS and has a VFD	Multiple non-HVLS fans	Time of Sale	1.64	Yes	Yes	90%	100%	100%	IL TRM
265	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	24-35" 14.0cfm/W at 0.10 static pressure exhaust fan	24-35" exhaust fan	Time of Sale	1.23	Yes	Yes	90%	100%	100%	IL TRM
Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
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266	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	36-47" 17.1 cfm/W at 0.10 static pressure exhaust fan	36-47" exhaust fan	Time of Sale	2.07	Yes	Yes	90%	100%	100%	IL TRM
267	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	48-71" 20.3 cfm/W at 0.10 static pressure exhaust fan	48-71" exhaust fan	Time of Sale	3.71	Yes	Yes	90%	100%	100%	IL TRM
268	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	24-35" 14.0cfm/W at 0.10 static pressure ventilation fan	24-35" ventilation fan	Time of Sale	1.23	Yes	Yes	90%	100%	100%	IL TRM
269	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	36-47" 17.1 cfm/W at 0.10 static pressure ventilation fan	36-47" ventilation fan	Time of Sale	2.07	Yes	Yes	90%	100%	100%	IL TRM
270	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	48-71" 20.3 cfm/W at 0.10 static pressure ventilation fan	48-71" ventilation fan	Time of Sale	3.71	Yes	Yes	90%	100%	100%	IL TRM
271	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	24-35" 12.5 lbf/kW circulation fan	24-35" circulation fan	Time of Sale	1.23	Yes	Yes	90%	100%	100%	IL TRM
272	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	36-47" 18.2 lbf/kW circulation fan	36-47" circulation fan	Time of Sale	2.07	Yes	Yes	90%	100%	100%	IL TRM
273	Warehouse /Small Load (<=100 kW)	Miscellaneo us	High Speed Fans	48-71" 23.0 lbf/kW circulation fan	48-71" circulation fan	Time of Sale	3.71	Yes	Yes	90%	100%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
274	Warehouse /Small Load (<=100 kW)	Miscellaneo us	Live Stock Waterer	Electrically heated thermally insulated waterer w/ thermostat	Electric open waterer w/ sinking or floating water heater	Time of Sale	0.69	No	Yes	90%	100%	100%	IL TRM
275	All/Total >100 kW	HVAC	Air Conditioner Tune-up	Certified technician performs a package of services on unitary or split system air conditioner, 36 kBTU/h - 65 kBTU/h	Existing AC system w/o standing maintenance contract or tune up in last 3 years, 36 kBTU/h - 65 kBTU/h	Retrofit	11.34	Yes	Yes	8%	100%	20%	IL TRM
276	AII/AII	HVAC	Air Conditioner Tune-up	Certified technician performs a package of services on unitary or split system air conditioner, > 65 kBTU/h	Existing AC system w/o standing maintenance contract or tune up in last 3 years, > 65 kBTU/h	Retrofit	1.16	Yes	No	100%	100%	20%	IL TRM
277	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, No Economizer	New Construc tion	3.51	Yes	No	100%	2%	100%	IL TRM
278	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	New Construc tion	1.92	Yes	No	100%	2%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
279	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - VAV Reheat, Economizer	New Construc tion	1.87	Yes	No	100%	2%	100%	IL TRM
280	AII/AII	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water- cooled Reciprocatin g Chiller meeting IECC 2009 Standards - CV Reheat, No Economizer	New Construc tion	15.18	Yes	No	100%	1%	100%	IL TRM
281	AII/AII	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water- cooled Reciprocatin g Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	New Construc tion	9.49	Yes	No	100%	1%	100%	IL TRM
282	AII/AII	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - VAV, Economizer	Water- cooled Reciprocatin g Chiller meeting IECC 2009 Standards - VAV, Economizer	New Construc tion	9.29	Yes	No	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
283	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, No Economizer	New Construc tion	2.61	Yes	No	100%	1%	100%	IL TRM
284	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, Economizer	New Construc tion	1.63	Yes	No	100%	1%	100%	IL TRM
285	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - VAV Reheat, Economizer	New Construc tion	1.60	Yes	No	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
286	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	New Construc tion	4.77	Yes	No	100%	1%	100%	IL TRM
287	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	New Construc tion	2.98	Yes	No	100%	1%	100%	IL TRM
288	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	New Construc tion	2.92	Yes	No	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
289	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	Water- cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	New Construc tion	6.96	Yes	No	100%	1%	100%	IL TRM
290	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, Economizer	Water- cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, Economizer	New Construc tion	4.35	Yes	No	100%	1%	100%	IL TRM
291	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - VAV Reheat, Economizer	Water- cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - VAV Reheat, Economizer	New Construc tion	4.26	Yes	No	100%	1%	100%	IL TRM
292	Ali/Ali	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, No Economizer	Time of Sale	3.51	Yes	Yes	100%	2%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
293	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	Time of Sale	1.92	Yes	Yes	100%	2%	100%	IL TRM
294	AII/AII	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - VAV Reheat, Economizer	Time of Sale	1.87	Yes	Yes	100%	2%	100%	IL TRM
295	Ali/Ali	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water- cooled Reciprocatin g Chiller meeting IECC 2009 Standards - CV Reheat, No Economizer	Time of Sale	15.18	Yes	Yes	100%	1%	100%	IL TRM
296	All/All	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water- cooled Reciprocatin g Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	Time of Sale	9.49	Yes	Yes	100%	1%	100%	IL TRM
297	All/All	HVAC	Electric Chillers	Water-cooled Reciprocating Chiller exceeding IECC 2009 Standards - VAV, Economizer	Water- cooled Reciprocatin g Chiller meeting IECC 2009 Standards - VAV, Economizer	Time of Sale	9.29	Yes	Yes	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
298	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, No Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, No Economizer	Time of Sale	2.61	Yes	Yes	100%	1%	100%	IL TRM
299	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - CV Reheat, Economizer	Time of Sale	1.63	Yes	Yes	100%	1%	100%	IL TRM
300	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards - VAV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards < 150 tons - VAV Reheat, Economizer	Time of Sale	1.60	Yes	Yes	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
	01/01			Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, No Economizer	Sale				10070	175	100%	
302	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - CV Reheat, Economizer	Time of Sale	2.98	Yes	Yes	100%	1%	100%	IL TRM
303	All/All	HVAC	Electric Chillers	Water-cooled Rotary Screw and Scroll Chiller exceeding IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	Water- cooled Rotary Screw and Scroll Chiller meeting IECC 2009 Standards >= 150 tons and < 300 tons - VAV Reheat, Economizer	Time of Sale	2.92	Yes	Yes	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
304	Ali/Ali	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	Water- cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, No Economizer	Time of Sale	6.96	Yes	Yes	100%	1%	100%	IL TRM
305	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - CV Reheat, Economizer	Water- cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - CV Reheat, Economizer	Time of Sale	4.35	Yes	Yes	100%	1%	100%	IL TRM
306	AII/AII	HVAC	Electric Chillers	Water-cooled Rotary and Screw Chiller exceeding IECC 2009 Standards >= 300 tons - VAV Reheat, Economizer	Water- cooled Rotary and Screw Chiller meeting IECC 2009 Standards >= 300 tons - VAV Reheat, Economizer	Time of Sale	4.26	Yes	Yes	100%	1%	100%	IL TRM
307	All/All	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - < 8000 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - < 8000 Btu/H	Time of Sale	1.22	Yes	No	100%	100%	76%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
308	AII/AII	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - 8000 to 13999 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - 8000 to 13999 Btu/H	Time of Sale	2.40	Yes	No	100%	100%	76%	IL TRM
309	AII/AII	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - 14000 to 19999 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - 14000 to 19999 Btu/H	Time of Sale	3.66	Yes	Yes	100%	100%	76%	IL TRM
310	All/All	HVAC	ENERGY STAR and CEE Tier 1 Room Air Conditioner	New room air conditioning unit meeting ENERGY STAR efficiency standards - >= 20000 Btu/H	New room air condiitoning unit meeting minimum federal efficiency standards - >= 20000 Btu/H	Time of Sale	5.71	Yes	Yes	100%	100%	76%	IL TRM
311	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Electric Resistance Heating	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	2.66	Yes	Yes	100%	64%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
312	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Gas Heating	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	1.69	Yes	Yes	100%	64%	100%	IL TRM
313	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTHP	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	1.70	Yes	Yes	100%	64%	100%	IL TRM
314	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Electric Resistance Heating	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	1.27	Yes	No	100%	64%	100%	IL TRM
315	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, PTAC w/ Gas Heating	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	1.15	Yes	No	100%	64%	100%	IL TRM

Measure ID 316	Sub- Sector/Buil ding Type Hotel/Mote L/All	End Use HVAC	Measure Name Guest Room	Efficient Measure Definition Automatic	Baseline Definition Manual heating/cooli	Measure Type Time of Sale	Measure TRC 1.15	Measure Included in Economic Potential Analysis Yes	Measure Included in Achievable Potential Analysis No	Applicability to Building Type* 100%	Technical Feasibility* 64%	Not-Yet- Adopted Rate* 100%	References IL TRM
	1/01		Management (PTAC & PTHP)	detector connected to HVAC controls, PTHP	ng temperature set-point and fan On/Off/Auto thermostat controls	Jaie							
317	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, Central Hot Water Fan Coil w/ Electric Resistance Heating	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	0.96	No	No	100%	64%	100%	IL TRM
318	Hotel/Mote I/All	HVAC	Guest Room Energy Management (PTAC & PTHP)	Automatic occupancy detector connected to HVAC controls, Central Hot Water Fan Coil w/ Gas Heating	Manual heating/cooli ng temperature set-point and fan On/Off/Auto thermostat controls	Time of Sale	0.84	No	No	100%	64%	100%	IL TRM
319	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - < 65,000 Btu/h	Time of Sale	4.24	Yes	Yes	100%	6%	33%	IL TRM
320	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 65,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - 65,000 - 135,000 Btu/h	Time of Sale	2.31	Yes	Yes	100%	6%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
321	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 135,000 - 240,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - 135,000 - 240,000 Btu/h	Time of Sale	2.11	Yes	Yes	100%	6%	33%	IL TRM
322	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - > 240,000 exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - 240,000 - 760,000	Time of Sale	2.50	Yes	Yes	100%	6%	33%	IL TRM
323	All/All	HVAC	Heat Pump Systems	Water-source Heat Pump - < 17,000 Btu/h exceeding IECC 2012	IECC 2012 Water- sourceHeat Pump - < 17,000 Btu/h	Time of Sale	3.21	Yes	Yes	100%	6%	33%	IL TRM
324	All/All	HVAC	Heat Pump Systems	Water-source Heat Pump - 17,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Water- source Heat Pump - 17,000 - 135,000 Btu/h	Time of Sale	2.06	Yes	Yes	100%	6%	33%	IL TRM
325	Ali/Ali	HVAC	Heat Pump Systems	Groundwater- source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwate r-sourceHeat Pump - < 135,000 Btu/h	Time of Sale	1.55	Yes	Yes	100%	6%	33%	IL TRM
326	All/All	HVAC	Heat Pump Systems	Ground- source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Ground- sourceHeat Pump - < 135,000 Btu/h	Time of Sale	4.69	Yes	Yes	100%	6%	33%	IL TRM
327	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - < 65,000 Btu/h	New Construc tion	4.24	Yes	No	100%	6%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
328	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 65,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - 65,000 - 135,000 Btu/h	New Construc tion	2.31	Yes	No	100%	6%	33%	IL TRM
329	AII/AII	HVAC	Heat Pump Systems	Air-cooled Heat Pump - 135,000 - 240,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - 135,000 - 240,000 Btu/h	New Construc tion	2.11	Yes	No	100%	6%	33%	IL TRM
330	All/All	HVAC	Heat Pump Systems	Air-cooled Heat Pump - > 240,000 exceeding IECC 2012	IECC 2012 Air-cooled Heat Pump - 240,000 - 760,000	New Construc tion	2.50	Yes	No	100%	6%	33%	IL TRM
331	All/All	HVAC	Heat Pump Systems	Water-source Heat Pump - < 17,000 Btu/h exceeding IECC 2012	IECC 2012 Water- sourceHeat Pump - < 17,000 Btu/h	New Construc tion	3.21	Yes	No	100%	6%	33%	IL TRM
332	AII/AII	HVAC	Heat Pump Systems	Water-source Heat Pump - 17,000 - 135,000 Btu/h exceeding IECC 2012	IECC 2012 Water- source Heat Pump - 17,000 - 135,000 Btu/h	New Construc tion	2.06	Yes	No	100%	6%	33%	IL TRM
333	AII/AII	HVAC	Heat Pump Systems	Groundwater- source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwate r-sourceHeat Pump - < 135,000 Btu/h	New Construc tion	1.55	Yes	No	100%	6%	33%	IL TRM
334	AII/AII	HVAC	Heat Pump Systems	Ground- source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Ground- sourceHeat Pump - < 135,000 Btu/h	New Construc tion	4.69	Yes	No	100%	6%	33%	IL TRM

Measure	Sub- Sector/Buil			Efficient Measure	Baseline	Measure	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Building	Technical	Not-Yet- Adopted	References
ID	ding Type	End Use	Measure Name	Definition	Definition	Туре	TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	
335	AII/AII	HVAC	High Efficiency Furnace	AFUE 90% Furnace	AFUE 80% Furnace	Time of Sale	3.54	No	No	100%	94%	100%	IL TRM
336	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace	AFUE 80% Furnace	Time of Sale	3.33	No	No	100%	94%	100%	IL TRM
337	All/All	HVAC	High Efficiency Furnace	AFUE 92% Furnace	AFUE 80% Furnace	Time of Sale	3.17	No	No	100%	94%	100%	IL TRM
338	All/All	HVAC	High Efficiency Furnace	AFUE 93% Furnace	AFUE 80% Furnace	Time of Sale	2.60	No	No	100%	94%	100%	IL TRM
339	All/All	HVAC	High Efficiency Furnace	AFUE 94% Furnace	AFUE 80% Furnace	Time of Sale	2.24	No	No	100%	94%	100%	IL TRM
340	AII/AII	HVAC	High Efficiency Furnace	AFUE 95% Furnace	AFUE 80% Furnace	Time of Sale	1.99	No	No	100%	94%	100%	IL TRM
341	All/All	HVAC	High Efficiency Furnace	AFUE 96% Furnace	AFUE 80% Furnace	Time of Sale	1.81	No	No	100%	94%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
342	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity = 50 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 50 gallons, input wattage: 12 kW - 54 kW	Retrofit	0.86	No	Yes	92%	30%	100%	IL TRM
344	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity =80 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 80 gallons, input wattage: 12 kW - 54 kW	Time of Sale	1.90	Yes	Yes	92%	30%	100%	IL TRM
345	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity =80 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity = 80 gallons, input wattage: 12 kW - 54 kW	Retrofit	1.90	Yes	Yes	92%	30%	100%	IL TRM
347	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity >= 100 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity >= 100 gallons, input wattage: 12 kW - 54 kW	Time of Sale	1.60	Yes	Yes	92%	30%	100%	IL TRM
348	All/Small Load (<=100 kW)	Hot Water	Storage Water Heater	Electric, Storage Capacity >= 100 gallons, EF >= 0.95, TE >= 0.98, standby loss < 3%	Electric, Storage Capacity >= 100 gallons, input wattage: 12 kW - 54 kW	Retrofit	1.60	Yes	Yes	92%	30%	100%	IL TRM
351	AII/AII	Lighting	LED Bulbs and Fixtures	LED High- and Low-Bay Fixtures	MH 250 W CWA Pulse Start	Retrofit	2.00	Yes	Yes	100%	6%	93%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
353	Ali/Ali	Lighting	LED Bulbs and Fixtures	LED High- and Low-Bay Fixtures	MH 250 W CWA Pulse Start	Time of Sale	3.20	Yes	Yes	100%	6%	93%	IL TRM
354	Hotel/Mote I/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	Time of Sale	5.76	Yes	Yes	100%	96%	76%	IL TRM
355	AII/AII	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	Time of Sale	5.81	Yes	Yes	100%	96%	76%	IL TRM
356	Hotel/Mote I/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012 w/ elec res htg	Time of Sale	40.05	Yes	Yes	100%	96%	76%	IL TRM
357	AII/AII	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012 w/ elec res htg	Time of Sale	36.26	Yes	Yes	100%	4%	76%	IL TRM
358	Hotel/Mote I/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	Time of Sale	5.36	Yes	Yes	100%	4%	76%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
359	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	Time of Sale	5.07	Yes	Yes	100%	4%	76%	IL TRM
360	Hotel/Mote I/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	New Construc tion	5.76	Yes	No	100%	96%	76%	IL TRM
361	AII/AII	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	New Construc tion	5.81	Yes	No	100%	96%	76%	IL TRM
362	Hotel/Mote I/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012	New Construc tion	40.05	Yes	No	100%	96%	76%	IL TRM
363	AII/AII	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012	New Construc tion	36.26	Yes	No	100%	4%	76%	IL TRM
364	Hotel/Mote I/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	New Construc tion	3.09	Yes	No	100%	4%	76%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
365	AII/AII	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	New Construc tion	3.03	Yes	No	100%	4%	76%	IL TRM
366	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled AC - < 65,000 Btu/h	Time of Sale	2.61	Yes	Yes	100%	96%	33%	IL TRM
367	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC ->= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Air-cooled AC - >= 760,000 , all other heating type	Time of Sale	1.84	Yes	Yes	100%	96%	33%	IL TRM
368	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC ->= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - >= 760,000, electric resistance heating (or none)	Time of Sale	1.28	Yes	Yes	100%	96%	33%	IL TRM
369	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled condensing units - >135,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled condensing units	Time of Sale	5.79	Yes	Yes	100%	96%	33%	IL TRM
370	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Small-duct high-velocity - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Small-duct high-velocity - < 65,000 Btu/h	Time of Sale	7.26	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
371	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Through-the- wall AC - < 30,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Through-the- wall AC - < 30,000 Btu/h	Time of Sale	3.03	Yes	Yes	100%	96%	33%	IL TRM
372	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Evaporativel y cooled condensing units	Time of Sale	0.41	No	No	100%	96%	33%	IL TRM
373	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Evaporativel y-cooled AC - < 65,000 Btu/h	Time of Sale	2.85	Yes	Yes	100%	96%	33%	IL TRM
374	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Evaporativel y-cooled AC - >= 760,000 , all other heating type	Time of Sale	3.69	Yes	Yes	100%	96%	33%	IL TRM
375	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - >= 760,000, electric resistance heating (or none)	Time of Sale	3.31	Yes	Yes	100%	96%	33%	IL TRM
376	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporativel y-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	Time of Sale	3.12	Yes	Yes	100%	96%	33%	IL TRM

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377	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	Time of Sale	2.76	Yes	Yes	100%	96%	33%	IL TRM
378	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Evaporativel y-cooled AC - 240,000 - 760,000 , all other heating section type	Time of Sale	2.42	Yes	Yes	100%	96%	33%	IL TRM
379	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	Time of Sale	2.94	Yes	Yes	100%	96%	33%	IL TRM
380	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporativel y-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	Time of Sale	2.94	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
381	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	Time of Sale	2.59	Yes	Yes	100%	96%	33%	IL TRM
382	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Water- cooled AC - < 65,000 Btu/h	Time of Sale	2.85	Yes	Yes	100%	96%	33%	IL TRM
383	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Water- cooled AC - >= 760,000 , all other heating type	Time of Sale	2.76	Yes	Yes	100%	96%	33%	IL TRM
384	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - >= 760,000 , electric resistance heating (or none)	Time of Sale	2.76	Yes	Yes	100%	96%	33%	IL TRM
385	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	Time of Sale	2.25	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
386	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	Time of Sale	1.92	Yes	Yes	100%	96%	33%	IL TRM
387	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Water- cooled AC - 240,000 - 760,000 , all other heating section type	Time of Sale	2.42	Yes	Yes	100%	96%	33%	IL TRM
388	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	Time of Sale	2.08	Yes	Yes	100%	96%	33%	IL TRM
389	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	Time of Sale	2.94	Yes	Yes	100%	96%	33%	IL TRM

Measure	Sub- Sector/Buil			Efficient Measure	Baseline	Measure	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability	Technical	Not-Yet- Adopted	Poforoncos
ID	ding Type	End Use	Measure Name	Definition	Definition	Туре	TRC	Analysis	Analysis	Type*	Feasibility*	Rate*	References
390	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	Time of Sale	2.59	Yes	Yes	100%	96%	33%	IL TRM
391	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Water- cooled condensing units	Time of Sale	0.41	No	No	100%	96%	33%	IL TRM
392	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled AC - < 65,000 Btu/h	New Construc tion	2.61	Yes	No	100%	96%	33%	IL TRM
393	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Through-the- wall AC - < 30,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Through-the- wall AC - < 30,000 Btu/h	New Construc tion	3.03	Yes	No	100%	96%	33%	IL TRM
394	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled Small-duct high-velocity - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled Small-duct high-velocity - < 65,000 Btu/h	New Construc tion	7.26	Yes	No	100%	96%	33%	IL TRM
395	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC ->= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - >= 760,000, electric resistance heating (or none)	New Construc tion	1.28	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
396	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled AC ->= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Air-cooled AC - >= 760,000 , all other heating type	New Construc tion	1.84	Yes	No	100%	96%	33%	IL TRM
397	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Water- cooled AC - < 65,000 Btu/h	New Construc tion	2.85	Yes	No	100%	96%	33%	IL TRM
398	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construc tion	2.59	Yes	No	100%	96%	33%	IL TRM
399	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water- cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construc tion	2.94	Yes	No	100%	96%	33%	IL TRM
400	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construc tion	1.92	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
401	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Water- cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construc tion	2.25	Yes	No	100%	96%	33%	IL TRM
402	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construc tion	2.08	Yes	No	100%	96%	33%	IL TRM
403	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Water- cooled AC - 240,000 - 760,000 , all other heating section type	New Construc tion	2.42	Yes	No	100%	96%	33%	IL TRM
404	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Water- cooled AC - >= 760,000 , electric resistance heating (or none)	New Construc tion	2.76	Yes	No	100%	96%	33%	IL TRM
405	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Water- cooled AC - >= 760,000 , all other heating type	New Construc tion	2.76	Yes	No	100%	96%	33%	IL TRM

	Sub-			Efficient				Measure Included in Economic	Measure Included in Achievable	Applicability		Not-Yet-	
Measure	Sector/Buil	Fieldles		Measure	Baseline	Measure	Measure	Potential	Potential	to Building	Technical	Adopted	References
406	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - < 65,000 Btu/h exceeding IECC 2012	IECC 2012 Evaporativel y-cooled AC - < 65,000 Btu/h	New Construc tion	2.85	Yes	No	100%	96%	33%	IL TRM
407	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construc tion	2.59	Yes	No	100%	96%	33%	IL TRM
408	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporativel y-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construc tion	2.94	Yes	No	100%	96%	33%	IL TRM
409	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construc tion	2.76	Yes	No	100%	96%	33%	IL TRM
410	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Evaporativel y-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construc tion	3.12	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
411	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construc tion	2.94	Yes	No	100%	96%	33%	IL TRM
412	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Evaporativel y-cooled AC - 240,000 - 760,000 , all other heating section type	New Construc tion	2.42	Yes	No	100%	96%	33%	IL TRM
413	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Evaporativel y-cooled AC - >= 760,000 , electric resistance heating (or none)	New Construc tion	3.31	Yes	No	100%	96%	33%	IL TRM
414	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively- cooled AC - >= 760,000 exceeding IECC 2012, all other heating type	IECC 2012 Evaporativel y-cooled AC - >= 760,000 , all other heating type	New Construc tion	3.69	Yes	No	100%	96%	33%	IL TRM
415	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Air-cooled condensing units - >135,000 Btu/h exceeding IECC 2012	IECC 2012 Air-cooled condensing units	New Construc tion	5.79	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
416	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Water-cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Water- cooled condensing units	New Construc tion	0.41	No	No	100%	96%	33%	IL TRM
417	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners	Evaporatively cooled condensing units - >135,000 exceeding IECC 2012	IECC 2012 Evaporativel y cooled condensing units	New Construc tion	0.41	No	No	100%	96%	33%	IL TRM
418	Ali/Ali	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type - 2018	Time of Sale	2.38	Yes	Yes	100%	96%	64%	IL TRM
419	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none) -2018	Time of Sale	2.12	Yes	Yes	100%	96%	64%	IL TRM
420	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 240,000 - 760,000, all other heating section type - 2018	Time of Sale	2.82	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
421	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 240,000 - 760,000, electric resistance heating (or none) - 2018	Time of Sale	2.49	Yes	Yes	100%	96%	54%	IL TRM
422	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type - 2018	Time of Sale	2.07	Yes	Yes	100%	3%	54%	IL TRM
423	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none) -2018	Time of Sale	1.81	Yes	Yes	100%	22%	64%	IL TRM
424	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construc tion	1.81	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
425	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construc tion	2.07	Yes	No	100%	96%	33%	IL TRM
426	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construc tion	2.12	Yes	No	100%	96%	33%	IL TRM
427	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construc tion	2.38	Yes	No	100%	96%	33%	IL TRM
428	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 240,000 - 760,000, electric resistance heating (or none)	New Construc tion	2.49	Yes	No	100%	96%	33%	IL TRM
429	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- 2018	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 240,000 - 760,000, all other heating section type	New Construc tion	2.82	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
432	Grocery/Sm all Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	1.31	Yes	Yes	85%	100%	58%	IL TRM
433	Grocery/Sm all Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.15	No	No	85%	100%	58%	IL TRM
434	Office/Smal I Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	2.80	Yes	Yes	95%	100%	45%	IL TRM
435	Office/Smal I Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.22	No	No	95%	100%	45%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
438	Restaurant/ Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.25	No	No	93%	100%	44%	IL TRM
439	Restaurant/ Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.07	No	No	93%	100%	44%	IL TRM
440	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.72	No	No	7%	100%	44%	IL TRM
441	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.07	Νο	No	7%	100%	44%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
442	Retail/Servi ce/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.28	No	No	93%	100%	50%	IL TRM
443	Retail/Servi ce/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.05	No	No	93%	100%	50%	IL TRM
448	Grocery/To tal >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	1.31	Yes	Yes	15%	100%	58%	IL TRM
449	Grocery/Sm all Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.15	No	Νο	85%	100%	58%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
450	Office/Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	2.80	Yes	Yes	5%	100%	45%	IL TRM
451	Office/Smal I Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.22	No	No	95%	100%	45%	IL TRM
452	Miscellaneo us/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.64	No	No	93%	100%	45%	IL TRM
453	Miscellaneo us/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.04	No	No	93%	100%	45%	IL TRM
Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
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454	Restaurant/ Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.25	No	No	93%	100%	44%	IL TRM
455	Restaurant/ Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.07	No	No	93%	100%	44%	IL TRM
456	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.72	No	No	7%	100%	44%	IL TRM
457	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.07	No	No	7%	100%	44%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
458	Retail/Servi ce/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Continuous fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.28	No	No	93%	100%	50%	IL TRM
459	Retail/Servi ce/Small Load (<=100 kW)	HVAC	Small Commercial Programmable Thermostats	Programmabl e thermostat with Intermittent fan model during operation	Non- programmab le thermostat requiring manual intervention to change temperature setpoint	DI	0.05	No	No	93%	100%	50%	IL TRM
462	Office/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.12	No	No	100%	1%	100%	IL TRM
463	Office/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.12	No	No	100%	1%	100%	IL TRM
464	Office/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.12	No	No	100%	1%	100%	IL TRM

Measure ID 465	Sub- Sector/Buil ding Type Miscellaneo us/All	End Use HVAC	Measure Name Demand Controlled	Efficient Measure Definition DCV, new CO2 sensors	Baseline Definition Space with no demand	Measure Type Retrofit	Measure TRC 0.14	Measure Included in Economic Potential Analysis No	Measure Included in Achievable Potential Analysis No	Applicability to Building Type* 100%	Technical Feasibility* 1%	Not-Yet- Adopted Rate* 100%	References IL TRM
			Ventilation	installed on return air systems	control capability, 17 CFM/occupa nt of OA ventilation								
466	Restaurant/ All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.14	No	No	100%	1%	100%	IL TRM
467	Retail/Servi ce/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.17	No	No	100%	1%	100%	IL TRM
469	Grocery/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.16	No	No	100%	1%	100%	IL TRM
470	School (K- 12)/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.09	No	No	100%	1%	100%	IL TRM
472	College/Uni versity/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.11	No	No	100%	1%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
473	Medical/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.10	No	No	100%	1%	100%	IL TRM
474	Hotel/Mote I/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.16	No	No	100%	1%	100%	IL TRM
475	Miscellaneo us/All	HVAC	Demand Controlled Ventilation	DCV, new CO2 sensors installed on return air systems	Space with no demand control capability, 17 CFM/occupa nt of OA ventilation	Retrofit	0.13	No	No	100%	1%	100%	IL TRM
480	Grocery/To tal >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	1.65	Yes	Yes	15%	42%	100%	IL TRM
482	Office/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	3.52	Yes	Yes	5%	55%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
484	Miscellaneo us/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.80	No	Yes	7%	55%	100%	IL TRM
486	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.31	No	Yes	7%	56%	100%	IL TRM
487	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Intermittent fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.09	No	Yes	7%	56%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
488	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.90	No	Yes	7%	56%	100%	IL TRM
489	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Intermittent fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.09	No	Yes	7%	56%	100%	IL TRM
490	Retail/Servi ce/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.35	No	Yes	7%	50%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
491	Retail/Servi ce/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Intermittent fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	Retrofit	0.06	No	Yes	7%	50%	100%	IL TRM
496	Grocery/To tal >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	1.65	Yes	Yes	15%	42%	100%	IL TRM
498	Office/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	3.52	Yes	Yes	5%	55%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
500	Miscellaneo us/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.80	No	Yes	7%	55%	100%	IL TRM
502	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.31	No	Yes	7%	56%	100%	IL TRM
503	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Intermittent fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.09	No	Yes	7%	56%	100%	IL TRM

Measure	Sub- Sector/Buil ding Type	<b>Fnd Lise</b>	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
504	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.90	No	Yes	7%	56%	100%	IL TRM
505	Restaurant/ Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Intermittent fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.09	No	Yes	7%	56%	100%	IL TRM
506	Retail/Servi ce/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Continuous fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.35	No	Yes	7%	50%	100%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
507	Retail/Servi ce/Total >100 kW	HVAC	Small Commercial Programmable Thermostat Adjustments	Programmabl e thermostat or BAS with Intermittent fan model during operation, reprogramme d to match actual facility occupancy	Commercial programmab le thermostat or BAS that do not align with a facilities actual occupancy	DI	0.06	No	Yes	7%	50%	100%	IL TRM
510	All/All	HVAC	Small Business Furnace Tune-Up	Approved technician must complete the tune-up requirements	Furnace assumed not to have had a tune-up in the past 2 years	Retrofit	0.19	No	No	100%	100%	20%	IL TRM
511	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	Time of Sale	1.39	Yes	Yes	100%	3%	54%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
512	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	Time of Sale	2.31	Yes	Yes	100%	3%	54%	IL TRM
513	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Air foil/backwar d incline inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	1.16	Yes	Yes	100%	22%	64%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
514	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	Time of Sale	1.03	Yes	Yes	100%	22%	64%	IL TRM
515	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	0.40	No	Yes	100%	22%	64%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
516	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	Time of Sale	1.71	Yes	Yes	100%	22%	64%	IL TRM
517	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	Time of Sale	2.85	Yes	Yes	100%	3%	54%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
518	Ali/Ali	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Air foil/backwar d incline inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	1.44	Yes	Yes	100%	22%	64%	IL TRM
519	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	Time of Sale	1.27	Yes	Yes	100%	22%	64%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
520	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	Time of Sale	0.49	No	Yes	100%	22%	64%	IL TRM
521	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	10 hp VSD - 10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	Time of Sale	1.95	Yes	Yes	100%	22%	64%	IL TRM
522	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	New Construc tion	1.39	Yes	No	100%	3%	54%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
523	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	New Construc tion	2.31	Yes	No	100%	3%	54%	IL TRM
524	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Air foil/backwar d incline inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construc tion	1.16	Yes	No	100%	3%	54%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
525	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	New Construc tion	1.03	Yes	No	100%	22%	64%	IL TRM
526	Ali/Ali	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	1-5 hp VSD - 1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	1-5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construc tion	0.40	No	No	100%	22%	64%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
527	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	New Construc tion	1.71	Yes	No	100%	22%	64%	IL TRM
528	AII/AII	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Chilled water pump - new motor installed w/o vsd or other methods of control	New Construc tion	2.85	Yes	No	100%	22%	64%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
529	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Air foil/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Air foil/backwar d incline inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construc tion	1.44	Yes	No	100%	3%	54%	IL TRM
530	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	7.5 hp VSD - 7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	7.5 hp VSD - Forward curved fan, with discharge dampers - new motor installed w/o vsd or other methods of control	New Construc tion	1.27	Yes	No	100%	22%	64%	IL TRM

Measure ID 531	Sub- Sector/Buil ding Type All/All	End Use HVAC	Measure Name Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	Efficient Measure Definition 7.5 hp VSD - 7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load	Baseline Definition 7.5 hp VSD - Forward curved inlet guide vanes - new motor installed w/o vsd or other methods of control	Measure Type New Construc tion	Measure TRC 0.49	Measure Included in Economic Potential Analysis No	Measure Included in Achievable Potential Analysis No	Applicability to Building Type* 100%	Technical Feasibility* 22%	Not-Yet- Adopted Rate* 64%	References IL TRM
				and necessary controls									
532	All/All	HVAC	Variable Speed Drives for HVAC Pumps and Cooling Tower Fans	10 hp VSD - 10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control - VSD applied to motor with variable load and necessary controls	10 hp VSD - Hot water pump - new motor installed w/o vsd or other methods of control	New Construc tion	1.95	Yes	No	100%	22%	64%	IL TRM
533	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type - 2023	Time of Sale	2.66	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
534	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none) - 2023	Time of Sale	2.39	Yes	Yes	100%	96%	33%	IL TRM
535	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 240,000 - 760,000, all other heating section type - 2023	Time of Sale	2.95	Yes	Yes	100%	96%	33%	IL TRM
536	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 240,000 - 760,000, electric resistance heating (or none) - 2023	Time of Sale	2.62	Yes	Yes	100%	96%	33%	IL TRM
537	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type - 2023	Time of Sale	2.47	Yes	Yes	100%	96%	33%	IL TRM

<sup>\*</sup>Commercial applicability factors were developed only for measures included in the potential analyses.

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
538	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none) - 2023	Time of Sale	2.21	Yes	Yes	100%	96%	33%	IL TRM
539	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construc tion	2.21	Yes	No	100%	96%	33%	IL TRM
540	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construc tion	2.47	Yes	No	100%	96%	33%	IL TRM
541	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construc tion	2.39	Yes	No	100%	96%	33%	IL TRM
542	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construc tion	2.66	Yes	No	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
543	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 240,000 - 760,000, electric resistance heating (or none)	New Construc tion	2.62	Yes	No	100%	96%	33%	IL TRM
544	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- 2023	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 240,000 - 760,000, all other heating section type	New Construc tion	2.95	Yes	No	100%	96%	33%	IL TRM
545	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none)	New Construc tion	4.14	Yes	No	100%	96%	33%	IL TRM
546	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type	New Construc tion	4.28	Yes	No	100%	96%	33%	IL TRM
547	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none)	New Construc tion	3.44	Yes	No	100%	96%	33%	IL TRM

	Sub-			Ffficient				Measure Included in Economic	Measure Included in Achievable	Applicability		Not-Vet-	
Measure ID	Sector/Buil ding Type	End Use	Measure Name	Measure	Baseline Definition	Measure Type	Measure TRC	Potential	Potential Analysis	to Building	Technical Feasibility*	Adopted Rate*	References
548	All/All	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type	New Construc tion	3.56	Yes	No	100%	96%	33%	IL TRM
549	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 240,000 - 760,000, electric resistance heating (or none)	New Construc tion	4.75	Yes	No	100%	96%	33%	IL TRM
550	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 240,000 - 760,000, all other heating section type	New Construc tion	4.93	Yes	No	100%	96%	33%	IL TRM
551	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , all other heating section type - Current	Time of Sale	3.56	Yes	Yes	100%	96%	33%	IL TRM
552	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 135,000 - 240,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 135,000 - 240,000 Btu/h , electric resistance heating (or none) - Current	Time of Sale	3.44	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
553	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 240,000 - 760,000, all other heating section type - Current	Time of Sale	4.93	Yes	Yes	100%	96%	33%	IL TRM
554	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 240,000 - 760,000 exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 240,000 - 760,000, electric resistance heating (or none) - Current	Time of Sale	4.75	Yes	Yes	100%	96%	33%	IL TRM
555	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, all other heating section type	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , all other heating section type - Current	Time of Sale	4.28	Yes	Yes	100%	96%	33%	IL TRM
556	AII/AII	HVAC	Single-Package and Split System Unitary Air Conditioners- Current	Air-cooled AC - 65,000 - 135,000 Btu/h exceeding IECC 2012, electric resistance heating (or none)	IECC 2012 Air-cooled AC - 65,000 - 135,000 Btu/h , electric resistance heating (or none) - Current	Time of Sale	4.14	Yes	Yes	100%	96%	33%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
557	Ali/Ali	Lighting	Occupancy Sensor Lighting Controls	Wall-mounted passive infrared, ultrasonic detectors, and/or fixture- mounted sensors	Lighting System Uncontrolled by Occupancy	Retrofit	10.75	Yes	Yes	100%	100%	95%	IL TRM
558	All/All	Lighting	Occupancy Sensor Lighting Controls	Remote- mounted passive infrared, ultrasonic detectors, and/or fixture- mounted sensors	Lighting System Uncontrolled by Occupancy	Retrofit	11.47	Yes	Yes	100%	100%	95%	IL TRM
559	AII/AII	Lighting	Occupancy Sensor Lighting Controls	Fixture- mounted passive infrared, ultrasonic detectors, and/or fixture- mounted sensors	Lighting System Uncontrolled by Occupancy	Retrofit	0.55	No	Yes	100%	100%	95%	IL TRM
560	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	RWT8 - F32/25W T8/T5 Extra Lamp Life	F32 T8 standard lamp	Time of Sale	4.07	Yes	Yes	8%	98%	62%	IL TRM
561	All/Total >100 kW	Lighting	High Performance and Reduced Wattage T8/T5 Fixtures and Lamps	RWT8 - F32/25W T8/T5 Extra Lamp Life	F32 T8 standard lamp	Retrofit	1.81	Yes	Yes	8%	98%	62%	IL TRM

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
562	All/Medium Load (Over 100 kW <= 400 kW)	Lighting	Commercial Custom Measure	Custom Lighting Upgrades	Custom Lighting Baseline	Retrofit	2.44	Yes	Yes	6%	100%	100%	ICF
563	All/Total >100 kW	Miscellaneo us	Commercial Custom Measure	Custom Non- Ligthing Upgrades	Custom Non- Lighting Baseline	Retrofit	6.79	Yes	Yes	8%	100%	100%	ICF
564	All/Small Load (<=100 kW)	Lighting	Small Business Program Lighting Upgrades	Alternative SB Lighting Approach Saving 22773 kWh gross	Regular Lighting Approach	Retrofit	5.17	Yes	Yes	100%	100%	100%	ICF
565	All/Small Load (<=100 kW)	Refrigeration	Small Business Program Refrigeration Upgrades	Alternative SB Refrigeration Approach Saving 2530 kWh gross	Regular Refrigeration Approach	Retrofit	7.03	Yes	Yes	100%	100%	100%	ICF
566	All/Small Load (<=100 kW)	Miscellaneo us	Sm New Const <=100K sq ft	More Efficient than IECC2015 construction	IECC2015 Code construction - Sm New Const	New Construc tion	10.36	Yes	Yes	92%	100%	100%	ICF
567	All/Total >100 kW	Miscellaneo us	Lrg New Const >100K sq ft	More Efficient than IECC2015 construction	IECC2015 Code construction - Lrg New Const	New Construc tion	5.56	Yes	Yes	8%	100%	100%	ICF
4223	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2 airflow	Retrofit	1.72	No	Yes	100%	0%	100%	ICF

Measure ID	Sub- Sector/Buil ding Type	Fnd Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
4224	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2 airflow	Retrofit	0.86	No	Yes	100%	0%	100%	ICF
4225	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 airflow	Retrofit	11.86	No	Yes	100%	0%	100%	ICF
4226	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 airflow	Retrofit	11.62	No	Yes	100%	0%	100%	ICF
4227	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with application optimization and load balancing - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2	Retrofit	2.68	No	Yes	100%	0%	100%	ICF
4228	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with application optimization and load balancing - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2	Retrofit	1.51	No	Yes	100%	0%	100%	ICF

Measure	Sub- Sector/Buil	End Lico	Mossuro Namo	Efficient Measure	Baseline	Measure	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Building Turo*	Technical	Not-Yet- Adopted	References
4220	Miscellanoo	Miscollanoo	Load Distribution	Data contor	Basolino	Potrofit	2.74	No	Vos	100%		100%	ICE
4229	us/All	us		with application optimization and load balancing - Data Center - 25000 ft2	data center post energy audit - Data Center - 25000 ft2	Retront	2.74	NU	Tes	100%	076	100%	ις
4230	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with application optimization and load balancing - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2	Retrofit	2.74	No	Yes	100%	0%	100%	ICF
4231	Miscellaneo us/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 No economizer	Retrofit	3.70	No	Yes	100%	0%	100%	ICF
4232	Miscellaneo us/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 No economizer	Retrofit	3.62	No	Yes	100%	0%	100%	ICF
4233	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2 airflow	New Construc tion	5.34	No	Yes	100%	0%	100%	ICF

Measure ID 4234	Sub- Sector/Buil ding Type Miscellaneo us/All	End Use HVAC	Measure Name Air Flow Management	Efficient Measure Definition High- efficiency airflow	Baseline Definition Baseline data center pott operation	Measure Type New Construc tion	Measure TRC 2.86	Measure Included in Economic Potential Analysis No	Measure Included in Achievable Potential Analysis Yes	Applicability to Building Type* 100%	Technical Feasibility* 0%	Not-Yet- Adopted Rate* 100%	References ICF
				configuration - Data Center - 10000 ft2	audit - Data Center - 10000 ft2 airflow	tion							
4235	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 airflow	New Construc tion	93.08	No	Yes	100%	0%	100%	ICF
4236	Miscellaneo us/All	HVAC	Air Flow Management	High- efficiency airflow configuration - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 airflow	New Construc tion	129.09	No	Yes	100%	0%	100%	ICF
4237	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with transformerle ss PDU's and load balancing - Data Center - 5000 ft2	Baseline data center post energy audit - Data Center - 5000 ft2	New Construc tion	5.76	No	Yes	100%	0%	100%	ICF
4238	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with transformerle ss PDU's and load balancing - Data Center - 10000 ft2	Baseline data center post energy audit - Data Center - 10000 ft2	New Construc tion	3.36	No	Yes	100%	0%	100%	ICF
4239	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with transformerle ss PDU's and load balancing - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2	New Construc tion	20.42	No	Yes	100%	0%	100%	ICF

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
4240	Miscellaneo us/All	Miscellaneo us	Load Distribution	Data center with transformerle ss PDU's and load balancing - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2	New Construc tion	20.38	No	Yes	100%	0%	100%	ICF
4241	Miscellaneo us/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 25000 ft2	Baseline data center post energy audit - Data Center - 25000 ft2 No economizer	New Construc tion	41.08	No	Yes	100%	0%	100%	ICF
4242	Miscellaneo us/All	HVAC	Waterside Economizer	Waterside economizer and associate controls installed - Data Center - 50000 ft2	Baseline data center post energy audit - Data Center - 50000 ft2 No economizer	New Construc tion	40.24	No	Yes	100%	0%	100%	ICF
4246	All/Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Other	RetroCommissio ning	Data Center RCx	Data Center RCx - Baseline	Retrofit	7.10	Yes	Yes	0%	3%	99%	ICF
4247	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissio ning	Education RCx	Education RCx - Baseline	Retrofit	4.61	Yes	Yes	1%	14%	99%	ICF
4248	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissio ning	Hospital RCx	Hospital RCx - Baseline	Retrofit	4.46	Yes	Yes	1%	2%	99%	ICF

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
4249	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissio ning	Lodging RCx	Lodging RCx - Baseline	Retrofit	2.42	Yes	Yes	1%	21%	99%	ICF
4250	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissio ning	Office RCx	Office RCx - Baseline	Retrofit	3.86	Yes	Yes	1%	1%	99%	ICF
4251	All/Large Load (Over 400 kW <= 1,000 kW)	Other	RetroCommissio ning	Other RCx	Other RCx - Baseline	Retrofit	1.02	Yes	Yes	1%	3%	99%	ICF
4252	All/Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Other	RetroCommissio ning	Small Building - Data Center RCx	Small Building - Data Center RCx - Baseline	Retrofit	9.09	Yes	Yes	0%	6%	99%	ICF
4253	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissio ning	Small Building - Education RCx	Small Building - Education RCx - Baseline	Retrofit	2.77	Yes	Yes	6%	14%	99%	ICF
4254	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissio ning	Small Building - Hospital RCx	Small Building - Hospital RCx - Baseline	Retrofit	2.30	Yes	Yes	6%	4%	99%	ICF
4255	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissio ning	Small Building - Lodging RCx	Small Building - Lodging RCx - Baseline	Retrofit	1.13	Yes	Yes	6%	27%	99%	ICF

Measure ID	Sub- Sector/Buil ding Type	End Use	Measure Name	Efficient Measure Definition	Baseline Definition	Measure Type	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Building Type*	Technical Feasibility*	Not-Yet- Adopted Rate*	References
4256	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissio ning	Small Building - Office RCx	Small Building - Office RCx - Baseline	Retrofit	2.05	Yes	Yes	6%	5%	99%	ICF
4257	All/Medium Load (Over 100 kW <= 400 kW)	Other	RetroCommissio ning	Small Building - Other RCx	Small Building - Other RCx - Baseline	Retrofit	0.44	Yes	Yes	6%	6%	99%	ICF
4258	All/Large Load (Over 400 kW <= 1,000 kW)	Other	DCEO Commercial	0	0	Retrofit	0.00	No	Yes	1%	100%	90%	ICF
629	Multifamily /Gas Heating	Lighting	MF DI Lighting	0	0	Direct Install	1.32	#N/A	Yes	87%	62%	100%	IL TRM
630	Multifamily /Electric Heating	Lighting	MF DI Lighting	0	0	Direct Install	1.19	#N/A	Yes	13%	62%	100%	IL TRM

# Appendix F: Industrial Measure Assumptions

ComEd Energy Efficiency Potential Study Report, 2017-2030

#### Appendix F: Industrial Measure Assumptions

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
1	Industrial	Transformers	Per kWh	100%	30	0.00166667	\$11.4	0.4	NO	NO	100%	100%	100%
2	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.025	\$39.0	0.6	No	No	100%	55%	60%
3	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.0375	\$41.7	0.9	No	No	100%	27%	87%
4	Industrial	Insulation (Oven)	Per kWh	100%	15	0.0125	\$22.2	0.4	No	No	100%	90%	33%
5	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
6	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.0375	\$4.2	8.7	Yes	Yes	100%	27%	87%
7	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.0125	\$2.2	4.4	Yes	Yes	100%	90%	33%
8	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
9	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	0%	100%
10	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.0125	\$2.2	4.4	Yes	Yes	100%	0%	100%
11	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	0%	100%
12	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.0125	\$0.4	21.9	Yes	Yes	100%	0%	100%
13	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.0425	\$85.9	0.5	No	No	100%	20%	84%
14	Industrial	Optimized Distribution System	Per kWh	100%	25	0.0075	\$22.4	0.4	No	No	100%	90%	83%

#### Appendix F: Industrial Measure Assumptions

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
15	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.0225	\$117.9	0.1	No	No	100%	80%	89%
16	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.025	\$0.8	25.4	Yes	Yes	100%	20%	89%
17	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.005125	\$0.0	8.1	Yes	Yes	100%	80%	89%
18	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
19	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.015	\$0.0	23.8	Yes	Yes	100%	80%	89%
20	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.075	\$30.2	1.9	Yes	Yes	100%	80%	89%
21	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.01	\$11.6	0.6	No	No	100%	35%	78%
22	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.0125	\$22.2	0.3	No	No	100%	80%	37%
23	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.005	\$22.4	0.3	No	No	100%	80%	96%
24	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.025	\$1.1	32.3	Yes	Yes	100%	15%	97%
25	Industrial	Optimization of pumping system	Per kWh	100%	15	0.0225	\$26.1	1.0	Yes	Yes	100%	80%	99%
26	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03333333	\$27.9	1.4	Yes	Yes	100%	70%	83%
27	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	48%
			Meas	Measure	Measur	Baseline	Total Measure		Measure Included in Economic	Measure Included in Achievable	Applicability to	Techologi	
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Measure D	Sub- Sector	Measure Name	ure Unit	of Baseline)	e Life (Years)	Size (kW/)	Incrementai Cost (\$)	TRC	Potentiai Analysis	Potentiai Analysis	Industrial Subsector	Technicai Feasibility	NOT-YET Adopted Rate
28	Industrial	High/Premium	Per	100%	15	0.005	\$37.5	0.1	No	No	100%	80%	96%
		Efficiency Motors (Fans)	kWh										
29	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.05	\$59.7	0.5	No	No	100%	70%	86%
30	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.005	\$5.6	0.5	No	No	100%	40%	100%
31	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	48%
32	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00333333	\$22.4	0.2	No	No	100%	80%	96%
33	Industrial	Correctly sized motors	Per kWh	100%	15	0.00333333	\$14.1	0.3	No	No	100%	70%	98%
34	Industrial	Optimized motor control	Per kWh	100%	15	0.00833333	\$0.9	10.9	Yes	Yes	100%	70%	77%
35	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	48%
36	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03125	\$161.6	0.1	No	No	100%	80%	75%
37	Industrial	Optimized Distribution System	Per kWh	100%	10	0.025	\$11.2	1.2	Yes	Yes	100%	80%	82%
38	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.05	\$0.0	26.5	Yes	Yes	100%	80%	72%
39	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.025	\$77.8	0.3	No	No	100%	70%	93%
40	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.03	\$40.2	0.4	No	No	100%	80%	56%
41	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.021	\$41.3	0.5	No	No	100%	80%	75%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
42	Industrial	Sequencing Control	Per kWh	100%	5	0.025	\$16.8	0.4	No	No	100%	60%	61%
43	Industrial	Eliminate air leaks	Per kWh	100%	3	0.0375	\$9.3	0.6	No	No	100%	100%	72%
44	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.005	\$2.7	1.0	Yes	Yes	100%	40%	93%
45	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.14	\$44.7	3.0	Yes	Yes	100%	10%	99%
46	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03125	\$97.7	0.2	No	No	100%	0%	100%
47	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.0125	\$20.4	0.6	No	No	100%	0%	100%
48	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.015	\$28.8	0.3	No	No	100%	100%	89%
49	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.01258653	\$54.3	0.2	No	No	100%	10%	78%
50	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.02013845	\$2.4	5.0	Yes	Yes	3%	80%	70%
51	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.04195511	\$18.0	2.2	Yes	Yes	100%	80%	70%
52	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.11327879	\$719.6	0.2	No	No	100%	5%	84%
53	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,562.5	0.0	No	No	100%	40%	100%
54	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01468429	\$3.2	1.5	Yes	Yes	100%	80%	61%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
55	Industrial	Destratification Fans	Per	100%	10	0.10488777	\$245.0	0.3	No	No	15%	40%	94%
			kWh										
56	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.01258653	\$10.5	0.8	No	No	100%	30%	63%
57	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01048878	\$6.3	0.3	No	No	100%	100%	36%
58	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.03146633	\$184.9	0.2	No	No	5%	60%	60%
59	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0625	\$15.0	2.7	Yes	Yes	100%	100%	84%
60	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.115	\$169.5	0.3	No	No	100%	100%	84%
61	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.0375	\$11.9	2.0	Yes	Yes	100%	100%	92%
62	Industrial	Lighting controls	Per kWh	100%	8	0.0375	\$47.1	0.4	No	No	100%	80%	99%
63	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0	#DIV/0!	65535.0	Yes	Yes	100%	60%	89%
64	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0	#DIV/0!	65535.0	Yes	Yes	80%	60%	99%
65	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00209776	\$14.3	0.3	No	No	100%	100%	100%
66	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.025	\$39.0	0.6	No	No	100%	15%	87%
67	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.0375	\$41.7	0.9	No	No	100%	9%	87%
68	Industrial	Insulation (Oven)	Per kWh	100%	15	0.0125	\$22.2	0.4	No	No	100%	90%	33%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
69	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
70	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.0375	\$4.2	8.7	Yes	Yes	100%	9%	87%
71	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.0125	\$2.2	4.4	Yes	Yes	100%	90%	33%
72	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
73	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	0%	100%
74	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.0125	\$2.2	4.4	Yes	Yes	100%	0%	100%
75	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	0%	100%
76	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.0125	\$0.4	21.9	Yes	Yes	100%	0%	100%
77	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.0425	\$85.9	0.5	No	No	100%	10%	93%
78	Industrial	Optimized Distribution System	Per kWh	100%	25	0.0075	\$22.4	0.4	No	No	100%	93%	82%
79	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.0225	\$117.9	0.1	No	No	100%	80%	90%
80	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.025	\$0.8	25.4	Yes	Yes	100%	10%	93%
81	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.005125	\$0.0	8.1	Yes	Yes	100%	80%	90%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
82	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
83	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.015	\$0.0	23.8	Yes	Yes	100%	80%	90%
84	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.075	\$30.2	1.9	Yes	Yes	100%	80%	90%
85	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.01	\$11.6	0.6	No	No	100%	35%	70%
86	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.0125	\$22.2	0.3	No	No	100%	80%	57%
87	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.0075	\$33.5	0.2	No	No	100%	80%	84%
88	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.0375	\$19.6	1.8	Yes	Yes	100%	15%	99%
89	Industrial	Optimization of pumping system	Per kWh	100%	15	0.03375	\$39.1	0.7	No	No	100%	80%	95%
90	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.05	\$41.9	0.9	No	No	100%	70%	89%
91	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	53%
92	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00749906	\$56.3	0.1	No	No	100%	80%	44%
93	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.07499063	\$89.5	0.3	No	No	100%	70%	55%
94	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00749906	\$8.4	0.3	No	No	100%	40%	100%
95	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.01874766	\$0.0	19.8	Yes	Yes	100%	100%	53%

			Meas	Measure	Measur	Baseline	Total Measure		Measure Included in Economic	Measure Included in Achievable	Applicability to		
Measure	Sub-		ure	Savings (%	e Life	Technology	Incremental	Measure	Potential	Potential	Industrial	Technical	Not-Yet
96	Industrial	High/Premium	Per	100%	(rears)	0.005	\$33.5	0.1	No	No	100%	80%	
50	maastriar	Efficiency Motors	kWh	10070	15	0.005	<i>\$</i> 33.3	0.1	No		100/0	00/0	
97	Industrial	Correctly sized motors	Per kWh	100%	15	0.005	\$21.2	0.2	No	No	100%	70%	98%
98	Industrial	Optimized motor control	Per kWh	100%	15	0.0125	\$1.3	7.3	Yes	Yes	100%	70%	77%
99	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	53%
100	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03125	\$161.6	0.1	No	No	100%	80%	89%
101	Industrial	Optimized Distribution System	Per kWh	100%	10	0.025	\$11.2	1.2	Yes	Yes	100%	80%	84%
102	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.05	\$0.0	26.5	Yes	Yes	100%	80%	36%
103	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.025	\$77.8	0.3	No	No	100%	70%	84%
104	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.03	\$40.2	0.4	No	No	100%	80%	45%
105	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.021	\$41.3	0.5	No	No	100%	80%	89%
106	Industrial	Sequencing Control	Per kWh	100%	5	0.025	\$16.8	0.4	No	No	100%	75%	72%
107	Industrial	Eliminate air leaks	Per kWh	100%	3	0.0375	\$9.3	0.6	No	No	100%	100%	36%
108	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.005	\$2.7	1.0	Yes	Yes	100%	40%	95%
109	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.14	\$44.7	3.0	Yes	Yes	100%	10%	96%

Measure	Sub-	Mossuro Namo	Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
110	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03125	\$97.7	0.2	No	No	100%	0%	100%
111	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.0125	\$20.4	0.6	No	No	100%	0%	100%
112	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.015	\$28.8	0.3	No	No	100%	100%	89%
113	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.01258653	\$54.3	0.2	No	No	100%	10%	70%
114	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.02013845	\$2.4	5.0	Yes	Yes	3%	80%	70%
115	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.04195511	\$18.0	2.2	Yes	Yes	100%	80%	70%
116	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.11327879	\$719.6	0.2	No	No	100%	5%	95%
117	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,562.5	0.0	No	No	100%	40%	82%
118	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01468429	\$3.2	1.5	Yes	Yes	100%	80%	59%
119	Industrial	Destratification Fans	Per kWh	100%	10	0.10488777	\$245.0	0.3	No	No	15%	30%	93%
120	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.01258653	\$10.5	0.8	No	No	100%	30%	64%
121	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01048878	\$6.3	0.3	No	No	100%	100%	36%
122	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.03146633	\$184.9	0.2	No	No	5%	60%	87%

Measure	Sub-	Magaura Nama	Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
123	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0625	\$15.0	2.7	Yes	Yes	100%	100%	87%
124	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.115	\$169.5	0.3	No	No	100%	100%	87%
125	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.0375	\$11.9	2.0	Yes	Yes	100%	100%	92%
126	Industrial	Lighting controls	Per kWh	100%	8	0.0375	\$47.1	0.4	No	No	100%	80%	99%
127	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.075	\$59.3	1.0	No	No	100%	80%	89%
128	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.025	\$344.2	0.0	No	No	80%	80%	99%
129	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.0017507	\$12.0	0.3	No	No	100%	100%	100%
130	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0	#DIV/0!	65535.0	Yes	Yes	100%	30%	84%
131	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.0262605	\$29.2	1.2	Yes	Yes	100%	35%	81%
132	Industrial	Insulation (Oven)	Per kWh	100%	15	0.0087535	\$15.6	0.6	No	No	100%	90%	38%
133	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%
134	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.0262605	\$2.9	12.4	Yes	Yes	100%	30%	81%
135	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.0087535	\$1.6	6.3	Yes	Yes	100%	90%	38%
136	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
137	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%
138	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.0087535	\$1.6	6.3	Yes	Yes	100%	90%	38%
139	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	0%	100%
140	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.0087535	\$0.3	31.3	Yes	Yes	100%	0%	100%
141	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.04553978	\$92.0	0.5	No	No	100%	8%	99%
142	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00773994	\$23.1	0.4	No	No	100%	80%	63%
143	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.0241093	\$126.4	0.1	No	No	100%	80%	100%
144	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.02678811	\$0.9	23.7	Yes	Yes	100%	8%	63%
145	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00549156	\$0.0	8.1	Yes	Yes	100%	40%	100%
146	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.01339405	\$0.0	19.8	Yes	Yes	100%	100%	30%
147	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01607286	\$0.0	23.8	Yes	Yes	100%	40%	100%
148	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.08036432	\$32.4	1.8	Yes	Yes	100%	80%	100%
149	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.01071524	\$12.4	0.5	No	No	100%	35%	83%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
150	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.01339405	\$23.8	0.3	No	No	100%	80%	63%
151	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00558971	\$25.0	0.2	No	No	100%	80%	99%
152	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.02794857	\$14.6	2.5	Yes	Yes	100%	15%	95%
153	Industrial	Optimization of pumping system	Per kWh	100%	15	0.02515372	\$29.2	0.9	No	No	100%	80%	90%
154	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03726477	\$31.2	1.2	Yes	Yes	100%	70%	94%
155	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00931619	\$0.0	19.8	Yes	Yes	100%	100%	48%
156	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00445633	\$33.5	0.1	No	No	100%	80%	100%
157	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.04456328	\$53.2	0.5	No	No	100%	70%	86%
158	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00445633	\$5.0	0.6	No	No	100%	40%	78%
159	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.01114082	\$0.0	19.8	Yes	Yes	100%	100%	48%
160	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00389636	\$26.1	0.1	No	No	100%	80%	100%
161	Industrial	Correctly sized motors	Per kWh	100%	15	0.00389636	\$16.5	0.2	No	No	100%	70%	98%
162	Industrial	Optimized motor control	Per kWh	100%	15	0.00974089	\$1.0	9.3	Yes	Yes	100%	70%	77%
163	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00974089	\$0.0	19.8	Yes	Yes	100%	100%	48%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
164	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03224974	\$166.8	0.1	No	No	100%	80%	82%
165	Industrial	Optimized Distribution System	Per kWh	100%	10	0.02579979	\$11.5	1.2	Yes	Yes	100%	90%	68%
166	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.05159959	\$0.0	26.5	Yes	Yes	100%	80%	59%
167	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.02579979	\$80.3	0.3	No	No	100%	70%	91%
168	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.03095975	\$41.5	0.4	No	No	100%	80%	55%
169	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.02167183	\$42.7	0.5	No	No	100%	80%	82%
170	Industrial	Sequencing Control	Per kWh	100%	5	0.02579979	\$17.3	0.4	No	No	100%	75%	57%
171	Industrial	Eliminate air leaks	Per kWh	100%	3	0.03869969	\$9.6	0.6	No	No	100%	100%	59%
172	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00515996	\$2.8	1.0	No	No	100%	40%	96%
173	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.14447884	\$46.1	2.9	Yes	Yes	100%	10%	96%
174	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03224974	\$100.8	0.2	No	No	100%	0%	100%
175	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.0128999	\$21.0	0.6	No	No	100%	0%	100%
176	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01071429	\$20.6	0.4	No	No	100%	100%	89%

Naciona	Cult		Meas	Measure	Measur	Baseline	Total Measure		Measure Included in Economic	Measure Included in Achievable	Applicability to	Taskaisal	
INIEASURE ID	Sub- Sector	Measure Name	ure Unit	Savings (% of Baseline)	e Life (Years)	Size (kW)	Cost (\$)	TRC	Potentiai Analysis	Analysis	Subsector	Feasibility	NOT-YET Adopted Rate
177	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.0206044	\$88.8	0.1	No	No	100%	10%	83%
178	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.03296703	\$3.9	3.1	Yes	Yes	3%	80%	70%
179	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.06868132	\$29.5	1.3	Yes	Yes	100%	80%	70%
180	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.18543956	\$1,178.1	0.1	No	No	100%	5%	78%
181	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$2,557.8	0.0	No	No	100%	40%	99%
182	Industrial	Automated Temperature Control	Per kWh	100%	5	0.02403846	\$5.3	0.9	No	No	100%	80%	53%
183	Industrial	Destratification Fans	Per kWh	100%	10	0.1717033	\$401.1	0.2	No	No	15%	40%	96%
184	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.0206044	\$17.2	0.5	No	No	100%	30%	70%
185	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01717033	\$10.4	0.2	No	No	100%	100%	36%
186	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.05151099	\$302.7	0.1	No	No	5%	60%	84%
187	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.06009615	\$14.4	2.8	Yes	Yes	100%	100%	47%
188	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.11057692	\$163.0	0.3	No	No	100%	100%	81%
189	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.03605769	\$11.4	2.1	Yes	Yes	100%	100%	72%
190	Industrial	Lighting controls	Per kWh	100%	8	0.03605769	\$45.3	0.4	No	No	100%	80%	99%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
191	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.05589715	\$44.2	1.3	Yes	Yes	100%	80%	89%
192	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.01863238	\$256.5	0.1	No	No	80%	80%	99%
193	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00209776	\$14.3	0.3	No	No	100%	100%	100%
194	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.025	\$39.0	0.6	No	No	100%	55%	75%
195	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.0375	\$41.7	0.9	No	No	100%	35%	76%
196	Industrial	Insulation (Oven)	Per kWh	100%	15	0.0125	\$22.2	0.4	No	No	100%	90%	36%
197	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
198	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.0375	\$4.2	8.7	Yes	Yes	100%	30%	76%
199	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.0125	\$2.2	4.4	Yes	Yes	100%	90%	36%
200	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
201	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
202	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.0125	\$2.2	4.4	Yes	Yes	100%	90%	36%
203	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	0%	100%
204	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.0125	\$0.4	21.9	Yes	Yes	100%	0%	100%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
205	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.0425	\$85.9	0.5	No	No	100%	15%	94%
206	Industrial	Optimized Distribution System	Per kWh	100%	25	0.0075	\$22.4	0.4	No	No	100%	80%	96%
207	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.0225	\$117.9	0.1	No	No	100%	80%	93%
208	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.025	\$0.8	25.4	Yes	Yes	100%	15%	100%
209	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.005125	\$0.0	8.1	Yes	Yes	100%	40%	93%
210	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
211	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.015	\$0.0	23.8	Yes	Yes	100%	40%	93%
212	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.075	\$30.2	1.9	Yes	Yes	100%	80%	93%
213	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.01	\$11.6	0.6	No	No	100%	35%	81%
214	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.0125	\$22.2	0.3	No	No	100%	80%	61%
215	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.0075	\$33.5	0.2	No	No	100%	80%	91%
216	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.0375	\$19.6	1.8	Yes	Yes	100%	15%	99%
217	Industrial	Optimization of pumping system	Per kWh	100%	15	0.03375	\$39.1	0.7	No	No	100%	80%	98%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
218	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.05	\$41.9	0.9	No	No	100%	70%	94%
219	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	52%
220	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00749906	\$56.3	0.1	No	No	100%	80%	99%
221	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.07499063	\$89.5	0.3	No	No	100%	70%	78%
222	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00749906	\$8.4	0.3	No	No	100%	40%	100%
223	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.01874766	\$0.0	19.8	Yes	Yes	100%	100%	52%
224	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.005	\$33.5	0.1	No	No	100%	80%	99%
225	Industrial	Correctly sized motors	Per kWh	100%	15	0.005	\$21.2	0.2	No	No	100%	70%	98%
226	Industrial	Optimized motor control	Per kWh	100%	15	0.0125	\$1.3	7.3	Yes	Yes	100%	70%	77%
227	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	52%
228	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03125	\$161.6	0.1	No	No	100%	80%	75%
229	Industrial	Optimized Distribution System	Per kWh	100%	10	0.025	\$11.2	1.2	Yes	Yes	100%	80%	53%
230	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.05	\$0.0	26.5	Yes	Yes	100%	80%	56%
231	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.025	\$77.8	0.3	No	No	100%	70%	81%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
232	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.03	\$40.2	0.4	No	No	100%	80%	44%
233	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.021	\$41.3	0.5	No	No	100%	80%	75%
234	Industrial	Sequencing Control	Per kWh	100%	5	0.025	\$16.8	0.4	No	No	100%	75%	64%
235	Industrial	Eliminate air leaks	Per kWh	100%	3	0.0375	\$9.3	0.6	No	No	100%	100%	56%
236	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.005	\$2.7	1.0	Yes	Yes	100%	40%	93%
237	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.14	\$44.7	3.0	Yes	Yes	100%	10%	98%
238	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03125	\$97.7	0.2	No	No	100%	0%	100%
239	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.0125	\$20.4	0.6	No	No	100%	0%	100%
240	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.015	\$28.8	0.3	No	No	100%	100%	89%
241	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.01258653	\$54.3	0.2	No	No	100%	10%	81%
242	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.02013845	\$2.4	5.0	Yes	Yes	3%	80%	70%
243	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.04195511	\$18.0	2.2	Yes	Yes	100%	80%	70%
244	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.11327879	\$719.6	0.2	No	No	100%	5%	93%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
245	Industrial	Ventilation Heat	Per	#DIV/0!	15	0	\$1,562.5	0.0	No	No	100%	40%	94%
		Recovery	kWh										
246	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01468429	\$3.2	1.5	Yes	Yes	100%	80%	67%
247	Industrial	Destratification Fans	Per kWh	100%	10	0.10488777	\$245.0	0.3	No	No	15%	40%	91%
248	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.01258653	\$10.5	0.8	No	No	100%	30%	57%
249	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01048878	\$6.3	0.3	No	No	100%	100%	36%
250	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.03146633	\$184.9	0.2	No	No	5%	60%	75%
251	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0625	\$15.0	2.7	Yes	Yes	100%	100%	83%
252	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.115	\$169.5	0.3	No	No	100%	100%	80%
253	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.0375	\$11.9	2.0	Yes	Yes	100%	100%	92%
254	Industrial	Lighting controls	Per kWh	100%	8	0.0375	\$47.1	0.4	No	No	100%	80%	99%
255	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.075	\$59.3	1.0	No	No	100%	80%	89%
256	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.025	\$344.2	0.0	No	No	80%	80%	99%
257	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.0017507	\$12.0	0.3	No	No	100%	100%	100%
258	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0	#DIV/0!	65535.0	Yes	Yes	100%	15%	87%

Measure	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (%	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental	Measure	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet
259	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.0262605	\$29.2	1.2	Yes	Yes	100%	9%	87%
260	Industrial	Insulation (Oven)	Per kWh	100%	15	0.0087535	\$15.6	0.6	No	No	100%	90%	33%
261	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%
262	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.0262605	\$2.9	12.4	Yes	Yes	100%	9%	87%
263	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.0087535	\$1.6	6.3	Yes	Yes	100%	90%	33%
264	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%
265	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	0%	100%
266	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.0087535	\$1.6	6.3	Yes	Yes	100%	0%	100%
267	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	0%	100%
268	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.0087535	\$0.3	31.3	Yes	Yes	100%	0%	100%
269	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.04553978	\$92.0	0.5	No	No	100%	10%	93%
270	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00773994	\$23.1	0.4	No	No	100%	93%	82%
271	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.0241093	\$126.4	0.1	No	No	100%	80%	90%
272	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.02678811	\$0.9	23.7	Yes	Yes	100%	10%	93%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
273	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00549156	\$0.0	8.1	Yes	Yes	100%	80%	90%
274	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.01339405	\$0.0	19.8	Yes	Yes	100%	100%	36%
275	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01607286	\$0.0	23.8	Yes	Yes	100%	80%	90%
276	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.08036432	\$32.4	1.8	Yes	Yes	100%	80%	90%
277	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.01071524	\$12.4	0.5	No	No	100%	35%	70%
278	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.01339405	\$23.8	0.3	No	No	100%	80%	57%
279	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00558971	\$25.0	0.2	No	No	100%	80%	84%
280	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.02794857	\$14.6	2.5	Yes	Yes	100%	15%	99%
281	Industrial	Optimization of pumping system	Per kWh	100%	15	0.02515372	\$29.2	0.9	No	No	100%	80%	95%
282	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03726477	\$31.2	1.2	Yes	Yes	100%	70%	86%
283	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00931619	\$0.0	19.8	Yes	Yes	100%	100%	48%
284	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00445633	\$33.5	0.1	No	No	100%	80%	44%
285	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.04456328	\$53.2	0.5	No	No	100%	70%	86%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
286	Industrial	Synchronous Belts	Per	100%	(Years) 10	0.00445633	\$5.0	0.6	No	No	100%	40%	100%
		(1 a115)	KVVII										
287	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.01114082	\$0.0	19.8	Yes	Yes	100%	100%	48%
288	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00389636	\$26.1	0.1	No	No	100%	80%	44%
289	Industrial	Correctly sized motors	Per kWh	100%	15	0.00389636	\$16.5	0.2	No	No	100%	70%	98%
290	Industrial	Optimized motor control	Per kWh	100%	15	0.00974089	\$1.0	9.3	Yes	Yes	100%	70%	77%
291	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00974089	\$0.0	19.8	Yes	Yes	100%	100%	48%
292	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03224974	\$166.8	0.1	No	No	100%	80%	89%
293	Industrial	Optimized Distribution System	Per kWh	100%	10	0.02579979	\$11.5	1.2	Yes	Yes	100%	80%	84%
294	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.05159959	\$0.0	26.5	Yes	Yes	100%	80%	36%
295	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.02579979	\$80.3	0.3	No	No	100%	70%	84%
296	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.03095975	\$41.5	0.4	No	No	100%	80%	45%
297	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.02167183	\$42.7	0.5	No	No	100%	80%	89%
298	Industrial	Sequencing Control	Per kWh	100%	5	0.02579979	\$17.3	0.4	No	No	100%	75%	72%
299	Industrial	Eliminate air leaks	Per kWh	100%	3	0.03869969	\$9.6	0.6	No	No	100%	100%	36%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
300	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00515996	\$2.8	1.0	No	No	100%	40%	95%
301	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.14447884	\$46.1	2.9	Yes	Yes	100%	10%	96%
302	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.03224974	\$100.8	0.2	No	No	100%	0%	100%
303	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.0128999	\$21.0	0.6	No	No	100%	0%	100%
304	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01071429	\$20.6	0.4	No	No	100%	100%	89%
305	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.01123806	\$48.4	0.2	No	No	100%	10%	70%
306	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.0179809	\$2.1	5.6	Yes	Yes	3%	80%	70%
307	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.0374602	\$16.1	2.4	Yes	Yes	100%	80%	70%
308	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.10114254	\$642.5	0.2	No	No	100%	5%	95%
309	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,395.1	0.0	No	No	100%	40%	82%
310	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01311107	\$2.9	1.7	Yes	Yes	100%	80%	59%
311	Industrial	Destratification Fans	Per kWh	100%	10	0.0936505	\$218.8	0.3	No	No	15%	30%	93%
312	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.01123806	\$9.4	0.9	No	No	100%	30%	64%

Magguro	Sub		Meas	Measure	Measur	Baseline	Total Measure	Moosuro	Measure Included in Economic	Measure Included in Achievable	Applicability to	Technical	Not Vot
ID	Sub- Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
313	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00936505	\$5.7	0.4	No	No	100%	100%	36%
314	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.02809515	\$165.1	0.2	No	No	5%	60%	87%
315	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.06009615	\$14.4	2.8	Yes	Yes	100%	100%	87%
316	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.11057692	\$163.0	0.3	No	No	100%	100%	80%
317	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.03605769	\$11.4	2.1	Yes	Yes	100%	100%	92%
318	Industrial	Lighting controls	Per kWh	100%	8	0.03605769	\$45.3	0.4	No	No	100%	80%	99%
319	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.05589715	\$44.2	1.3	Yes	Yes	100%	80%	89%
320	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.01863238	\$256.5	0.1	No	No	80%	80%	99%
321	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.0017507	\$12.0	0.3	No	No	100%	100%	100%
322	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.017507	\$27.3	0.9	No	No	100%	90%	81%
323	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.0262605	\$29.2	1.2	Yes	Yes	100%	9%	85%
324	Industrial	Insulation (Oven)	Per kWh	100%	15	0.0087535	\$15.6	0.6	No	No	100%	90%	55%
325	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%
326	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.0262605	\$2.9	12.4	Yes	Yes	100%	9%	85%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
327	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.0087535	\$1.6	6.3	Yes	Yes	100%	95%	55%
328	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	100%	36%
329	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	0%	100%
330	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.0087535	\$1.6	6.3	Yes	Yes	100%	0%	100%
331	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.0087535	\$0.0	19.8	Yes	Yes	100%	0%	100%
332	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.0087535	\$0.3	31.3	Yes	Yes	100%	0%	100%
333	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.04553978	\$92.0	0.5	No	No	100%	10%	97%
334	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00663423	\$19.8	0.4	No	No	100%	80%	98%
335	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.0241093	\$126.4	0.1	No	No	100%	80%	90%
336	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.02678811	\$0.9	23.7	Yes	Yes	100%	10%	93%
337	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00549156	\$0.0	8.1	Yes	Yes	100%	35%	90%
338	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.01339405	\$0.0	19.8	Yes	Yes	100%	100%	36%
339	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01607286	\$0.0	23.8	Yes	Yes	100%	35%	90%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
340	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.08036432	\$32.4	1.8	Yes	Yes	100%	80%	90%
341	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.01071524	\$12.4	0.5	No	No	100%	35%	100%
342	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.01339405	\$23.8	0.3	No	No	100%	80%	81%
343	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00558971	\$25.0	0.2	No	No	100%	80%	96%
344	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.02794857	\$14.6	2.5	Yes	Yes	100%	15%	96%
345	Industrial	Optimization of pumping system	Per kWh	100%	15	0.02515372	\$29.2	0.9	No	No	100%	80%	94%
346	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03726477	\$31.2	1.2	Yes	Yes	100%	70%	66%
347	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00931619	\$0.0	19.8	Yes	Yes	100%	100%	48%
348	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00445633	\$33.5	0.1	No	No	100%	80%	97%
349	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.04456328	\$53.2	0.5	No	No	100%	70%	92%
350	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00445633	\$5.0	0.6	No	No	100%	40%	100%
351	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.01114082	\$0.0	19.8	Yes	Yes	100%	100%	48%
352	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00504159	\$33.8	0.1	No	No	100%	80%	97%
353	Industrial	Correctly sized motors	Per kWh	100%	15	0.00504159	\$21.4	0.2	No	No	100%	70%	96%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
354	Industrial	Optimized motor control	Per kWh	100%	15	0.01260398	\$1.4	7.2	Yes	Yes	100%	70%	93%
355	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.01260398	\$0.0	19.8	Yes	Yes	100%	100%	48%
356	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02764264	\$142.9	0.1	No	No	100%	80%	96%
357	Industrial	Optimized Distribution System	Per kWh	100%	10	0.02211411	\$9.9	1.4	Yes	Yes	100%	90%	87%
358	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.04422822	\$0.0	26.5	Yes	Yes	100%	80%	59%
359	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.02211411	\$68.8	0.4	No	No	100%	70%	95%
360	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.02653693	\$35.6	0.5	No	No	100%	80%	55%
361	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.01857585	\$36.6	0.6	No	No	100%	80%	96%
362	Industrial	Sequencing Control	Per kWh	100%	5	0.02211411	\$14.8	0.5	No	No	100%	75%	89%
363	Industrial	Eliminate air leaks	Per kWh	100%	3	0.03317116	\$8.2	0.7	No	No	100%	100%	59%
364	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00442282	\$2.4	1.1	Yes	Yes	100%	40%	98%
365	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.12383901	\$39.5	3.4	Yes	Yes	100%	10%	99%
366	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02764264	\$86.4	0.2	No	No	100%	0%	100%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
367	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.01105705	\$18.0	0.7	No	No	100%	0%	100%
368	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01071429	\$20.6	0.4	No	No	100%	100%	89%
369	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.0206044	\$88.8	0.1	No	No	100%	10%	100%
370	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.03296703	\$3.9	3.1	Yes	Yes	3%	80%	70%
371	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.06868132	\$29.5	1.3	Yes	Yes	100%	80%	70%
372	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.18543956	\$1,178.1	0.1	No	No	100%	5%	96%
373	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$2,557.8	0.0	No	No	100%	40%	98%
374	Industrial	Automated Temperature Control	Per kWh	100%	5	0.02403846	\$5.3	0.9	No	No	100%	80%	85%
375	Industrial	Destratification Fans	Per kWh	100%	10	0.1717033	\$401.1	0.2	No	No	15%	20%	96%
376	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.0206044	\$17.2	0.5	No	No	100%	30%	70%
377	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01717033	\$10.4	0.2	No	No	100%	100%	36%
378	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.05151099	\$302.7	0.1	No	No	5%	60%	81%
379	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.06009615	\$14.4	2.8	Yes	Yes	100%	100%	89%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
1D 380	Industrial	High Efficiency Light	Per	of Baseline)	(Years) 7	Size (KW) 0 11057692	Cost (\$) \$163.0	0 3	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
500	muustnur	fixtures	kWh	10070	,	0.11057052	<i>Ş</i> 103.0	0.5		No	100/5	10070	0370
381	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.03605769	\$11.4	2.1	Yes	Yes	100%	100%	95%
382	Industrial	Lighting controls	Per kWh	100%	8	0.03605769	\$45.3	0.4	No	No	100%	80%	99%
383	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0	#DIV/0!	65535.0	Yes	Yes	100%	0%	89%
384	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0	#DIV/0!	65535.0	Yes	Yes	80%	0%	99%
385	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00116713	\$8.0	0.5	No	No	100%	100%	100%
386	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.01167134	\$18.2	1.3	Yes	Yes	100%	70%	69%
387	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.04180602	\$46.5	0.8	No	No	100%	9%	79%
388	Industrial	Insulation (Oven)	Per kWh	100%	15	0.01393534	\$24.8	0.4	No	No	100%	90%	42%
389	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.01393534	\$0.0	19.8	Yes	Yes	100%	100%	36%
390	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.04180602	\$4.6	7.8	Yes	Yes	100%	9%	79%
391	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.01393534	\$2.5	3.9	Yes	Yes	100%	90%	42%
392	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.01393534	\$0.0	19.8	Yes	Yes	100%	100%	36%
393	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.01393534	\$0.0	19.8	Yes	Yes	100%	100%	36%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
394	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.01393534	\$2.5	3.9	Yes	Yes	100%	90%	42%
395	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.01393534	\$0.0	19.8	Yes	Yes	100%	100%	36%
396	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.01393534	\$0.5	19.6	Yes	Yes	100%	90%	42%
397	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.03541667	\$71.6	0.6	No	No	100%	15%	82%
398	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00631579	\$18.8	0.4	No	No	100%	90%	94%
399	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.01875	\$98.3	0.2	No	No	100%	80%	84%
400	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.02083333	\$0.7	30.4	Yes	Yes	100%	15%	87%
401	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00427083	\$0.0	8.1	Yes	Yes	100%	60%	84%
402	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.01041667	\$0.0	19.8	Yes	Yes	100%	100%	42%
403	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.0125	\$0.0	23.8	Yes	Yes	100%	60%	84%
404	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.0625	\$25.2	2.3	Yes	Yes	100%	80%	84%
405	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00833333	\$9.7	0.7	No	No	100%	35%	80%
406	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.01041667	\$18.5	0.4	No	No	100%	80%	61%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
407	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00521739	Ş23.3	0.3	No	No	100%	80%	99%
408	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.02608696	\$13.6	2.7	Yes	Yes	100%	15%	99%
409	Industrial	Optimization of pumping system	Per kWh	100%	15	0.02347826	\$27.2	1.0	No	No	100%	80%	99%
410	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03478261	\$29.2	1.3	Yes	Yes	100%	70%	86%
411	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00869565	\$0.0	19.8	Yes	Yes	100%	100%	46%
412	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00356506	\$26.8	0.1	No	No	100%	80%	99%
413	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.03565062	\$42.5	0.6	No	No	100%	70%	94%
414	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00356506	\$4.0	0.7	No	No	100%	40%	100%
415	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.00891266	\$0.0	19.8	Yes	Yes	100%	100%	46%
416	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00470588	\$31.6	0.1	No	No	100%	80%	99%
417	Industrial	Correctly sized motors	Per kWh	100%	15	0.00470588	\$20.0	0.2	No	No	100%	70%	99%
418	Industrial	Optimized motor control	Per kWh	100%	15	0.01176471	\$1.3	7.7	Yes	Yes	100%	70%	96%
419	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.01176471	\$0.0	19.8	Yes	Yes	100%	100%	46%
420	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02631579	\$136.1	0.1	No	No	100%	80%	89%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
421	Industrial	Optimized Distribution System	Per kWh	100%	10	0.02105263	\$9.4	1.5	Yes	Yes	100%	80%	81%
422	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.04210526	\$0.0	26.5	Yes	Yes	100%	80%	61%
423	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.02105263	\$65.5	0.4	No	No	100%	70%	93%
424	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.02526316	\$33.9	0.5	No	No	100%	80%	45%
425	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.01768421	\$34.8	0.6	No	No	100%	80%	89%
426	Industrial	Sequencing Control	Per kWh	100%	5	0.02105263	\$14.1	0.5	No	No	100%	60%	69%
427	Industrial	Eliminate air leaks	Per kWh	100%	3	0.03157895	\$7.8	0.8	No	No	100%	100%	61%
428	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00421053	\$2.3	1.2	Yes	Yes	100%	40%	94%
429	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.11789474	\$37.6	3.6	Yes	Yes	100%	10%	98%
430	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02631579	\$82.2	0.2	No	No	100%	70%	85%
431	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.01052632	\$17.2	0.7	No	No	100%	50%	70%
432	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01470588	\$28.3	0.3	No	No	100%	100%	89%
433	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.0103022	\$44.4	0.2	No	No	100%	10%	80%

			Meas	Measure	Measur	Baseline	Total Measure		Measure Included in Economic	Measure Included in Achievable	Applicability to		
Measure	Sub-	Moasuro Namo	ure Unit	Savings (%	e Life	Technology	Incremental	Measure	Potential	Potential	Industrial	Technical Foosibility	Not-Yet
434	Industrial	High efficiency non-	Per	100%	9	0.01648352	\$2.0	6.2	Yes	Yes	3%	80%	70%
		packaged HVAC equipment	kWh				·						
435	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.03434066	\$14.8	2.6	Yes	Yes	100%	80%	70%
436	Industrial	Ground Source Heat	Per	100%	20	0.09271978	\$589.0	0.2	No	No	100%	5%	89%
		Pump	kWh										
437	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,278.9	0.0	No	No	100%	40%	92%
438	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01201923	\$2.7	1.9	Yes	Yes	100%	80%	46%
439	Industrial	Destratification Fans	Per kWh	100%	10	0.08585165	\$200.6	0.3	No	No	15%	40%	94%
440	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.0103022	\$8.6	1.0	No	No	100%	30%	66%
441	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00858516	\$5.2	0.4	No	No	100%	100%	36%
442	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.02575549	\$151.4	0.2	No	No	5%	60%	69%
443	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0462963	\$11.1	3.6	Yes	Yes	100%	100%	86%
444	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.08518519	\$125.5	0.4	No	No	100%	100%	74%
445	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.02777778	\$8.8	2.7	Yes	Yes	100%	100%	96%
446	Industrial	Lighting controls	Per kWh	100%	8	0.02777778	\$34.9	0.5	No	No	100%	80%	99%
447	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.05217391	\$41.2	1.4	Yes	Yes	100%	80%	89%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
448	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.0173913	\$239.4	0.1	No	No	80%	80%	99%
449	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.0013986	\$9.6	0.4	No	No	100%	100%	100%
450	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.01666667	\$21.6	1.1	Yes	Yes	100%	55%	60%
451	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.025	\$27.8	1.3	Yes	Yes	100%	27%	83%
452	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00833333	\$14.8	0.7	No	No	100%	90%	10%
453	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
454	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.025	\$2.8	13.0	Yes	Yes	100%	27%	83%
455	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00833333	\$1.5	6.6	Yes	Yes	100%	90%	10%
456	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
457	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	0%	100%
458	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00833333	\$1.5	6.6	Yes	Yes	100%	0%	100%
459	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	0%	100%
460	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00833333	\$0.3	32.8	Yes	Yes	100%	0%	100%
461	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.02833333	\$57.2	0.8	No	No	100%	20%	79%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
462	Industrial	Optimized Distribution System	Per kWh	100%	25	0.005	\$14.9	0.6	No	No	100%	90%	77%
463	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.015	\$78.6	0.2	No	No	100%	80%	85%
464	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.01666667	\$0.5	38.1	Yes	Yes	100%	20%	85%
465	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00341667	\$0.0	8.1	Yes	Yes	100%	80%	85%
466	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
467	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01	\$0.0	23.8	Yes	Yes	100%	80%	85%
468	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.05	\$20.2	2.9	Yes	Yes	100%	80%	85%
469	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00666667	\$7.7	0.8	No	No	100%	35%	71%
470	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.00833333	\$14.8	0.5	No	No	100%	80%	16%
471	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.005	\$22.4	0.3	No	No	100%	80%	94%
472	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.025	\$13.0	2.8	Yes	Yes	100%	15%	96%
473	Industrial	Optimization of pumping system	Per kWh	100%	15	0.0225	\$26.1	1.0	Yes	Yes	100%	80%	98%
474	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03333333	\$27.9	1.4	Yes	Yes	100%	70%	77%

Measure	Sub-	Measure Name	Meas ure	Measure Savings (%	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental	Measure	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial	Technical	Not-Yet
475	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	31%
476	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00333333	\$25.0	0.2	No	No	100%	80%	95%
477	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.03333333	\$39.8	0.7	No	No	100%	70%	81%
478	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00333333	\$3.7	0.7	No	No	100%	40%	100%
479	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	31%
480	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00333333	\$22.4	0.2	No	No	100%	80%	95%
481	Industrial	Correctly sized motors	Per kWh	100%	15	0.00333333	\$14.1	0.3	No	No	100%	70%	98%
482	Industrial	Optimized motor control	Per kWh	100%	15	0.00833333	\$0.9	10.9	Yes	Yes	100%	70%	77%
483	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	31%
484	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02083333	\$107.7	0.2	No	No	100%	80%	66%
485	Industrial	Optimized Distribution System	Per kWh	100%	10	0.01666667	\$7.5	1.8	Yes	Yes	100%	80%	76%
486	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.03333333	\$0.0	26.5	Yes	Yes	100%	80%	63%
487	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.01666667	\$51.9	0.5	No	No	100%	70%	90%
488	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.02	\$26.8	0.6	No	No	100%	80%	41%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
489	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.014	\$27.6	0.7	No	No	100%	80%	66%
490	Industrial	Sequencing Control	Per kWh	100%	5	0.01666667	\$11.2	0.6	No	No	100%	60%	48%
491	Industrial	Eliminate air leaks	Per kWh	100%	3	0.025	\$6.2	1.0	No	No	100%	100%	63%
492	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00333333	\$1.8	1.5	Yes	Yes	100%	40%	90%
493	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.09333333	\$29.8	4.5	Yes	Yes	100%	10%	99%
494	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02083333	\$65.1	0.3	No	No	100%	0%	100%
495	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.00833333	\$13.6	0.9	No	No	100%	0%	100%
496	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01	\$19.2	0.4	No	No	100%	100%	85%
497	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.00839161	\$36.2	0.2	No	No	100%	10%	71%
498	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.01342657	\$1.6	7.6	Yes	Yes	3%	80%	60%
499	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.03356643	\$12.0	3.9	Yes	Yes	100%	80%	60%
500	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.07552448	\$479.8	0.3	No	No	100%	5%	78%
501	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,041.7	0.0	No	No	100%	40%	100%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
502	Industrial	Automated Temperature Control	Per kWh	100%	5	0.00979021	\$2.2	2.3	Yes	Yes	100%	80%	48%
503	Industrial	Destratification Fans	Per kWh	100%	10	0.06993007	\$163.4	0.4	No	No	15%	40%	92%
504	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.00839161	\$7.0	1.2	Yes	Yes	100%	30%	51%
505	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00699301	\$4.2	0.5	No	No	100%	100%	15%
506	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.02097902	\$123.3	0.2	No	No	5%	60%	60%
507	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.04166667	\$10.0	4.0	Yes	Yes	100%	100%	79%
508	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.07666667	\$113.0	0.4	No	No	100%	100%	79%
509	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.025	\$7.9	3.0	Yes	Yes	100%	100%	89%
510	Industrial	Lighting controls	Per kWh	100%	8	0.025	\$31.4	0.6	No	No	100%	80%	99%
511	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0	#DIV/0!	65535.0	Yes	Yes	100%	60%	85%
512	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0	#DIV/0!	65535.0	Yes	Yes	20%	60%	98%
513	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.0013986	\$9.6	0.4	No	No	100%	100%	100%
514	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.01666667	\$21.6	1.1	Yes	Yes	100%	15%	83%
515	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.025	\$27.8	1.3	Yes	Yes	100%	9%	83%
Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
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516	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00833333	\$14.8	0.7	No	No	100%	90%	10%
517	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
518	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.025	\$2.8	13.0	Yes	Yes	100%	9%	83%
519	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00833333	\$1.5	6.6	Yes	Yes	100%	90%	10%
520	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
521	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	0%	100%
522	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00833333	\$1.5	6.6	Yes	Yes	100%	0%	100%
523	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	0%	100%
524	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00833333	\$0.3	32.8	Yes	Yes	100%	0%	100%
525	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.02833333	\$57.2	0.8	No	No	100%	10%	91%
526	Industrial	Optimized Distribution System	Per kWh	100%	25	0.005	\$14.9	0.6	No	No	100%	93%	76%
527	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.015	\$78.6	0.2	No	No	100%	80%	86%
528	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.01666667	\$0.5	38.1	Yes	Yes	100%	10%	91%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
529	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00341667	\$0.0	8.1	Yes	Yes	100%	80%	86%
530	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
531	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01	\$0.0	23.8	Yes	Yes	100%	80%	86%
532	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.05	\$20.2	2.9	Yes	Yes	100%	80%	86%
533	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00666667	\$7.7	0.8	No	No	100%	35%	60%
534	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.00833333	\$14.8	0.5	No	No	100%	80%	43%
535	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.005	\$22.4	0.3	No	No	100%	80%	78%
536	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.025	\$13.0	2.8	Yes	Yes	100%	15%	98%
537	Industrial	Optimization of pumping system	Per kWh	100%	15	0.0225	\$26.1	1.0	Yes	Yes	100%	80%	93%
538	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03333333	\$27.9	1.4	Yes	Yes	100%	70%	85%
539	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	37%
540	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.005	\$37.5	0.1	No	No	100%	80%	25%
541	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.05	\$59.7	0.5	No	No	100%	70%	40%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
542	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.005	\$5.6	0.5	No	No	100%	40%	100%
543	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	37%
544	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00333333	\$22.4	0.2	No	No	100%	80%	25%
545	Industrial	Correctly sized motors	Per kWh	100%	15	0.00333333	\$14.1	0.3	No	No	100%	70%	98%
546	Industrial	Optimized motor control	Per kWh	100%	15	0.00833333	\$0.9	10.9	Yes	Yes	100%	70%	77%
547	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	37%
548	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02083333	\$107.7	0.2	No	No	100%	80%	85%
549	Industrial	Optimized Distribution System	Per kWh	100%	10	0.01666667	\$7.5	1.8	Yes	Yes	100%	80%	79%
550	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.03333333	\$0.0	26.5	Yes	Yes	100%	80%	15%
551	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.01666667	\$51.9	0.5	No	No	100%	70%	79%
552	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.02	\$26.8	0.6	No	No	100%	80%	27%
553	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.014	\$27.6	0.7	No	No	100%	80%	85%
554	Industrial	Sequencing Control	Per kWh	100%	5	0.01666667	\$11.2	0.6	No	No	100%	75%	63%
555	Industrial	Eliminate air leaks	Per kWh	100%	3	0.025	\$6.2	1.0	No	No	100%	100%	15%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
556	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00333333	\$1.8	1.5	Yes	Yes	100%	40%	93%
557	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.09333333	\$29.8	4.5	Yes	Yes	100%	10%	95%
558	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02083333	\$65.1	0.3	No	No	100%	0%	100%
559	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.00833333	\$13.6	0.9	No	No	100%	0%	100%
560	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01	\$19.2	0.4	No	No	100%	100%	85%
561	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.00839161	\$36.2	0.2	No	No	100%	10%	60%
562	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.01342657	\$1.6	7.6	Yes	Yes	3%	80%	60%
563	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.03356643	\$12.0	3.9	Yes	Yes	100%	80%	60%
564	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.07552448	\$479.8	0.3	No	No	100%	5%	93%
565	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,041.7	0.0	No	No	100%	40%	76%
566	Industrial	Automated Temperature Control	Per kWh	100%	5	0.00979021	\$2.2	2.3	Yes	Yes	100%	80%	45%
567	Industrial	Destratification Fans	Per kWh	100%	10	0.06993007	\$163.4	0.4	No	No	15%	30%	90%
568	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.00839161	\$7.0	1.2	Yes	Yes	100%	30%	52%

Maasura	Cub		Meas	Measure	Measur	Baseline	Total Measure	Moosuro	Measure Included in Economic	Measure Included in Achievable	Applicability to	Technical	Not Vot
ID	Sub- Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
569	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00699301	\$4.2	0.5	No	No	100%	100%	15%
570	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.02097902	\$123.3	0.2	No	No	5%	60%	83%
571	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.04166667	\$10.0	4.0	Yes	Yes	100%	100%	83%
572	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.07666667	\$113.0	0.4	No	No	100%	100%	83%
573	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.025	\$7.9	3.0	Yes	Yes	100%	100%	89%
574	Industrial	Lighting controls	Per kWh	100%	8	0.025	\$31.4	0.6	No	No	100%	80%	98%
575	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.05	\$39.8	1.5	Yes	Yes	100%	80%	85%
576	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.01666667	\$229.5	0.1	No	No	20%	80%	98%
577	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00116713	\$8.0	0.5	No	No	100%	100%	100%
578	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0	#DIV/0!	65535.0	Yes	Yes	100%	30%	79%
579	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.017507	\$19.5	1.9	Yes	Yes	100%	35%	75%
580	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00583567	\$10.4	0.9	No	No	100%	90%	17%
581	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
582	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.017507	\$1.9	18.6	Yes	Yes	100%	30%	75%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
583	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00583567	\$1.0	9.4	Yes	Yes	100%	90%	17%
584	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
585	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
586	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00583567	\$1.0	9.4	Yes	Yes	100%	90%	17%
587	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	0%	100%
588	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00583567	\$0.2	46.9	Yes	Yes	100%	0%	100%
589	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.03035714	\$61.3	0.7	No	No	100%	8%	98%
590	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00442282	\$13.2	0.6	No	No	100%	80%	50%
591	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.01607143	\$84.2	0.2	No	No	100%	80%	100%
592	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.01785714	\$0.6	35.5	Yes	Yes	100%	8%	50%
593	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00366071	\$0.0	8.1	Yes	Yes	100%	40%	100%
594	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.00892857	\$0.0	19.8	Yes	Yes	100%	100%	7%
595	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01071429	\$0.0	23.8	Yes	Yes	100%	40%	100%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
596	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.05357143	\$21.6	2.7	Yes	Yes	100%	80%	100%
597	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00714286	\$8.3	0.8	No	No	100%	35%	77%
598	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.00892857	\$15.8	0.4	No	No	100%	80%	50%
599	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00372671	\$16.7	0.4	No	No	100%	80%	99%
600	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.01863354	\$9.7	3.7	Yes	Yes	100%	15%	93%
601	Industrial	Optimization of pumping system	Per kWh	100%	15	0.01677019	\$19.4	1.4	Yes	Yes	100%	80%	86%
602	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.02484472	\$20.8	1.9	Yes	Yes	100%	70%	92%
603	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00621118	\$0.0	19.8	Yes	Yes	100%	100%	31%
604	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00254647	\$19.1	0.2	No	No	100%	80%	100%
605	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.02546473	\$30.4	0.9	No	No	100%	70%	81%
606	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00254647	\$2.8	1.0	No	No	100%	40%	71%
607	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.00636618	\$0.0	19.8	Yes	Yes	100%	100%	31%
608	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.0025974	\$17.4	0.2	No	No	100%	80%	100%
609	Industrial	Correctly sized motors	Per kWh	100%	15	0.0025974	\$11.0	0.4	No	No	100%	70%	97%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
610	Industrial	Optimized motor control	Per kWh	100%	15	0.00649351	\$0.7	14.0	Yes	Yes	100%	70%	69%
611	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00649351	\$0.0	19.8	Yes	Yes	100%	100%	31%
612	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.01842842	\$95.3	0.2	No	No	100%	80%	76%
613	Industrial	Optimized Distribution System	Per kWh	100%	10	0.01474274	\$6.6	2.1	Yes	Yes	100%	90%	57%
614	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.02948548	\$0.0	26.5	Yes	Yes	100%	80%	45%
615	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.01474274	\$45.9	0.5	No	No	100%	70%	88%
616	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.01769129	\$23.7	0.7	No	No	100%	80%	40%
617	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.0123839	\$24.4	0.8	No	No	100%	80%	76%
618	Industrial	Sequencing Control	Per kWh	100%	5	0.01474274	\$9.9	0.7	No	No	100%	75%	43%
619	Industrial	Eliminate air leaks	Per kWh	100%	3	0.02211411	\$5.5	1.1	Yes	Yes	100%	100%	45%
620	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00294855	\$1.6	1.7	Yes	Yes	100%	40%	94%
621	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.08255934	\$26.4	5.1	Yes	Yes	100%	10%	95%
622	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.01842842	\$57.6	0.3	No	No	100%	0%	100%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
623	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.00737137	\$12.0	1.0	Yes	Yes	100%	0%	100%
624	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.00714286	\$13.7	0.6	No	No	100%	100%	85%
625	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.01373626	\$59.2	0.1	No	No	100%	10%	77%
626	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.02197802	\$2.6	4.6	Yes	Yes	3%	80%	60%
627	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.05494505	\$19.6	2.4	Yes	Yes	100%	80%	60%
628	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.12362637	\$785.4	0.2	No	No	100%	5%	71%
629	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,705.2	0.0	No	No	100%	40%	98%
630	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01602564	\$3.5	1.4	Yes	Yes	100%	80%	37%
631	Industrial	Destratification Fans	Per kWh	100%	10	0.11446886	\$267.4	0.3	No	No	15%	40%	95%
632	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.01373626	\$11.5	0.7	No	No	100%	30%	60%
633	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01144689	\$6.9	0.3	No	No	100%	100%	15%
634	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.03434066	\$201.8	0.1	No	No	5%	60%	79%
635	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0400641	\$9.6	4.2	Yes	Yes	100%	100%	29%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
636	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.07371795	\$108.6	0.4	No	No	100%	100%	74%
637	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.02403846	\$7.6	3.2	Yes	Yes	100%	100%	62%
638	Industrial	Lighting controls	Per kWh	100%	8	0.02403846	\$30.2	0.6	No	No	100%	80%	99%
639	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.03726708	\$29.7	2.0	Yes	Yes	100%	80%	85%
640	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.01242236	\$171.0	0.1	No	No	20%	80%	98%
641	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.0013986	\$9.6	0.4	No	No	100%	100%	100%
642	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.01666667	\$21.6	1.1	Yes	Yes	100%	55%	66%
643	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.025	\$27.8	1.3	Yes	Yes	100%	35%	68%
644	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00833333	\$14.8	0.7	No	No	100%	90%	14%
645	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
646	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.025	\$2.8	13.0	Yes	Yes	100%	30%	68%
647	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00833333	\$1.5	6.6	Yes	Yes	100%	90%	14%
648	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
649	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
650	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00833333	\$1.5	6.6	Yes	Yes	100%	90%	14%
651	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	0%	100%
652	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00833333	\$0.3	32.8	Yes	Yes	100%	0%	100%
653	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.02833333	\$57.2	0.8	No	No	100%	15%	92%
654	Industrial	Optimized Distribution System	Per kWh	100%	25	0.005	\$14.9	0.6	No	No	100%	80%	95%
655	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.015	\$78.6	0.2	No	No	100%	80%	90%
656	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.01666667	\$0.5	38.1	Yes	Yes	100%	15%	100%
657	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00341667	\$0.0	8.1	Yes	Yes	100%	40%	90%
658	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	15%
659	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01	\$0.0	23.8	Yes	Yes	100%	40%	90%
660	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.05	\$20.2	2.9	Yes	Yes	100%	80%	90%
661	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00666667	\$7.7	0.8	No	No	100%	35%	74%
662	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.00833333	\$14.8	0.5	No	No	100%	80%	48%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
663	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.005	\$22.4	0.3	No	No	100%	80%	88%
664	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.025	\$13.0	2.8	Yes	Yes	100%	15%	99%
665	Industrial	Optimization of pumping system	Per kWh	100%	15	0.0225	\$26.1	1.0	Yes	Yes	100%	80%	97%
666	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03333333	\$27.9	1.4	Yes	Yes	100%	70%	92%
667	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	36%
668	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.005	\$37.5	0.1	No	No	100%	80%	98%
669	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.05	\$59.7	0.5	No	No	100%	70%	70%
670	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.005	\$5.6	0.5	No	No	100%	40%	100%
671	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.0125	\$0.0	19.8	Yes	Yes	100%	100%	36%
672	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00333333	\$22.4	0.2	No	No	100%	80%	98%
673	Industrial	Correctly sized motors	Per kWh	100%	15	0.00333333	\$14.1	0.3	No	No	100%	70%	98%
674	Industrial	Optimized motor control	Per kWh	100%	15	0.00833333	\$0.9	10.9	Yes	Yes	100%	70%	77%
675	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00833333	\$0.0	19.8	Yes	Yes	100%	100%	36%
676	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02083333	\$107.7	0.2	No	No	100%	80%	66%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
677	Industrial	Optimized Distribution System	Per kWh	100%	10	0.01666667	\$7.5	1.8	Yes	Yes	100%	80%	37%
678	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.03333333	\$0.0	26.5	Yes	Yes	100%	80%	41%
679	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.01666667	\$51.9	0.5	No	No	100%	70%	75%
680	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.02	\$26.8	0.6	No	No	100%	80%	25%
681	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.014	\$27.6	0.7	No	No	100%	80%	66%
682	Industrial	Sequencing Control	Per kWh	100%	5	0.01666667	\$11.2	0.6	No	No	100%	75%	52%
683	Industrial	Eliminate air leaks	Per kWh	100%	3	0.025	\$6.2	1.0	No	No	100%	100%	41%
684	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00333333	\$1.8	1.5	Yes	Yes	100%	40%	90%
685	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.09333333	\$29.8	4.5	Yes	Yes	100%	10%	97%
686	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02083333	\$65.1	0.3	No	No	100%	0%	100%
687	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.00833333	\$13.6	0.9	No	No	100%	0%	100%
688	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01	\$19.2	0.4	No	No	100%	100%	85%
689	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.00839161	\$36.2	0.2	No	No	100%	10%	74%

			Meas	Measure	Measur	Baseline	Total Measure		Measure Included in Economic	Measure Included in Achievable	Applicability to		
Measure	Sub-	Measure Name	ure Unit	Savings (%	e Life (Vears)	Technology	Incremental	Measure	Potential	Potential	Industrial Subsector	Technical Feasibility	Not-Yet
690	Industrial	High efficiency non-	Per	100%	9	0.01342657	\$1.6	7.6	Yes	Yes	3%	80%	60%
		packaged HVAC equipment	kWh				·						
691	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.03356643	\$12.0	3.9	Yes	Yes	100%	80%	60%
692	Industrial	Ground Source Heat	Per	100%	20	0.07552448	\$479.8	0.3	No	No	100%	5%	90%
		Pump	kWh										
693	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,041.7	0.0	No	No	100%	40%	92%
694	Industrial	Automated Temperature Control	Per kWh	100%	5	0.00979021	\$2.2	2.3	Yes	Yes	100%	80%	56%
695	Industrial	Destratification Fans	Per kWh	100%	10	0.06993007	\$163.4	0.4	No	No	15%	40%	88%
696	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.00839161	\$7.0	1.2	Yes	Yes	100%	30%	43%
697	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00699301	\$4.2	0.5	No	No	100%	100%	15%
698	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.02097902	\$123.3	0.2	No	No	5%	60%	66%
699	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.04166667	\$10.0	4.0	Yes	Yes	100%	100%	77%
700	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.07666667	\$113.0	0.4	No	No	100%	100%	74%
701	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.025	\$7.9	3.0	Yes	Yes	100%	100%	89%
702	Industrial	Lighting controls	Per kWh	100%	8	0.025	\$31.4	0.6	No	No	100%	80%	99%
703	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.05	\$39.8	1.5	Yes	Yes	100%	80%	85%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
704	industrial	Ventilation	kWh	10070	10	0.01000007	<i>4223.3</i>	0.1	No		2070	0070	3070
705	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00116713	\$8.0	0.5	No	No	100%	100%	100%
706	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0	#DIV/0!	65535.0	Yes	Yes	100%	15%	83%
707	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.017507	\$19.5	1.9	Yes	Yes	100%	9%	83%
708	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00583567	\$10.4	0.9	No	No	100%	90%	10%
709	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
710	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.017507	\$1.9	18.6	Yes	Yes	100%	9%	83%
711	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00583567	\$1.0	9.4	Yes	Yes	100%	90%	10%
712	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
713	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	0%	100%
714	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00583567	\$1.0	9.4	Yes	Yes	100%	0%	100%
715	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	0%	100%
716	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00583567	\$0.2	46.9	Yes	Yes	100%	0%	100%
717	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.03035714	\$61.3	0.7	No	No	100%	10%	91%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
718	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00442282	\$13.2	0.6	No	No	100%	93%	76%
719	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.01607143	\$84.2	0.2	No	No	100%	80%	87%
720	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.01785714	\$0.6	35.5	Yes	Yes	100%	10%	91%
721	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00366071	\$0.0	8.1	Yes	Yes	100%	80%	87%
722	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.00892857	\$0.0	19.8	Yes	Yes	100%	100%	15%
723	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01071429	\$0.0	23.8	Yes	Yes	100%	80%	87%
724	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.05357143	\$21.6	2.7	Yes	Yes	100%	80%	87%
725	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00714286	\$8.3	0.8	No	No	100%	35%	60%
726	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.00892857	\$15.8	0.4	No	No	100%	80%	43%
727	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00372671	\$16.7	0.4	No	No	100%	80%	78%
728	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.01863354	\$9.7	3.7	Yes	Yes	100%	15%	98%
729	Industrial	Optimization of pumping system	Per kWh	100%	15	0.01677019	\$19.4	1.4	Yes	Yes	100%	80%	93%
730	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.02484472	\$20.8	1.9	Yes	Yes	100%	70%	81%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
731	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00621118	\$0.0	19.8	Yes	Yes	100%	100%	31%
732	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00254647	\$19.1	0.2	No	No	100%	80%	25%
733	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.02546473	\$30.4	0.9	No	No	100%	70%	81%
734	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00254647	\$2.8	1.0	No	No	100%	40%	100%
735	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.00636618	\$0.0	19.8	Yes	Yes	100%	100%	31%
736	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.0030303	\$20.3	0.2	No	No	100%	80%	25%
737	Industrial	Correctly sized motors	Per kWh	100%	15	0.0030303	\$12.9	0.3	No	No	100%	70%	98%
738	Industrial	Optimized motor control	Per kWh	100%	15	0.00757576	\$0.8	12.0	Yes	Yes	100%	70%	77%
739	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00757576	\$0.0	19.8	Yes	Yes	100%	100%	31%
740	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.01842842	\$95.3	0.2	No	No	100%	80%	85%
741	Industrial	Optimized Distribution System	Per kWh	100%	10	0.01474274	\$6.6	2.1	Yes	Yes	100%	80%	79%
742	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.02948548	\$0.0	26.5	Yes	Yes	100%	80%	15%
743	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.01474274	\$45.9	0.5	No	No	100%	70%	79%
744	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.01769129	\$23.7	0.7	No	No	100%	80%	27%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
745	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.0123839	\$24.4	0.8	No	No	100%	80%	85%
746	Industrial	Sequencing Control	Per kWh	100%	5	0.01474274	\$9.9	0.7	No	No	100%	75%	63%
747	Industrial	Eliminate air leaks	Per kWh	100%	3	0.02211411	\$5.5	1.1	Yes	Yes	100%	100%	15%
748	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00294855	\$1.6	1.7	Yes	Yes	100%	40%	93%
749	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.08255934	\$26.4	5.1	Yes	Yes	100%	10%	95%
750	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.01842842	\$57.6	0.3	No	No	100%	0%	100%
751	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.00737137	\$12.0	1.0	Yes	Yes	100%	0%	100%
752	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.00714286	\$13.7	0.6	No	No	100%	100%	85%
753	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.00749251	\$32.3	0.3	No	No	100%	10%	60%
754	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.01198801	\$1.4	8.5	Yes	Yes	3%	80%	60%
755	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.02997003	\$10.7	4.4	Yes	Yes	100%	80%	60%
756	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.06743257	\$428.4	0.3	No	No	100%	5%	93%
757	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$930.1	0.0	No	No	100%	40%	76%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
ID	Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
758	Industrial	Automated Temperature Control	Per kWh	100%	5	0.00874126	\$1.9	2.5	Yes	Yes	100%	80%	45%
759	Industrial	Destratification Fans	Per kWh	100%	10	0.06243756	\$145.9	0.5	No	No	15%	30%	90%
760	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.00749251	\$6.2	1.3	Yes	Yes	100%	30%	52%
761	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00624376	\$3.8	0.5	No	No	100%	100%	15%
762	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.01873127	\$110.1	0.3	No	No	5%	60%	83%
763	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0400641	\$9.6	4.2	Yes	Yes	100%	100%	83%
764	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.07371795	\$108.6	0.4	No	No	100%	100%	80%
765	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.02403846	\$7.6	3.2	Yes	Yes	100%	100%	89%
766	Industrial	Lighting controls	Per kWh	100%	8	0.02403846	\$30.2	0.6	No	No	100%	80%	99%
767	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.03726708	\$29.7	2.0	Yes	Yes	100%	80%	85%
768	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.01242236	\$171.0	0.1	No	No	20%	80%	98%
769	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00116713	\$8.0	0.5	No	No	100%	100%	100%
770	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.01167134	\$15.1	1.6	Yes	Yes	100%	90%	75%
771	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.017507	\$19.5	1.9	Yes	Yes	100%	9%	80%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (S)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
772	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00583567	\$10.4	0.9	No	No	100%	90%	40%
773	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
774	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.017507	\$1.9	18.6	Yes	Yes	100%	9%	80%
775	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00583567	\$1.0	9.4	Yes	Yes	100%	95%	40%
776	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	100%	15%
777	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	0%	100%
778	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00583567	\$1.0	9.4	Yes	Yes	100%	0%	100%
779	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00583567	\$0.0	19.8	Yes	Yes	100%	0%	100%
780	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00583567	\$0.2	46.9	Yes	Yes	100%	0%	100%
781	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.03035714	\$61.3	0.7	No	No	100%	10%	96%
782	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00442282	\$13.2	0.6	No	No	100%	80%	97%
783	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.01607143	\$84.2	0.2	No	No	100%	80%	87%
784	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.01785714	\$0.6	35.5	Yes	Yes	100%	10%	90%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
785	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00366071	\$0.0	8.1	Yes	Yes	100%	35%	87%
786	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.00892857	\$0.0	19.8	Yes	Yes	100%	100%	15%
787	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.01071429	\$0.0	23.8	Yes	Yes	100%	35%	87%
788	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.05357143	\$21.6	2.7	Yes	Yes	100%	80%	87%
789	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00714286	\$8.3	0.8	No	No	100%	35%	100%
790	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.00892857	\$15.8	0.4	No	No	100%	80%	75%
791	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00372671	\$16.7	0.4	No	No	100%	80%	94%
792	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.01863354	\$9.7	3.7	Yes	Yes	100%	15%	95%
793	Industrial	Optimization of pumping system	Per kWh	100%	15	0.01677019	\$19.4	1.4	Yes	Yes	100%	80%	92%
794	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.02484472	\$20.8	1.9	Yes	Yes	100%	70%	54%
795	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00621118	\$0.0	19.8	Yes	Yes	100%	100%	31%
796	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00254647	\$19.1	0.2	No	No	100%	80%	96%
797	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.02546473	\$30.4	0.9	No	No	100%	70%	89%

Measure	Sub-		Meas ure	Measure Savings (%	Measur e Life	Baseline Technology	Total Measure Incremental	Measure	Measure Included in Economic Potential	Measure Included in Achievable Potential	Applicability to Industrial	Technical	Not-Yet
1D 798	Sector	Synchronous Belts	Unit Per	of Baseline)	(Years) 10	Size (kW) 0.00254647	Cost (\$) \$2.8	1.0	Analysis	Analysis	Subsector	Feasibility 40%	Adopted Rate
730	maastinai	(Fans)	kWh	10070	10	0.00251017	<i></i>	1.0		110	100/0	1070	100/0
799	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.00636618	\$0.0	19.8	Yes	Yes	100%	100%	31%
800	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00392157	\$26.3	0.1	No	No	100%	80%	96%
801	Industrial	Correctly sized motors	Per kWh	100%	15	0.00392157	\$16.6	0.2	No	No	100%	70%	95%
802	Industrial	Optimized motor control	Per kWh	100%	15	0.00980392	\$1.1	9.2	Yes	Yes	100%	70%	90%
803	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.00980392	\$0.0	19.8	Yes	Yes	100%	100%	31%
804	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.01842842	\$95.3	0.2	No	No	100%	80%	95%
805	Industrial	Optimized Distribution System	Per kWh	100%	10	0.01474274	\$6.6	2.1	Yes	Yes	100%	90%	83%
806	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.02948548	\$0.0	26.5	Yes	Yes	100%	80%	45%
807	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.01474274	\$45.9	0.5	No	No	100%	70%	93%
808	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.01769129	\$23.7	0.7	No	No	100%	80%	40%
809	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.0123839	\$24.4	0.8	No	No	100%	80%	95%
810	Industrial	Sequencing Control	Per kWh	100%	5	0.01474274	\$9.9	0.7	No	No	100%	75%	85%
811	Industrial	Eliminate air leaks	Per kWh	100%	3	0.02211411	\$5.5	1.1	Yes	Yes	100%	100%	45%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
812	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00294855	\$1.6	1.7	Yes	Yes	100%	40%	97%
813	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.08255934	\$26.4	5.1	Yes	Yes	100%	10%	99%
814	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.01842842	\$57.6	0.3	No	No	100%	0%	100%
815	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.00737137	\$12.0	1.0	Yes	Yes	100%	0%	100%
816	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.00714286	\$13.7	0.6	No	No	100%	100%	85%
817	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.01373626	\$59.2	0.1	No	No	100%	10%	100%
818	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.02197802	\$2.6	4.6	Yes	Yes	3%	80%	60%
819	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.05494505	\$19.6	2.4	Yes	Yes	100%	80%	60%
820	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.12362637	\$785.4	0.2	No	No	100%	5%	95%
821	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,705.2	0.0	No	No	100%	40%	97%
822	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01602564	\$3.5	1.4	Yes	Yes	100%	80%	80%
823	Industrial	Destratification Fans	Per kWh	100%	10	0.11446886	\$267.4	0.3	No	No	15%	20%	95%
824	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.01373626	\$11.5	0.7	No	No	100%	30%	60%

Maacuro	Sub		Meas	Measure	Measur	Baseline	Total Measure	Moosuro	Measure Included in Economic	Measure Included in Achievable	Applicability to	Tochnical	Not Vot
ID	Sub- Sector	Measure Name	Unit	of Baseline)	(Years)	Size (kW)	Cost (\$)	TRC	Analysis	Analysis	Subsector	Feasibility	Adopted Rate
825	Industrial	Preventative	Per	100%	3	0.01144689	\$6.9	0.3	No	No	100%	100%	15%
		Maintenance	KVVII										
826	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.03434066	\$201.8	0.1	No	No	5%	60%	75%
827	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0400641	\$9.6	4.2	Yes	Yes	100%	100%	85%
828	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.07371795	\$108.6	0.4	No	No	100%	100%	85%
829	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.02403846	\$7.6	3.2	Yes	Yes	100%	100%	93%
830	Industrial	Lighting controls	Per kWh	100%	8	0.02403846	\$30.2	0.6	No	No	100%	80%	99%
831	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0	#DIV/0!	65535.0	Yes	Yes	100%	0%	85%
832	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0	#DIV/0!	65535.0	Yes	Yes	20%	0%	98%
833	Industrial	HE Dry-Type Transformers	Per kWh	100%	30	0.00116713	\$8.0	0.5	No	No	100%	100%	100%
834	Industrial	Process Heat Recovery to Preheat Makeup Water	Per kWh	100%	20	0.01167134	\$15.1	1.6	Yes	Yes	100%	70%	59%
835	Industrial	Air Curtains (Oven)	Per kWh	100%	20	0.02787068	\$31.0	1.2	Yes	Yes	100%	9%	72%
836	Industrial	Insulation (Oven)	Per kWh	100%	15	0.00929023	\$16.5	0.6	No	No	100%	90%	23%
837	Industrial	Preventative Oven Maintenance	Per kWh	100%	3	0.00929023	\$0.0	19.8	Yes	Yes	100%	100%	15%
838	Industrial	Air Curtains (Dryer)	Per kWh	100%	20	0.02787068	\$3.1	11.7	Yes	Yes	100%	9%	72%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
839	Industrial	Insulation (Dryer)	Per kWh	100%	15	0.00929023	\$1.7	5.9	Yes	Yes	100%	90%	23%
840	Industrial	Preventative Dryer Maintenance	Per kWh	100%	3	0.00929023	\$0.0	19.8	Yes	Yes	100%	100%	15%
841	Industrial	Preventative Furnace Maintenance	Per kWh	100%	3	0.00929023	\$0.0	19.8	Yes	Yes	100%	100%	15%
842	Industrial	Insulation (Furnace)	Per kWh	100%	15	0.00929023	\$1.7	5.9	Yes	Yes	100%	90%	23%
843	Industrial	Preventative Kiln Maintenance	Per kWh	100%	3	0.00929023	\$0.0	19.8	Yes	Yes	100%	100%	15%
844	Industrial	Insulation (Kiln)	Per kWh	100%	15	0.00929023	\$0.3	29.5	Yes	Yes	100%	90%	23%
845	Industrial	High Efficiency Chiller	Per kWh	100%	23	0.03541667	\$71.6	0.6	No	No	100%	15%	76%
846	Industrial	Optimized Distribution System	Per kWh	100%	25	0.00631579	\$18.8	0.4	No	No	100%	90%	92%
847	Industrial	Premium efficiency refrigeration control system	Per kWh	100%	15	0.01875	\$98.3	0.2	No	No	100%	80%	79%
848	Industrial	Smart Defrost Controls	Per kWh	100%	16	0.02083333	\$0.7	30.4	Yes	Yes	100%	15%	83%
849	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Per kWh	100%	3	0.00427083	\$0.0	8.1	Yes	Yes	100%	60%	79%
850	Industrial	Preventative refrigeration/cooling system maintenance	Per kWh	100%	3	0.01041667	\$0.0	19.8	Yes	Yes	100%	100%	22%
851	Industrial	Optimized condenser pressure	Per kWh	100%	3	0.0125	\$0.0	23.8	Yes	Yes	100%	60%	79%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
852	Industrial	VSD on chiller compressor	Per kWh	100%	15	0.0625	\$25.2	2.3	Yes	Yes	100%	80%	79%
853	Industrial	Cooling Tower Optimization	Per kWh	100%	12	0.00833333	\$9.7	0.7	No	No	100%	35%	73%
854	Industrial	Improve insulation of refrigeration system	Per kWh	100%	10	0.01041667	\$18.5	0.4	No	No	100%	80%	48%
855	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00521739	\$23.3	0.3	No	No	100%	80%	99%
856	Industrial	Impeller Trimming (Pump)	Per kWh	100%	20	0.02608696	\$13.6	2.7	Yes	Yes	100%	15%	98%
857	Industrial	Optimization of pumping system	Per kWh	100%	15	0.02347826	\$27.2	1.0	No	No	100%	80%	99%
858	Industrial	Premium Efficiency Control with ASDs (Pumps)	Per kWh	100%	15	0.03478261	\$29.2	1.3	Yes	Yes	100%	70%	81%
859	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.00869565	\$0.0	19.8	Yes	Yes	100%	100%	28%
860	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.00356506	\$26.8	0.1	No	No	100%	80%	99%
861	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.03565062	\$42.5	0.6	No	No	100%	70%	92%
862	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00356506	\$4.0	0.7	No	No	100%	40%	100%
863	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.00891266	\$0.0	19.8	Yes	Yes	100%	100%	28%
864	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.00470588	\$31.6	0.1	No	No	100%	80%	99%
865	Industrial	Correctly sized motors	Per kWh	100%	15	0.00470588	\$20.0	0.2	No	No	100%	70%	99%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
866	Industrial	Optimized motor control	Per kWh	100%	15	0.01176471	\$1.3	7.7	Yes	Yes	100%	70%	95%
867	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.01176471	\$0.0	19.8	Yes	Yes	100%	100%	28%
868	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02631579	\$136.1	0.1	No	No	100%	80%	85%
869	Industrial	Optimized Distribution System	Per kWh	100%	10	0.02105263	\$9.4	1.5	Yes	Yes	100%	80%	74%
870	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.04210526	\$0.0	26.5	Yes	Yes	100%	80%	48%
871	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.02105263	\$65.5	0.4	No	No	100%	70%	90%
872	Industrial	Optimized sizes of air receiver tanks	Per kWh	100%	10	0.02526316	\$33.9	0.5	No	No	100%	80%	26%
873	Industrial	Premium Efficiency Air Dryer (compressors)	Per kWh	100%	20	0.01768421	\$34.8	0.6	No	No	100%	80%	85%
874	Industrial	Sequencing Control	Per kWh	100%	5	0.02105263	\$14.1	0.5	No	No	100%	60%	58%
875	Industrial	Eliminate air leaks	Per kWh	100%	3	0.03157895	\$7.8	0.8	No	No	100%	100%	48%
876	Industrial	Synchronous Belts for Air Compressors	Per kWh	100%	10	0.00421053	\$2.3	1.2	Yes	Yes	100%	40%	92%
877	Industrial	Replace compressed air use with mechanical or electrical	Per kWh	100%	20	0.11789474	\$37.6	3.6	Yes	Yes	100%	10%	97%
878	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.02631579	\$82.2	0.2	No	No	100%	70%	80%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
879	Industrial	Retrofit internal parts of existing centrifugal compressors	Per kWh	100%	20	0.01052632	\$17.2	0.7	No	No	100%	50%	60%
880	Industrial	High efficiency battery charger (for forklifts)	Per kWh	100%	10	0.01470588	\$28.3	0.3	No	No	100%	100%	85%
881	Industrial	Economizers for Packaged Air- Conditioning Units	Per kWh	100%	10	0.0103022	\$44.4	0.2	No	No	100%	10%	73%
882	Industrial	High efficiency non- packaged HVAC equipment	Per kWh	100%	9	0.01648352	\$2.0	6.2	Yes	Yes	3%	80%	60%
883	Industrial	High Efficiency Unitary AC	Per kWh	100%	15	0.04120879	\$14.7	3.2	Yes	Yes	100%	80%	60%
884	Industrial	Ground Source Heat Pump	Per kWh	100%	20	0.09271978	\$589.0	0.2	No	No	100%	5%	85%
885	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,278.9	0.0	No	No	100%	40%	89%
886	Industrial	Automated Temperature Control	Per kWh	100%	5	0.01201923	\$2.7	1.9	Yes	Yes	100%	80%	28%
887	Industrial	Destratification Fans	Per kWh	100%	10	0.08585165	\$200.6	0.3	No	No	15%	40%	92%
888	Industrial	Warehouse Loading Dock Seals	Per kWh	100%	10	0.0103022	\$8.6	1.0	No	No	100%	30%	54%
889	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.00858516	\$5.2	0.4	No	No	100%	100%	15%
890	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Per kWh	100%	15	0.02575549	\$151.4	0.2	No	No	5%	60%	59%
891	Industrial	High efficiency ballasts for lighting	Per kWh	100%	11	0.0462963	\$11.1	3.6	Yes	Yes	100%	100%	81%

Measure ID	Sub- Sector	Measure Name	Meas ure Unit	Measure Savings (% of Baseline)	Measur e Life (Years)	Baseline Technology Size (kW)	Total Measure Incremental Cost (\$)	Measure TRC	Measure Included in Economic Potential Analysis	Measure Included in Achievable Potential Analysis	Applicability to Industrial Subsector	Technical Feasibility	Not-Yet Adopted Rate
892	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.08518519	\$125.5	0.4	No	No	100%	100%	74%
893	Industrial	Efficient Lighting Design	Per kWh	100%	11	0.02777778	\$8.8	2.7	Yes	Yes	100%	100%	95%
894	Industrial	Lighting controls	Per kWh	100%	8	0.02777778	\$34.9	0.5	No	No	100%	80%	99%
895	Industrial	Premium efficiency ventilation control with VSD	Per kWh	100%	15	0.05217391	\$41.5	1.4	Yes	Yes	100%	80%	85%
896	Industrial	Demand-Controlled Ventilation	Per kWh	100%	10	0.0173913	\$239.4	0.1	No	No	20%	80%	98%

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
1	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
2	Industrial	Process Heat Recovery to	Energy Design Resources, Industrial Process Heat Recovery	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent
		Preheat Makeup Water	Design Brief, 2009.	Advancements in Technology and Applications, 2007.
3	Industrial	Air Curtains (Oven)	Vendor website - date accessed: March 2010	NA
4	Industrial	Insulation (Oven)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
5	Industrial	Preventative Oven Maintenance	ICF	NA
6	Industrial	Air Curtains (Dryer)	Vendor website - date accessed: May, 2010	NA
7	Industrial	Insulation (Dryer)	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
8	Industrial	Preventative Dryer Maintenance	ICF	NA
9	Industrial	Preventative Furnace Maintenance	ICF	NA
10	Industrial	Insulation (Furnace)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
11	Industrial	Preventative Kiln Maintenance	ICF	NA
12	Industrial	Insulation (Kiln)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
13	Industrial	High Efficiency Chiller	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
14	Industrial	Optimized Distribution System	ICF	NA
15	Industrial	Premium efficiency refrigeration control system	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
16	Industrial	Smart Defrost Controls	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
17	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
18	Industrial	Preventative refrigeration/cooling system maintenance	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
19	Industrial	Optimized condenser pressure	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
20	Industrial	VSD on chiller compressor	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
21	Industrial	Cooling Tower Optimization	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
22	Industrial	Improve insulation of refrigeration system	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
23	Industrial	High/Premium Efficiency Motors (Pumps)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
24	Industrial	Impeller Trimming (Pump)	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
25	Industrial	Optimization of pumping system	Vendor website - Date accessed: May 2010	NA
26	Industrial	Premium Efficiency Control with ASDs (Pumps)	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
27	Industrial	Preventative Pump Maintenance	ICF	NA
28	Industrial	High/Premium Efficiency Motors (Fans)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
29	Industrial	Premium efficiency control, with ASD (Fans)	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
30	Industrial	Synchronous Belts (Fans)	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
31	Industrial	Preventative Fan Maintenance	ICF	NA
32	Industrial	High/Premium Efficiency Motors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
33	Industrial	Correctly sized motors	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
34	Industrial	Optimized motor control	Marbek in-house info	RS Means Mechanical Cost Data
35	Industrial	Preventative Motor Maintenance	ICF	NA
36	Industrial	Premium efficiency ASD compressor	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
37	Industrial	Optimized Distribution System	ICF	NA
38	Industrial	Minimize operating air pressure	ICF	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
39	Industrial	Optimized sizing of compressor system	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
40	Industrial	Optimized sizes of air receiver tanks	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
41	Industrial	Premium Efficiency Air Dryer (compressors)	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
42	Industrial	Sequencing Control	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
43	Industrial	Eliminate air leaks	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
44	Industrial	Synchronous Belts for Air Compressors	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
45	Industrial	Replace compressed air use with mechanical or electrical	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
46	Industrial	Premium efficiency ASD compressor	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
47	Industrial	Retrofit internal parts of existing centrifugal compressors	Personnal communication with IFA (International Fertilizer Association) experts.	NA
48	Industrial	High efficiency battery charger (for forklifts)	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
49	Industrial	Economizers for Packaged Air-Conditioning Units	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
50	Industrial	High efficiency non- packaged HVAC equipment	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
51	Industrial	High Efficiency Unitary AC	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
52	Industrial	Ground Source Heat Pump	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
53	Industrial	Ventilation Heat Recovery	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
54	Industrial	Automated Temperature Control	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
55	Industrial	Destratification Fans	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
56	Industrial	Warehouse Loading Dock Seals	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
57	Industrial	Preventative Packaged HVAC Maintenance	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
58	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	National Center for Energy Management and Building Technologies, Energy Reduction Through Practical Scheduled Maintenance, 2006.
59	Industrial	High efficiency ballasts for lighting	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: September 2010	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0
60	Industrial	High Efficiency Light fixtures	CADDET Energy Efficiency. 1995. Efficient lighting in commercial buildings. (Report No.ISSN 1382-4929 ; brochure 01). Date accessed: April, 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: April, 2010
61	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	U.S. Department of Energy, Common Industrial Lighting Upgrade Technologies, 2014. http://energy.gov/sites/prod/files/2014/05/f16/lighting_factsheet.pdf
62	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	BC Hydro, Plan for Good Lighting Design, Accessed October 29, 2015: https://www.bchydro.com/powersmart/business/technologies- equipment/lighting-systems.html#1
63	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
64	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
65	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
66	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
67	Industrial	Air Curtains (Oven)	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
68	Industrial	Insulation (Oven)	Vendor website - date accessed: March 2010	NA
69	Industrial	Preventative Oven Maintenance	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
70	Industrial	Air Curtains (Dryer)	ICF	NA
71	Industrial	Insulation (Dryer)	Vendor website - date accessed: May, 2010	NA
72	Industrial	Preventative Dryer Maintenance	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
73	Industrial	Preventative Furnace Maintenance	ICF	NA
74	Industrial	Insulation (Furnace)	ICF	NA
75	Industrial	Preventative Kiln Maintenance	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
76	Industrial	Insulation (Kiln)	ICF	NA
77	Industrial	High Efficiency Chiller	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
78	Industrial	Optimized Distribution System	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
79	Industrial	Premium efficiency refrigeration control system	ICF	NA
80	Industrial	Smart Defrost Controls	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
81	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
82	Industrial	Preventative refrigeration/cooling system maintenance	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
83	Industrial	Optimized condenser pressure	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
84	Industrial	VSD on chiller compressor	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
85	Industrial	Cooling Tower Optimization	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
86	Industrial	Improve insulation of refrigeration system	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
87	Industrial	High/Premium Efficiency Motors (Pumps)	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
88	Industrial	Impeller Trimming (Pump)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
89	Industrial	Optimization of pumping system	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
90	Industrial	Premium Efficiency Control with ASDs (Pumps)	Vendor website - Date accessed: May 2010	NA
91	Industrial	Preventative Pump Maintenance	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
92	Industrial	High/Premium Efficiency Motors (Fans)	ICF	NA
93	Industrial	Premium efficiency control, with ASD (Fans)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
94	Industrial	Synchronous Belts (Fans)	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
			Improvement and Cost Saving Opportunities for Petrochemical	accessed: May, 2010
05	Industrial	Droventative Fan	Industry. Date accessed: May 2010	ΝΑ
95	muustriai	Maintananaa	OS Department of Energy. 2005. Replace V-Belts with Cogged of	NA
0.0	to devote to t		Synchronous Belt Drives. Date accessed. May 2010	
96	Industrial	High/Premium Efficiency Motors	ICF	NA
97	Industrial	Correctly sized motors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
			Technical Fact sheet. Date accessed: May 2010	accessed: May, 2010
98	Industrial	Optimized motor control	US Department of Energy. 2002. Industrial Electric Motor Systems	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
			Market Opportunities Assessment. Date accessed: May 2010	accessed: May, 2010
99	Industrial	Preventative Motor	Marbek in-house info	RS Means Mechanical Cost Data
		Maintenance		
100	Industrial	Premium efficiency ASD	ICF	NA
		compressor		
101	Industrial	Optimized Distribution	UK Department of the Environment, Transport and the Region's	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		System	Energy Efficiency Best Practice Programme. 1999. Air	accessed: May, 2010
			compressors with integral variable speed control. Date accessed:	
			May 2010	
102	Industrial	Minimize operating air	ICF	NA
		pressure		
103	Industrial	Optimized sizing of	ICF	NA
		compressor system		
104	Industrial	Optimized sizes of air	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems.	NA
		receiver tanks	Date accessed: March 2010	
105	Industrial	Premium Efficiency Air	US Department of Energy. 2003. Improving Compressed Air	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Dryer (compressors)	System Performance, a Sourcebook for Industry. Date accessed:	accessed: May, 2010
100	In duraturial	Conversion Control	May 2010	NA
106	industriai	Sequencing Control	Efficiency Reference Guide, Date accessed: July 2010	NA
107	Industrial	Eliminata air laaks	Vender website date accessed. May 2010	BC Lludra 2006 OA Standard Tashnalagu Effective Measure Life Date
107	industriai	Eliminate air leaks	vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
100	In duraturial	Current and Dalta for Air	NDCon Office of France Efficiency 2007 Compared Air Franze	accessed. May, 2010
108	industriai	Synchronous Belts for Air	Efficiency Reference Cuide, Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
100	Industrial	Compressors	LIC Department of Energy 2005, Deplece V Belte with Coggod or	
109	muustriai	with machanical or	OS Department of Energy. 2005. Replace V-Belts with Cogged of	NA
		electrical	Synchronous Beit Drives. Date accessed: May 2010	
110	Industrial	Premium efficiency ASD	Stanley Assembly Technologies. 200Energy Consumption of	NA
		compressor	Pneumatic and DC Electric Assembly Tools. Date accessed: March	
			2010	
111	Industrial	Retrofit internal parts of	UK Department of the Environment, Transport and the Region's	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		existing centrifugal	Energy Efficiency Best Practice Programme. 1999. Air	accessed: May, 2010
		compressors	compressors with integral variable speed control. Date accessed:	
			May 2010	
112	Industrial	High efficiency battery	Personnal communication with IFA (International Fertilizer	NA
		charger (for forklifts)	Association) experts.	

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113	Judustrial	Economizers for Packaged	Design & Engineering Services Air Source Heat Pump for	NA
115	maastriar	Air-Conditioning Units	Preheating of Emergency Diesel Backun Generators December	
		All conditioning onits	2009	
114	Industrial	High efficiency non-	NRCan Office of Energy Efficiency, 2009, Industrial Battery	Power Designers, 2012, High-efficiency Battery Chargers Save Energy, Cut
	maastinai	packaged HVAC equipment	Chargers. Date accessed: September 2010	Costs. Date accessed: October 2015
		P		(http://www.mhi.org/media/members/17127/130197612878638451.pdf)
115	Industrial	High Efficiency Unitary AC	The Cadmus Group Inc, Wisconsin Focus on Energy Technical	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for
			Reference Manual, 2014.	packaged air-conditioning Units, 2004.
116	Industrial	Ground Source Heat Pump	Illinois Statewide Technical Reference Manual for Energy	ICF
			Efficiency, 2015, Version 4.0	
117	Industrial	Ventilation Heat Recovery	Illinois Statewide Technical Reference Manual for Energy	ICF
			Efficiency, 2015, Version 4.0	
118	Industrial	Automated Temperature	Information for Evaluating Geoexchange Applications, New York	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption,
		Control	State Energy Research and Development Authority (NYSERDA),	and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
			2007.	
119	Industrial	Destratification Fans	Illinois Statewide Technical Reference Manual for Energy	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference
			Efficiency, 2015, Version 4.0	Manual, 2014.
120	Industrial	Warehouse Loading Dock	Illinois Statewide Technical Reference Manual for Energy	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
		Seals	Efficiency, 2015, Version 4.0	
121	Industrial	Preventative Packaged	Illinois Statewide Technical Reference Manual for Energy	Ontario Independent Electricity System Operator, Prescriptive Measures and
		HVAC Maintenance	Efficiency, 2015, Version 4.0	Assumptions List, 2015.
122	Industrial	Heat Recovery from	Rutgers, Industrial Assessment Centers Database, Accessed:	ICF
		Processes to Heat	October 26, 2015.	
100	Inductrial	Ventilation Make-up Air	Illippic Statewide Technical Deference Manual for Energy	National Contar for Energy Management and Building Technologies, Energy
123	muustriai	lighting	Efficiency 2015 Version 4.0	Reduction Through Practical Scheduled Maintenance, 2006
124	Industrial	High Efficiency Light	LIS Department of Energy 2004 Improving Process Heating	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015
124	industrial	fixtures	System Performance: A Sourcebook for Industry- Date accessed:	Version 4.0
		lixtures	September 2010	
125	Industrial	Efficient Lighting Design	CADDET Energy Efficiency, 1995, Efficient lighting in commercial	BC Hydro, 2006, QA Standard, Technology: Effective Measure Life, Date
			buildings. (Report No.ISSN 1382-4929 ; brochure 01). Date	accessed: April, 2010
			accessed: April, 2010	
126	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy	U.S. Department of Energy, Common Industrial Lighting Upgrade
			Efficiency, 2015, Version 4.0	Technologies, 2014.
				http://energy.gov/sites/prod/files/2014/05/f16/lighting_factsheet.pdf
127	Industrial	Premium efficiency	Illinois Statewide Technical Reference Manual for Energy	BC Hydro, Plan for Good Lighting Design, Accessed October 29, 2015:
		ventilation control with	Efficiency, 2015, Version 4.0	https://www.bchydro.com/powersmart/business/technologies-
120	to devote to t	VSD	ultratic Classes, the Table to Defense of Marco al factories	equipment/lighting-systems.html#1
128	Industrial	Demand-Controlled	Illinois Statewide Technical Reference Manual for Energy	ICF
120	to devote to t			
129	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
130	Industrial	Drocoss Hoat Desevents	NPCon Office of Energy Efficiency, 2000, Dry Type Transformers	DCMoone Electrical Cast Data 2000, pp200
130	industrial	Probest Makeun Water	date accessed: July 2010	KSIVIEAIIS EIECTICAI COST DATA 2009, pp200
101	Industrial	Air Curtains (Over)	NPCan Office of Energy Efficiency 2000 Dry Type Transformers	PSMoans Electrical Cast Data 2000, pp200
101	muustilai		date accessed: July 2010	Norvicano Liecuncar Cust Data 2009, pp200
1	1		aute accessed. July 2010	
Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
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132	Industrial	Insulation (Oven)	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
133	Industrial	Preventative Oven Maintenance	Vendor website - date accessed: March 2010	NA
134	Industrial	Air Curtains (Dryer)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
135	Industrial	Insulation (Dryer)	ICF	NA
136	Industrial	Preventative Dryer Maintenance	Vendor website - date accessed: May, 2010	NA
137	Industrial	Preventative Furnace Maintenance	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
138	Industrial	Insulation (Furnace)	ICF	NA
139	Industrial	Preventative Kiln Maintenance	ICF	NA
140	Industrial	Insulation (Kiln)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
141	Industrial	High Efficiency Chiller	ICF	NA
142	Industrial	Optimized Distribution System	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
143	Industrial	Premium efficiency refrigeration control system	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
144	Industrial	Smart Defrost Controls	ICF	NA
145	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
146	Industrial	Preventative refrigeration/cooling system maintenance	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
147	Industrial	Optimized condenser pressure	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
148	Industrial	VSD on chiller compressor	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
149	Industrial	Cooling Tower Optimization	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
150	Industrial	Improve insulation of refrigeration system	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
151	Industrial	High/Premium Efficiency Motors (Pumps)	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
152	Industrial	Impeller Trimming (Pump)	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
153	Industrial	Optimization of pumping system	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
154	Industrial	Premium Efficiency Control with ASDs (Pumps)	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
155	Industrial	Preventative Pump Maintenance	Vendor website - Date accessed: May 2010	NA
156	Industrial	High/Premium Efficiency Motors (Fans)	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
157	Industrial	Premium efficiency control, with ASD (Fans)	ICF	NA
158	Industrial	Synchronous Belts (Fans)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
159	Industrial	Preventative Fan Maintenance	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
160	Industrial	High/Premium Efficiency Motors	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
161	Industrial	Correctly sized motors	ICF	NA
162	Industrial	Optimized motor control	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
163	Industrial	Preventative Motor Maintenance	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
164	Industrial	Premium efficiency ASD compressor	Marbek in-house info	RS Means Mechanical Cost Data
165	Industrial	Optimized Distribution System	ICF	NA
166	Industrial	Minimize operating air pressure	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
167	Industrial	Optimized sizing of compressor system	ICF	NA
168	Industrial	Optimized sizes of air receiver tanks	ICF	NA
169	Industrial	Premium Efficiency Air Dryer (compressors)	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
170	Industrial	Sequencing Control	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
171	Industrial	Eliminate air leaks	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
172	Industrial	Synchronous Belts for Air Compressors	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
173	Industrial	Replace compressed air use with mechanical or electrical	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
174	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
175	Industrial	Retrofit internal parts of existing centrifugal compressors	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
176	Industrial	High efficiency battery charger (for forklifts)	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
177	Industrial	Economizers for Packaged Air-Conditioning Units	Personnal communication with IFA (International Fertilizer Association) experts.	NA
178	Industrial	High efficiency non- packaged HVAC equipment	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
179	Industrial	High Efficiency Unitary AC	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
180	Industrial	Ground Source Heat Pump	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
181	Industrial	Ventilation Heat Recovery	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
182	Industrial	Automated Temperature Control	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
183	Industrial	Destratification Fans	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
184	Industrial	Warehouse Loading Dock Seals	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
185	Industrial	Preventative Packaged HVAC Maintenance	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
186	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
187	Industrial	High efficiency ballasts for lighting	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
188	Industrial	High Efficiency Light fixtures	- Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	National Center for Energy Management and Building Technologies, Energy Reduction Through Practical Scheduled Maintenance, 2006.
189	Industrial	Efficient Lighting Design	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: September 2010	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0
190	Industrial	Lighting controls	CADDET Energy Efficiency. 1995. Efficient lighting in commercial buildings. (Report No.ISSN 1382-4929 ; brochure 01). Date accessed: April, 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: April, 2010
191	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	U.S. Department of Energy, Common Industrial Lighting Upgrade Technologies, 2014. http://energy.gov/sites/prod/files/2014/05/f16/lighting_factsheet.pdf
192	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	BC Hydro, Plan for Good Lighting Design, Accessed October 29, 2015: https://www.bchydro.com/powersmart/business/technologies- equipment/lighting-systems.html#1
193	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
194	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
195	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
196	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
197	Industrial	Preventative Oven Maintenance	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
198	Industrial	Air Curtains (Dryer)	Vendor website - date accessed: March 2010	NA
199	Industrial	Insulation (Dryer)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
200	Industrial	Preventative Dryer Maintenance	ICF	NA
201	Industrial	Preventative Furnace Maintenance	Vendor website - date accessed: May, 2010	NA
202	Industrial	Insulation (Furnace)	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
203	Industrial	Preventative Kiln Maintenance	ICF	NA
204	Industrial	Insulation (Kiln)	ICF	NA
205	Industrial	High Efficiency Chiller	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
206	Industrial	Optimized Distribution System	ICF	NA

Moosuro ID	Sub Sector	Moosuro Namo	Poforonco 1	Poforonco 2
207	Industrial	Premium efficiency	US Department of Energy, 2004, Improving Process Heating	US Environmental Protection Agency, 1998, Wiserules for Industrial
207	industrial	refrigeration control	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
		system	April 2010	
208	Industrial	Smart Defrost Controls	US Office of Energy Efficiency & Renewable Energy. 2011.	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled
			Covered Product Category: Water-Cooled Electric Chillers. Date	Chiller. Date accessed: May 2010
			accessed: October 2015	
209	Industrial	Optimized chilled water	ICF	NA
		temperature and/or		
		tomporaturo		
210	Industrial	Preventative	ICE	Energy Design Resources 2010 Energy Efficiency Practices in Industrial
210	maastria	refrigeration/cooling		Refrigeration Accessed October 2015
		system maintenance		
211	Industrial	Optimized condenser	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		pressure		accessed: July, 2010
212	Industrial	VSD on chiller compressor	US Environmental Protection Agency. 1998. Wiserules for	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient
			Industrial Efficiency. Date accessed: July, 2010	Chillers. Date accessed: October 2015
213	Industrial	Cooling Tower Optimization	Betterbricks. Operation and Maintenance of Chillers. Date	NA
			accessed: July 2010	
214	Industrial	Improve insulation of	US Environmental Protection Agency. 1998. Wiserules for	NA
		refrigeration system	Industrial Efficiency. Date accessed: July, 2010	
215	Industrial	High/Premium Efficiency	Ontario Power Authority. 2009. 2009 Commercial and	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Motors (Pumps)	Institutional Measures and Assumptions. Date accessed: May	accessed: May, 2010
216	Industrial	Impoller Trimming (Rump)	2010 Enorgy Dosign Posources, Chiller Plant Efficiency Dosign Brief	Erank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal
210	industrial		2010.	February 2014.
217	Industrial	Optimization of pumping	Heschong Mahone Group, 2008, Analysis of Standards Options	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
		system	for Walk-in Refrigerated Storage. Date accessed: July 2010	······,···,
218	Industrial	Premium Efficiency Control	NRCan Office of Energy Efficiency. Premium-Efficiency Motors	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		with ASDs (Pumps)	Technical Fact sheet. Date accessed: May 2010	accessed: May, 2010
219	Industrial	Preventative Pump	US Department of Energy. 2006. Trim or Replace Impellers on	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency
		Maintenance	Oversized Pumps. Date accessed: May 2010	Improvement and Cost Saving Opportunities for the Fruit and Vegetable
				Processing Industry. Date accessed: May 2010
220	Industrial	High/Premium Efficiency	Vendor website - Date accessed: May 2010	NA
		Motors (Fans)		
221	Industrial	Premium efficiency control,	US Department of Energy. 2004. Variable Speed Pumping. Date	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and
		with ASD (Fans)	accessed: May 2010	
222	Industrial	Synchronous Belts (Fans)	ICE	NA
		-,(- 2		
223	Industrial	Preventative Fan	NRCan Office of Energy Efficiency. Premium-Efficiency Motors	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Maintenance	Technical Fact sheet. Date accessed: May 2010	accessed: May, 2010
224	Industrial	High/Premium Efficiency	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Motors	Improvement and Cost Saving Opportunities for Petrochemical	accessed: May, 2010
			Industry. Date accessed: May 2010	

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Measure ID	Sub-Sector		Reference 1	Reference 2
225	industriai	Correctly sized motors	Synchronous Belt Drives. Date accessed: May 2010	NA
226	Industrial	Optimized motor control	ICF	ΝΑ
227	Industrial	Preventative Motor Maintenance	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
228	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
229	Industrial	Optimized Distribution System	Marbek in-house info	RS Means Mechanical Cost Data
230	Industrial	Minimize operating air pressure	ICF	NA
231	Industrial	Optimized sizing of compressor system	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
232	Industrial	Optimized sizes of air receiver tanks	ICF	ΝΑ
233	Industrial	Premium Efficiency Air Dryer (compressors)	ICF	NA
234	Industrial	Sequencing Control	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
235	Industrial	Eliminate air leaks	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
236	Industrial	Synchronous Belts for Air Compressors	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
237	Industrial	Replace compressed air use with mechanical or electrical	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
238	Industrial	Premium efficiency ASD compressor	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
239	Industrial	Retrofit internal parts of existing centrifugal compressors	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	ΝΑ
240	Industrial	High efficiency battery charger (for forklifts)	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	ΝΑ
241	Industrial	Economizers for Packaged Air-Conditioning Units	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
242	Industrial	High efficiency non- packaged HVAC equipment	Personnal communication with IFA (International Fertilizer Association) experts.	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
243	Industrial	High Efficiency Unitary AC	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
244	Industrial	Ground Source Heat Pump	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
245	Industrial	Ventilation Heat Recovery	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
246	Industrial	Automated Temperature Control	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
247	Industrial	Destratification Fans	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
248	Industrial	Warehouse Loading Dock Seals	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
249	Industrial	Preventative Packaged HVAC Maintenance	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
250	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
251	Industrial	High efficiency ballasts for lighting	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
252	Industrial	High Efficiency Light fixtures	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF
253	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	National Center for Energy Management and Building Technologies, Energy Reduction Through Practical Scheduled Maintenance, 2006.
254	Industrial	Lighting controls	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: September 2010	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0
255	Industrial	Premium efficiency ventilation control with VSD	CADDET Energy Efficiency. 1995. Efficient lighting in commercial buildings. (Report No.ISSN 1382-4929 ; brochure 01). Date accessed: April, 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: April, 2010
256	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	U.S. Department of Energy, Common Industrial Lighting Upgrade Technologies, 2014. http://energy.gov/sites/prod/files/2014/05/f16/lighting_factsheet.pdf
257	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
258	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
259	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
260	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
261	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
262	Industrial	Air Curtains (Dryer)	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
263	Industrial	Insulation (Dryer)	Vendor website - date accessed: March 2010	NA
264	Industrial	Preventative Dryer Maintenance	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
265	Industrial	Preventative Furnace Maintenance	ICF	NA
266	Industrial	Insulation (Furnace)	Vendor website - date accessed: May, 2010	NA
267	Industrial	Preventative Kiln Maintenance	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
268	Industrial	Insulation (Kiln)	ICF	NA
269	Industrial	High Efficiency Chiller	ICF	NA
270	Industrial	Optimized Distribution System	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
271	Industrial	Premium efficiency refrigeration control system	ICF	NA
272	Industrial	Smart Defrost Controls	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
273	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
274	Industrial	Preventative refrigeration/cooling system maintenance	ICF	NA
275	Industrial	Optimized condenser pressure	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
276	Industrial	VSD on chiller compressor	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
277	Industrial	Cooling Tower Optimization	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
278	Industrial	Improve insulation of refrigeration system	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
279	Industrial	High/Premium Efficiency Motors (Pumps)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
280	Industrial	Impeller Trimming (Pump)	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
281	Industrial	Optimization of pumping system	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
282	Industrial	Premium Efficiency Control with ASDs (Pumps)	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
283	Industrial	Preventative Pump Maintenance	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
284	Industrial	High/Premium Efficiency Motors (Fans)	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
285	Industrial	Premium efficiency control, with ASD (Fans)	Vendor website - Date accessed: May 2010	NA
286	Industrial	Synchronous Belts (Fans)	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
287	Industrial	Preventative Fan Maintenance	ICF	NA
288	Industrial	High/Premium Efficiency Motors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
289	Industrial	Correctly sized motors	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
290	Industrial	Optimized motor control	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
291	Industrial	Preventative Motor Maintenance	ICF	NA
292	Industrial	Premium efficiency ASD compressor	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
293	Industrial	Optimized Distribution System	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
294	Industrial	Minimize operating air pressure	Marbek in-house info	RS Means Mechanical Cost Data
295	Industrial	Optimized sizing of compressor system	ICF	NA
296	Industrial	Optimized sizes of air receiver tanks	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
297	Industrial	Premium Efficiency Air Dryer (compressors)	ICF	NA
298	Industrial	Sequencing Control	ICF	NA
299	Industrial	Eliminate air leaks	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA

Moosuro ID	Sub Soctor	Moosuro Nomo	Poforonco 1	Poforonco 2
300	Industrial	Synchronous Belts for Air Compressors	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
301	Industrial	Replace compressed air use with mechanical or electrical	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
302	Industrial	Premium efficiency ASD compressor	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
303	Industrial	Retrofit internal parts of existing centrifugal compressors	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
304	Industrial	High efficiency battery charger (for forklifts)	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
305	Industrial	Economizers for Packaged Air-Conditioning Units	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
306	Industrial	High efficiency non- packaged HVAC equipment	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
307	Industrial	High Efficiency Unitary AC	Personnal communication with IFA (International Fertilizer Association) experts.	NA
308	Industrial	Ground Source Heat Pump	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
309	Industrial	Ventilation Heat Recovery	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
310	Industrial	Automated Temperature Control	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
311	Industrial	Destratification Fans	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
312	Industrial	Warehouse Loading Dock Seals	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
313	Industrial	Preventative Packaged HVAC Maintenance	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
314	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
315	Industrial	High efficiency ballasts for lighting	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
316	Industrial	High Efficiency Light fixtures	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
317	Industrial	Efficient Lighting Design	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
318	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	National Center for Energy Management and Building Technologies, Energy Reduction Through Practical Scheduled Maintenance, 2006.
319	Industrial	Premium efficiency ventilation control with VSD	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: September 2010	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0
320	Industrial	Demand-Controlled Ventilation	CADDET Energy Efficiency. 1995. Efficient lighting in commercial buildings. (Report No.ISSN 1382-4929 ; brochure 01). Date accessed: April, 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: April, 2010
321	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
322	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
323	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
324	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
325	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
326	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
327	Industrial	Insulation (Dryer)	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
328	Industrial	Preventative Dryer Maintenance	Vendor website - date accessed: March 2010	NA
329	Industrial	Preventative Furnace Maintenance	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
330	Industrial	Insulation (Furnace)	ICF	NA
331	Industrial	Preventative Kiln Maintenance	Vendor website - date accessed: May, 2010	NA
332	Industrial	Insulation (Kiln)	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
333	Industrial	High Efficiency Chiller	ICF	NA
334	Industrial	Optimized Distribution System	ICF	NA
335	Industrial	Premium efficiency refrigeration control system	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
336	Industrial	Smart Defrost Controls	ICF	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
337	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
338	Industrial	Preventative refrigeration/cooling system maintenance	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
339	Industrial	Optimized condenser pressure	ICF	NA
340	Industrial	VSD on chiller compressor	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
341	Industrial	Cooling Tower Optimization	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
342	Industrial	Improve insulation of refrigeration system	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
343	Industrial	High/Premium Efficiency Motors (Pumps)	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
344	Industrial	Impeller Trimming (Pump)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
345	Industrial	Optimization of pumping system	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
346	Industrial	Premium Efficiency Control with ASDs (Pumps)	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
347	Industrial	Preventative Pump Maintenance	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
348	Industrial	High/Premium Efficiency Motors (Fans)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
349	Industrial	Premium efficiency control, with ASD (Fans)	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
350	Industrial	Synchronous Belts (Fans)	Vendor website - Date accessed: May 2010	NA
351	Industrial	Preventative Fan Maintenance	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
352	Industrial	High/Premium Efficiency Motors	ICF	NA
353	Industrial	Correctly sized motors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
354	Industrial	Optimized motor control	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
355	Industrial	Preventative Motor Maintenance	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
356	Industrial	Premium efficiency ASD compressor	ICF	ΝΑ
357	Industrial	Optimized Distribution System	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
358	Industrial	Minimize operating air pressure	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
359	Industrial	Optimized sizing of compressor system	Marbek in-house info	RS Means Mechanical Cost Data
360	Industrial	Optimized sizes of air receiver tanks	ICF	NA
361	Industrial	Premium Efficiency Air Dryer (compressors)	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
362	Industrial	Sequencing Control	ICF	ΝΑ
363	Industrial	Eliminate air leaks	ICF	ΝΑ
364	Industrial	Synchronous Belts for Air Compressors	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
365	Industrial	Replace compressed air use with mechanical or electrical	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
366	Industrial	Premium efficiency ASD compressor	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	ΝΑ
367	Industrial	Retrofit internal parts of existing centrifugal compressors	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
368	Industrial	High efficiency battery charger (for forklifts)	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
369	Industrial	Economizers for Packaged Air-Conditioning Units	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	ΝΑ
370	Industrial	High efficiency non- packaged HVAC equipment	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	ΝΑ
371	Industrial	High Efficiency Unitary AC	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
372	Industrial	Ground Source Heat Pump	Personnal communication with IFA (International Fertilizer Association) experts.	NA
373	Industrial	Ventilation Heat Recovery	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	ΝΑ

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
374	Industrial	Automated Temperature Control	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
375	Industrial	Destratification Fans	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
376	Industrial	Warehouse Loading Dock Seals	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
377	Industrial	Preventative Packaged HVAC Maintenance	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
378	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
379	Industrial	High efficiency ballasts for lighting	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
380	Industrial	High Efficiency Light fixtures	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
381	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
382	Industrial	Lighting controls	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF
383	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	National Center for Energy Management and Building Technologies, Energy Reduction Through Practical Scheduled Maintenance, 2006.
384	Industrial	Demand-Controlled Ventilation	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: September 2010	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0
385	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
386	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
387	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
388	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
389	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
390	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
391	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
392	Industrial	Preventative Dryer Maintenance	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
393	Industrial	Preventative Furnace Maintenance	Vendor website - date accessed: March 2010	NA

Moosuro ID	Sub Soctor	Moscuro Namo	Poforonco 1	Pafaranca 2
394	Industrial	Insulation (Furnace)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
395	Industrial	Preventative Kiln Maintenance	ICF	NA
396	Industrial	Insulation (Kiln)	Vendor website - date accessed: May, 2010	NA
397	Industrial	High Efficiency Chiller	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
398	Industrial	Optimized Distribution System	ICF	NA
399	Industrial	Premium efficiency refrigeration control system	ICF	NA
400	Industrial	Smart Defrost Controls	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
401	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	ICF	NA
402	Industrial	Preventative refrigeration/cooling system maintenance	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
403	Industrial	Optimized condenser pressure	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
404	Industrial	VSD on chiller compressor	ICF	NA
405	Industrial	Cooling Tower Optimization	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
406	Industrial	Improve insulation of refrigeration system	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
407	Industrial	High/Premium Efficiency Motors (Pumps)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
408	Industrial	Impeller Trimming (Pump)	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
409	Industrial	Optimization of pumping system	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
410	Industrial	Premium Efficiency Control with ASDs (Pumps)	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
411	Industrial	Preventative Pump Maintenance	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
412	Industrial	High/Premium Efficiency Motors (Fans)	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
413	Industrial	Premium efficiency control, with ASD (Fans)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
414	Industrial	Synchronous Belts (Fans)	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
415	Industrial	Preventative Fan Maintenance	Vendor website - Date accessed: May 2010	NA
416	Industrial	High/Premium Efficiency Motors	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
417	Industrial	Correctly sized motors	ICF	NA
418	Industrial	Optimized motor control	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
419	Industrial	Preventative Motor Maintenance	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
420	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
421	Industrial	Optimized Distribution System	ICF	NA
422	Industrial	Minimize operating air pressure	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
423	Industrial	Optimized sizing of compressor system	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
424	Industrial	Optimized sizes of air receiver tanks	Marbek in-house info	RS Means Mechanical Cost Data
425	Industrial	Premium Efficiency Air Dryer (compressors)	ICF	NA
426	Industrial	Sequencing Control	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
427	Industrial	Eliminate air leaks	ICF	NA
428	Industrial	Synchronous Belts for Air Compressors	ICF	NA
429	Industrial	Replace compressed air use with mechanical or electrical	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
430	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

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431	Industrial	Retrofit internal parts of existing centrifugal compressors	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
432	Industrial	High efficiency battery charger (for forklifts)	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
433	Industrial	Economizers for Packaged Air-Conditioning Units	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
434	Industrial	High efficiency non- packaged HVAC equipment	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
435	Industrial	High Efficiency Unitary AC	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
436	Industrial	Ground Source Heat Pump	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
437	Industrial	Ventilation Heat Recovery	Personnal communication with IFA (International Fertilizer Association) experts.	NA
438	Industrial	Automated Temperature Control	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
439	Industrial	Destratification Fans	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
440	Industrial	Warehouse Loading Dock Seals	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
441	Industrial	Preventative Packaged HVAC Maintenance	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
442	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
443	Industrial	High efficiency ballasts for lighting	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
444	Industrial	High Efficiency Light fixtures	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
445	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
446	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
447	Industrial	Premium efficiency ventilation control with VSD	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF
448	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	National Center for Energy Management and Building Technologies, Energy Reduction Through Practical Scheduled Maintenance, 2006.

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
449	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
450	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
451	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
452	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
453	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
454	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
455	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
456	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
457	Industrial	Preventative Furnace Maintenance	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
458	Industrial	Insulation (Furnace)	Vendor website - date accessed: March 2010	NA
459	Industrial	Preventative Kiln Maintenance	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
460	Industrial	Insulation (Kiln)	ICF	NA
461	Industrial	High Efficiency Chiller	Vendor website - date accessed: May, 2010	NA
462	Industrial	Optimized Distribution System	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
463	Industrial	Premium efficiency refrigeration control system	ICF	NA
464	Industrial	Smart Defrost Controls	ICF	NA
465	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
466	Industrial	Preventative refrigeration/cooling system maintenance	ICF	NA
467	Industrial	Optimized condenser pressure	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
468	Industrial	VSD on chiller compressor	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
469	Industrial	Cooling Tower Optimization	ICF	NA
470	Industrial	Improve insulation of refrigeration system	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
471	Industrial	High/Premium Efficiency Motors (Pumps)	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
472	Industrial	Impeller Trimming (Pump)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
473	Industrial	Optimization of pumping system	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
474	Industrial	Premium Efficiency Control with ASDs (Pumps)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
475	Industrial	Preventative Pump Maintenance	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
476	Industrial	High/Premium Efficiency Motors (Fans)	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
477	Industrial	Premium efficiency control, with ASD (Fans)	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
478	Industrial	Synchronous Belts (Fans)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
479	Industrial	Preventative Fan Maintenance	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
480	Industrial	High/Premium Efficiency Motors	Vendor website - Date accessed: May 2010	NA
481	Industrial	Correctly sized motors	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
482	Industrial	Optimized motor control	ICF	NA
483	Industrial	Preventative Motor Maintenance	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
484	Industrial	Premium efficiency ASD compressor	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
485	Industrial	Optimized Distribution System	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
486	Industrial	Minimize operating air pressure	ICF	NA
487	Industrial	Optimized sizing of compressor system	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
488	Industrial	Optimized sizes of air receiver tanks	US Department of Energy, 2002. Industrial Electric Motor Systems Market Opportunities Assessment, Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
489	Industrial	Premium Efficiency Air	Market Opportunities / bisesmenti Dute decessed. May 2010	RS Means Mechanical Cost Data
		Dryer (compressors)		
490	Industrial	Sequencing Control	ICF	NA
491	Industrial	Eliminate air leaks	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
492	Industrial	Synchronous Belts for Air Compressors	ICF	NA
493	Industrial	Replace compressed air use with mechanical or electrical	ICF	NA
494	Industrial	Premium efficiency ASD compressor	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
495	Industrial	Retrofit internal parts of existing centrifugal compressors	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
496	Industrial	High efficiency battery charger (for forklifts)	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
497	Industrial	Economizers for Packaged Air-Conditioning Units	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
498	Industrial	High efficiency non- packaged HVAC equipment	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
499	Industrial	High Efficiency Unitary AC	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
500	Industrial	Ground Source Heat Pump	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
501	Industrial	Ventilation Heat Recovery	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
502	Industrial	Automated Temperature Control	Personnal communication with IFA (International Fertilizer Association) experts.	NA
503	Industrial	Destratification Fans	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
504	Industrial	Warehouse Loading Dock Seals	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
505	Industrial	Preventative Packaged HVAC Maintenance	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
506	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
507	Industrial	High efficiency ballasts for lighting	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
508	Industrial	High Efficiency Light fixtures	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
509	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
510	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
511	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
512	Industrial	Demand-Controlled Ventilation	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF
513	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
514	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
515	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
516	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
517	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
518	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
519	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
520	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
521	Industrial	Preventative Furnace Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
522	Industrial	Insulation (Furnace)	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
523	Industrial	Preventative Kiln Maintenance	Vendor website - date accessed: March 2010	NA
524	Industrial	Insulation (Kiln)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
525	Industrial	High Efficiency Chiller	ICF	NA
526	Industrial	Optimized Distribution System	Vendor website - date accessed: May, 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
527	Industrial	Premium efficiency	US Department of Energy, 2007. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		refrigeration control	System Performance: A Sourcebook for Industry 2nd edition-	Efficiency. Date accessed: April, 2010
		system	Date accessed: October 2015	
528	Industrial	Smart Defrost Controls	ICF	NA
529	Industrial	Optimized chilled water	ICF	NA
		temperature and/or		
		optimized condenser		
		temperature		
530	Industrial	Preventative	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		refrigeration/cooling	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
504		system maintenance	April 2010	
531	Industrial	Optimized condenser	ICF	NA
		pressure		
532	Industrial	VSD on chiller compressor	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
			System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
E 2 2	Industrial	Cooling Tower Ontimization	April 2010	US Department of Energy 2002 How to Ruy on Energy Efficient Air Cooled
222	inuustriai	Cooling Tower Optimization	Covered Product Category: Water Cooled Electric Chillers, Date	Chiller, Date accessed: May 2010
			accessed: October 2015	Chiller. Date accessed. May 2010
534	Industrial	Improve insulation of		ΝΔ
551	maastria	refrigeration system		
535	Industrial	High/Premium Efficiency	ICF	Energy Design Resources, 2010, Energy Efficiency Practices in Industrial
		Motors (Pumps)		Refrigeration. Accessed October 2015.
536	Industrial	Impeller Trimming (Pump)	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
				accessed: July, 2010
537	Industrial	Optimization of pumping	US Environmental Protection Agency. 1998. Wiserules for	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient
		system	Industrial Efficiency. Date accessed: July, 2010	Chillers. Date accessed: October 2015
538	Industrial	Premium Efficiency Control	Betterbricks. Operation and Maintenance of Chillers. Date	NA
		with ASDs (Pumps)	accessed: July 2010	
539	Industrial	Preventative Pump	US Environmental Protection Agency. 1998. Wiserules for	NA
		Maintenance	Industrial Efficiency. Date accessed: July, 2010	
540	Industrial	High/Premium Efficiency	Ontario Power Authority. 2009. 2009 Commercial and	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Motors (Fans)	Institutional Measures and Assumptions. Date accessed: May	accessed: May, 2010
			2010	
541	Industrial	Premium efficiency control,	Energy Design Resources, Chiller Plant Efficiency Design Brief,	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal,
		with ASD (Fans)	2010.	February 2014.
542	Industrial	Synchronous Belts (Fans)	Heschong Mahone Group. 2008. Analysis of Standards Options	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
			for Walk-in Refrigerated Storage. Date accessed: July 2010	
543	Industrial	Preventative Fan	INKLan Uffice of Energy Efficiency. Premium-Efficiency Motors	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
F 4 4			reconical Fact sneet. Date accessed: May 2010	accessed: May, 2010
544	Industrial	High/Premium Efficiency	US Department of Energy. 2006. Trim or Replace Impellers on	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency
		IVIOTORS	Oversized Pumps. Date accessed: May 2010	Improvement and Cost Saving Opportunities for the Fruit and Vegetable
E / E	Industrial	Correctly sized meters	Vandar wahsita - Data accessed: May 2010	
545	inuustriai	Correctly sized motors	VEHILOF WEDSILE - DALE ACCESSED, MIDY 2010	INA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
546	Industrial	Optimized motor control	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
547	Industrial	Preventative Motor Maintenance	ICF	NA
548	Industrial	Premium efficiency ASD compressor	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
549	Industrial	Optimized Distribution System	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
550	Industrial	Minimize operating air pressure	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
551	Industrial	Optimized sizing of compressor system	ICF	ΝΑ
552	Industrial	Optimized sizes of air receiver tanks	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
553	Industrial	Premium Efficiency Air Dryer (compressors)	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
554	Industrial	Sequencing Control	Marbek in-house info	RS Means Mechanical Cost Data
555	Industrial	Eliminate air leaks	ICF	NA
556	Industrial	Synchronous Belts for Air Compressors	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
557	Industrial	Replace compressed air use with mechanical or electrical	ICF	NA
558	Industrial	Premium efficiency ASD compressor	ICF	NA
559	Industrial	Retrofit internal parts of existing centrifugal compressors	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
560	Industrial	High efficiency battery charger (for forklifts)	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
561	Industrial	Economizers for Packaged Air-Conditioning Units	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
562	Industrial	High efficiency non- packaged HVAC equipment	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
563	Industrial	High Efficiency Unitary AC	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
564	Industrial	Ground Source Heat Pump	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA

			Defense and	
	Sub-Sector	Measure Name		Reference 2
505	industriai	ventilation heat kecovery	Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
566	Industrial	Automated Temperature	UK Department of the Environment, Transport and the Region's	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Control	Energy Efficiency Best Practice Programme. 1999. Air	accessed: May, 2010
			compressors with integral variable speed control. Date accessed:	
			May 2010	
567	Industrial	Destratification Fans	Personnal communication with IFA (International Fertilizer	NA
			Association) experts.	
568	Industrial	Warehouse Loading Dock	Design & Engineering Services, Air Source Heat Pump for	NA
		Seals	Preheating of Emergency Diesel Backup Generators, December,	
			2009	
569	Industrial	Preventative Packaged	NRCan Office of Energy Efficiency. 2009. Industrial Battery	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut
		HVAC Maintenance	Chargers. Date accessed: September 2010	Costs. Date accessed: October 2015
				(http://www.mhi.org/media/members/17127/130197612878638451.pdf)
570	Industrial	Heat Recovery from	The Cadmus Group Inc, Wisconsin Focus on Energy Technical	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for
		Processes to Heat	Reference Manual, 2014.	packaged air-conditioning Units, 2004.
		Ventilation Make-up Air		
571	Industrial	High efficiency ballasts for	Illinois Statewide Technical Reference Manual for Energy	ICF
		lighting	Efficiency, 2015, Version 4.0	
572	Industrial	High Efficiency Light	Illinois Statewide Technical Reference Manual for Energy	ICF
		fixtures	Efficiency, 2015, Version 4.0	
573	Industrial	Efficient Lighting Design	Information for Evaluating Geoexchange Applications, New York	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption,
			State Energy Research and Development Authority (NYSERDA),	and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
			2007.	
574	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference
			Efficiency, 2015, Version 4.0	Manual, 2014.
575	Industrial	Premium efficiency	Illinois Statewide Technical Reference Manual for Energy	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
		ventilation control with	Efficiency, 2015, Version 4.0	
		VSD		
576	Industrial	Demand-Controlled	Illinois Statewide Technical Reference Manual for Energy	Ontario Independent Electricity System Operator, Prescriptive Measures and
		Ventilation	Efficiency, 2015, Version 4.0	Assumptions List, 2015.
577	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
578	Industrial	Process Heat Recovery to	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
		Preheat Makeup Water	date accessed: July 2010	
579	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
580	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
581	Industrial	Preventative Oven	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
		Maintenance	date accessed: July 2010	
582	Industrial	Air Curtains (Drver)	NRCan Office of Energy Efficiency, 2009. Drv-Type Transformers -	RSMeans Electrical Cost Data 2009. pp200
			date accessed: July 2010	······································
583	Industrial	Insulation (Drver)	NRCan Office of Energy Efficiency, 2009, Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
	di		date accessed: July 2010	

Measure ID	Sub-Sector	Massura Nama	Reference 1	Reference 2
584	Industrial	Broventative Dryer	NPCan Office of Energy Efficiency, 2009, Dry Type Transformers	Reference 2 RSMoans Electrical Cost Data 2009, pp200
584	industrial	Maintenance	date accessed: July 2010	
585	Industrial	Preventative Furnace	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
		Maintenance	date accessed: July 2010	
586	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
587	Industrial	Preventative Kiln	Energy Design Resources, Industrial Process Heat Recovery	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent
		Maintenance	Design Brief, 2009.	Advancements in Technology and Applications, 2007.
588	Industrial	Insulation (Kiln)	Vendor website - date accessed: March 2010	NA
589	Industrial	High Efficiency Chiller	US Department of Energy, 2004, Improving Process Heating	US Environmental Protection Agency, 1998, Wiserules for Industrial
			System Performance: A Sourcebook for Industry- Date accessed:	Efficiency, Date accessed: April, 2010
			April 2010	
590	Industrial	Optimized Distribution	ICF	NA
		System		
591	Industrial	Premium efficiency	Vendor website - date accessed: May, 2010	NA
		refrigeration control		
		system		
592	Industrial	Smart Defrost Controls	US Department of Energy, 2007, Improving Process Heating	US Environmental Protection Agency, 1998. Wiserules for Industrial
			System Performance: A Sourcebook for Industry 2nd edition-	Efficiency. Date accessed: April, 2010
			Date accessed: October 2015	
593	Industrial	Optimized chilled water	ICF	NA
		temperature and/or		
		optimized condenser		
		temperature		
594	Industrial	Preventative	ICF	NA
		refrigeration/cooling		
		system maintenance		
595	Industrial	Optimized condenser	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		pressure	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
			April 2010	
596	Industrial	VSD on chiller compressor	ICF	NA
597	Industrial	Cooling Tower Optimization	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
			System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
			April 2010	
598	Industrial	Improve insulation of	US Office of Energy Efficiency & Renewable Energy. 2011.	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled
		refrigeration system	Covered Product Category: Water-Cooled Electric Chillers. Date	Chiller. Date accessed: May 2010
			accessed: October 2015	
599	Industrial	High/Premium Efficiency	ICF	NA
		Motors (Pumps)		
600	Industrial	Impeller Trimming (Pump)	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial
				Refrigeration. Accessed October 2015.
601	Industrial	Optimization of pumping	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		system		accessed: July, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
602	Industrial	Premium Efficiency Control	US Environmental Protection Agency. 1998. Wiserules for	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient
603	Industrial	Preventative Pump Maintenance	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
604	Industrial	High/Premium Efficiency Motors (Fans)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
605	Industrial	Premium efficiency control, with ASD (Fans)	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
606	Industrial	Synchronous Belts (Fans)	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
607	Industrial	Preventative Fan Maintenance	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
608	Industrial	High/Premium Efficiency Motors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
609	Industrial	Correctly sized motors	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
610	Industrial	Optimized motor control	Vendor website - Date accessed: May 2010	NA
611	Industrial	Preventative Motor Maintenance	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
612	Industrial	Premium efficiency ASD compressor	ICF	NA
613	Industrial	Optimized Distribution System	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
614	Industrial	Minimize operating air pressure	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
615	Industrial	Optimized sizing of compressor system	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
616	Industrial	Optimized sizes of air receiver tanks	ICF	NA
617	Industrial	Premium Efficiency Air Dryer (compressors)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
618	Industrial	Sequencing Control	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
619	Industrial	Eliminate air leaks	Marbek in-house info	RS Means Mechanical Cost Data
620	Industrial	Synchronous Belts for Air Compressors	ICF	NA
621	Industrial	Replace compressed air use with mechanical or electrical	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
622	Industrial	Premium efficiency ASD	ICF	NA
		compressor		
623	Industrial	Retrofit internal parts of	ICF	NA
		existing centrifugal		
624	Industrial	compressors	1 Sustainability Victoria 2006 Efficient Compressed Air Systems	ΝΑ
024	industrial	charger (for forklifts)	Date accessed: March 2010	
625	Industrial	Economizers for Packaged	US Department of Energy. 2003. Improving Compressed Air	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Air-Conditioning Units	System Performance, a Sourcebook for Industry. Date accessed:	accessed: May, 2010
			May 2010	
626	Industrial	High efficiency non-	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy	NA
		packaged HVAC equipment	Efficiency Reference Guide. Date accessed: July 2010	
627	Industrial	High Efficiency Unitary AC	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
628	Industrial	Ground Source Heat Pump	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
			Efficiency Reference Guide. Date accessed: May 2010	accessed: May, 2010
629	Industrial	Ventilation Heat Recovery	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
630	Industrial	Automated Temperature	Stanley Assembly Technologies. 200Energy Consumption of	NA
		Control	2010 Pheumatic and DC Electric Assembly Tools. Date accessed: March	
631	Industrial	Destratification Fans	UK Department of the Environment. Transport and the Region's	BC Hydro, 2006, QA Standard, Technology: Effective Measure Life, Date
			Energy Efficiency Best Practice Programme. 1999. Air	accessed: May, 2010
			compressors with integral variable speed control. Date accessed:	
			May 2010	
632	Industrial	Warehouse Loading Dock	Personnal communication with IFA (International Fertilizer	NA
622	Industrial	Sedis Proventative Packaged	Association) experts.	ΝΑ
033	muustnai	HVAC Maintenance	Preheating of Emergency Diesel Backup Generators, December,	
			2009	
634	Industrial	Heat Recovery from	NRCan Office of Energy Efficiency. 2009. Industrial Battery	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut
		Processes to Heat	Chargers. Date accessed: September 2010	Costs. Date accessed: October 2015
	to devote to t	Ventilation Make-up Air	The Order - Order Lee Miller of Free Lee Free Task field	(http://www.mhi.org/media/members/17127/130197612878638451.pdf)
635	Industrial	lighting	Reference Manual, 2014.	packaged air-conditioning Units, 2004.
636	Industrial	High Efficiency Light	Illinois Statewide Technical Reference Manual for Energy	ICF
		fixtures	Efficiency, 2015, Version 4.0	
637	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy	ICF
			Efficiency, 2015, Version 4.0	
638	Industrial	Lighting controls	Information for Evaluating Geoexchange Applications, New York	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption,
			State Energy Research and Development Authority (NYSERDA),	and options for overcoming Barriers, Navigant Consulting Inc., 2009.
639	Industrial	Premium efficiency	Illinois Statewide Technical Reference Manual for Energy	The Cadmus Group Inc. Wisconsin Focus on Energy Technical Reference
		ventilation control with	Efficiency, 2015, Version 4.0	Manual, 2014.
		VSD	· ·	

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
640	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
641	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
642	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
643	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
644	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
645	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
646	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
647	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
648	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
649	Industrial	Preventative Furnace Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
650	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
651	Industrial	Preventative Kiln Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
652	Industrial	Insulation (Kiln)	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
653	Industrial	High Efficiency Chiller	Vendor website - date accessed: March 2010	NA
654	Industrial	Optimized Distribution System	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
655	Industrial	Premium efficiency refrigeration control system	ICF	NA
656	Industrial	Smart Defrost Controls	Vendor website - date accessed: May, 2010	NA
657	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
658	Industrial	Preventative refrigeration/cooling system maintenance	ICF	NA
659	Industrial	Optimized condenser pressure	ICF	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
660	Industrial	VSD on chiller compressor	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
661	Industrial	Cooling Tower Optimization	ICF	NA
662	Industrial	Improve insulation of refrigeration system	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
663	Industrial	High/Premium Efficiency Motors (Pumps)	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
664	Industrial	Impeller Trimming (Pump)	ICF	NA
665	Industrial	Optimization of pumping system	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
666	Industrial	Premium Efficiency Control with ASDs (Pumps)	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
667	Industrial	Preventative Pump Maintenance	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
668	Industrial	High/Premium Efficiency Motors (Fans)	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
669	Industrial	Premium efficiency control, with ASD (Fans)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
670	Industrial	Synchronous Belts (Fans)	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
671	Industrial	Preventative Fan Maintenance	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
672	Industrial	High/Premium Efficiency Motors	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
673	Industrial	Correctly sized motors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
674	Industrial	Optimized motor control	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
675	Industrial	Preventative Motor Maintenance	Vendor website - Date accessed: May 2010	NA
676	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
677	Industrial	Optimized Distribution System	ICF	NA
678	Industrial	Minimize operating air pressure	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
679	Industrial	Optimized sizing of compressor system	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
680	Industrial	Optimized sizes of air receiver tanks	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	ΝΑ
681	Industrial	Premium Efficiency Air Dryer (compressors)	ICF	ΝΑ
682	Industrial	Sequencing Control	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
683	Industrial	Eliminate air leaks	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
684	Industrial	Synchronous Belts for Air Compressors	Marbek in-house info	RS Means Mechanical Cost Data
685	Industrial	Replace compressed air use with mechanical or electrical	ICF	ΝΑ
686	Industrial	Premium efficiency ASD compressor	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
687	Industrial	Retrofit internal parts of existing centrifugal compressors	ICF	ΝΑ
688	Industrial	High efficiency battery charger (for forklifts)	ICF	NA
689	Industrial	Economizers for Packaged Air-Conditioning Units	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
690	Industrial	High efficiency non- packaged HVAC equipment	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
691	Industrial	High Efficiency Unitary AC	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	ΝΑ
692	Industrial	Ground Source Heat Pump	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
693	Industrial	Ventilation Heat Recovery	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
694	Industrial	Automated Temperature Control	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	ΝΑ
695	Industrial	Destratification Fans	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	ΝΑ
696	Industrial	Warehouse Loading Dock Seals	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
697	Industrial	Preventative Packaged	Personnal communication with IFA (International Fertilizer	NA
		HVAC Maintenance	Association) experts.	
698	Industrial	Heat Recovery from	Design & Engineering Services, Air Source Heat Pump for	NA
		Processes to Heat	Preheating of Emergency Diesel Backup Generators, December,	
		Ventilation Make-up Air	2009	
699	Industrial	High efficiency ballasts for	NRCan Office of Energy Efficiency. 2009. Industrial Battery	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut
		lighting	Chargers. Date accessed: September 2010	Costs. Date accessed: October 2015
700	Industrial	High Efficiency Light	The Codmus Group Inc. Wisconsin Focus on Energy Technical	NPCan Office of Energy Efficiency Technical East Sheet: Economizers for
700	muustnai	fixtures	Reference Manual 2014	nackaged air-conditioning Units 2004
701	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy	
/01	maastria	Enclent Eighting Design	Efficiency, 2015, Version 4.0	
702	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy	ICF
,02	maastria		Efficiency, 2015, Version 4.0	
703	Industrial	Premium efficiency	Information for Evaluating Geoexchange Applications, New York	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption.
		ventilation control with	State Energy Research and Development Authority (NYSERDA),	and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
		VSD	2007.	
704	Industrial	Demand-Controlled	Illinois Statewide Technical Reference Manual for Energy	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference
		Ventilation	Efficiency, 2015, Version 4.0	Manual, 2014.
705	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
706	Industrial	Process Heat Recovery to	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
		Preheat Makeup Water	date accessed: July 2010	
707	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
708	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
700			date accessed: July 2010	
709	Industrial	Preventative Oven	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
710	lu du atula l		Uale accessed: July 2010	DCMagers Electrical Cast Data 2000, pp 200
/10	industriai	Air Curtains (Dryer)	date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
711	Industrial	Inculation (Druor)	NPCan Office of Energy Efficiency, 2000, Dry Type Transformers	PSMoone Electrical Cost Data 2000, pp200
/11	muustilai	insulation (Dryer)	date accessed: July 2010	KSMEdils Electrical Cost Data 2009, pp200
712	Industrial	Preventative Drver	NRCan Office of Energy Efficiency, 2009, Dry-Type Transformers -	RSMeans Electrical Cost Data 2009 pp200
/12	maastria	Maintenance	date accessed: July 2010	
713	Industrial	Preventative Eurnace	NRCan Office of Energy Efficiency, 2009, Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
. 10	maastinai	Maintenance	date accessed: July 2010	
714	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
715	Industrial	Preventative Kiln	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
		Maintenance	date accessed: July 2010	
716	Industrial	Insulation (Kiln)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
717	Industrial	High Efficiency Chiller	Energy Design Resources, Industrial Process Heat Recovery	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent
			Design Brief, 2009.	Advancements in Technology and Applications, 2007.

Maggirra ID	Sub Costor		Deference 1	Deference 2
	Sub-Sector	Ontimized Distribution	Reference 1	Reference 2
/18	Industrial	System	Vendor website - date accessed: March 2010	NA
719	Industrial	Premium efficiency	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		refrigeration control	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
		system	April 2010	
720	Industrial	Smart Defrost Controls	ICF	NA
721	Industrial	Optimized chilled water	Vendor website - date accessed: May, 2010	NA
		temperature and/or		
		optimized condenser		
		temperature		
722	Industrial	Preventative	US Department of Energy, 2007. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		refrigeration/cooling	System Performance: A Sourcebook for Industry 2nd edition-	Efficiency. Date accessed: April, 2010
		system maintenance	Date accessed: October 2015	
723	Industrial	Optimized condenser	ICF	NA
		pressure		
724	Industrial	VSD on chiller compressor	ICF	NA
725	Industrial	Cooling Tower Optimization	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		<b>U</b> .	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
			April 2010	, , , ,
726	Industrial	Improve insulation of	ICF	NA
		refrigeration system		
727	Industrial	High/Premium Efficiency	US Department of Energy, 2004, Improving Process Heating	US Environmental Protection Agency, 1998. Wiserules for Industrial
		Motors (Pumps)	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency, Date accessed: April, 2010
			April 2010	
728	Industrial	Impeller Trimming (Pump)	US Office of Energy Efficiency & Renewable Energy, 2011.	US Department of Energy, 2003, How to Buy an Energy Efficient Air-Cooled
			Covered Product Category: Water-Cooled Electric Chillers, Date	Chiller. Date accessed: May 2010
			accessed: October 2015	
729	Industrial	Optimization of pumping	ICF	NA
		system		
730	Industrial	Premium Efficiency Control	ICF	Energy Design Resources, 2010, Energy Efficiency Practices in Industrial
		with ASDs (Pumps)		Refrigeration. Accessed October 2015.
731	Industrial	Preventative Pump	Vendor website - date accessed: July 2010	BC Hydro 2006 OA Standard Technology: Effective Measure Life Date
,51	industrial	Maintenance	Vendor Website - date decessed. July 2010	accessed: July 2010
732	Industrial	High/Premium Efficiency	US Environmental Protection Agency 1998 Wiserules for	Progress Energy Energy Savers: Chiller Ontimization and Energy-Efficient
732	muustnai	Motors (Fans)	Industrial Efficiency. Date accessed: July 2010	Chillers Date accessed: October 2015
722	Inductrial		Batterbricks, Operation and Maintenance of Chillers, Date	
/33	industriai	with ASD (Fans)	Betterbricks. Operation and Maintenance of Chillers. Date	NA
70.4	to develop to the	With ASD (Fails)		NA
/34	Industrial	Synchronous Beits (Fans)	US Environmental Protection Agency, 1998. Wiserules for	NA
			Industrial Efficiency. Date accessed: July, 2010	
735	Industrial	Preventative Fan	Untario Power Authority. 2009. 2009 Commercial and	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Maintenance	Institutional Measures and Assumptions. Date accessed: May	accessed: May, 2010
			2010	
736	Industrial	High/Premium Efficiency	Energy Design Resources, Chiller Plant Efficiency Design Brief,	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal,
		Motors	2010.	February 2014.

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
737	Industrial	Correctly sized motors	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
738	Industrial	Optimized motor control	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
739	Industrial	Preventative Motor Maintenance	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
740	Industrial	Premium efficiency ASD compressor	Vendor website - Date accessed: May 2010	NA
741	Industrial	Optimized Distribution System	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
742	Industrial	Minimize operating air pressure	ICF	NA
743	Industrial	Optimized sizing of compressor system	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
744	Industrial	Optimized sizes of air receiver tanks	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
745	Industrial	Premium Efficiency Air Dryer (compressors)	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
746	Industrial	Sequencing Control	ICF	NA
747	Industrial	Eliminate air leaks	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
748	Industrial	Synchronous Belts for Air Compressors	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
749	Industrial	Replace compressed air use with mechanical or electrical	Marbek in-house info	RS Means Mechanical Cost Data
750	Industrial	Premium efficiency ASD compressor	ICF	NA
751	Industrial	Retrofit internal parts of existing centrifugal compressors	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
752	Industrial	High efficiency battery charger (for forklifts)	ICF	NA
753	Industrial	Economizers for Packaged Air-Conditioning Units	ICF	NA
754	Industrial	High efficiency non- packaged HVAC equipment	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
755	Industrial	High Efficiency Unitary AC	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
756	Industrial	Ground Source Heat Pump	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
757	Industrial	Ventilation Heat Recovery	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
758	Industrial	Automated Temperature Control	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
759	Industrial	Destratification Fans	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
760	Industrial	Warehouse Loading Dock Seals	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
761	Industrial	Preventative Packaged HVAC Maintenance	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
762	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Personnal communication with IFA (International Fertilizer Association) experts.	NA
763	Industrial	High efficiency ballasts for lighting	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
764	Industrial	High Efficiency Light fixtures	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
765	Industrial	Efficient Lighting Design	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
766	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
767	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
768	Industrial	Demand-Controlled Ventilation	Information for Evaluating Geoexchange Applications, New York State Energy Research and Development Authority (NYSERDA), 2007.	Ground-Source Heat Pumps: Overview of Market Status, Barriers to Adoption, and Options for Overcoming Barriers, Navigant Consulting Inc., 2009.
769	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
770	Industrial	Process Heat Recovery to Preheat Makeup Water	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
771	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
772	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
773	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
774	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
775	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
776	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
777	Industrial	Preventative Furnace Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
778	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
779	Industrial	Preventative Kiln Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
780	Industrial	Insulation (Kiln)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
781	Industrial	High Efficiency Chiller	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
782	Industrial	Optimized Distribution System	Energy Design Resources, Industrial Process Heat Recovery Design Brief, 2009.	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent Advancements in Technology and Applications, 2007.
783	Industrial	Premium efficiency refrigeration control system	Vendor website - date accessed: March 2010	NA
784	Industrial	Smart Defrost Controls	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
785	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	ICF	NA
786	Industrial	Preventative refrigeration/cooling system maintenance	Vendor website - date accessed: May, 2010	NA
787	Industrial	Optimized condenser pressure	US Department of Energy, 2007. Improving Process Heating System Performance: A Sourcebook for Industry 2nd edition- Date accessed: October 2015	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
788	Industrial	VSD on chiller compressor	ICF	NA
789	Industrial	Cooling Tower Optimization	ICF	NA
790	Industrial	Improve insulation of refrigeration system	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010
791	Industrial	High/Premium Efficiency Motors (Pumps)	ICF	NA
792	Industrial	Impeller Trimming (Pump)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: April, 2010

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
793	Industrial	Optimization of pumping system	US Office of Energy Efficiency & Renewable Energy. 2011. Covered Product Category: Water-Cooled Electric Chillers. Date accessed: October 2015	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled Chiller. Date accessed: May 2010
794	Industrial	Premium Efficiency Control with ASDs (Pumps)	ICF	NA
795	Industrial	Preventative Pump Maintenance	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
796	Industrial	High/Premium Efficiency Motors (Fans)	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
797	Industrial	Premium efficiency control, with ASD (Fans)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
798	Industrial	Synchronous Belts (Fans)	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
799	Industrial	Preventative Fan Maintenance	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
800	Industrial	High/Premium Efficiency Motors	Ontario Power Authority. 2009. 2009 Commercial and Institutional Measures and Assumptions. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
801	Industrial	Correctly sized motors	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
802	Industrial	Optimized motor control	Heschong Mahone Group. 2008. Analysis of Standards Options for Walk-in Refrigerated Storage. Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed: July 2010
803	Industrial	Preventative Motor Maintenance	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
804	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2006. Trim or Replace Impellers on Oversized Pumps. Date accessed: May 2010	Masanet, E., Worrel, E., Graus, W., Galitsky, C. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for the Fruit and Vegetable Processing Industry. Date accessed: May 2010
805	Industrial	Optimized Distribution System	Vendor website - Date accessed: May 2010	NA
806	Industrial	Minimize operating air pressure	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
807	Industrial	Optimized sizing of compressor system	ICF	NA
808	Industrial	Optimized sizes of air receiver tanks	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
809	Industrial	Premium Efficiency Air Dryer (compressors)	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
810	Industrial	Sequencing Control	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
811	Industrial	Eliminate air leaks	ICF	NA
812	Industrial	Synchronous Belts for Air Compressors	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
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813	Industrial	with mechanical or	Market Opportunities Assessment. Date accessed: May 2010	accessed: May, 2010
		electrical		
814	Industrial	Premium efficiency ASD	Marbek in-house info	RS Means Mechanical Cost Data
		compressor		
815	Industrial	Retrofit internal parts of	ICF	NA
		existing centrifugal		
916	Industrial	Ligh officioney battony	LIK Department of the Environment Transport and the Perion's	PC Hydro 2006, OA Standard Tachnology: Effective Measure Life, Data
810	muustilai	charger (for forklifts)	Energy Efficiency Best Practice Programme, 1999. Air	accessed: May, 2010
		energer (ier iermite)	compressors with integral variable speed control. Date accessed:	
			May 2010	
817	Industrial	Economizers for Packaged	ICF	NA
		Air-Conditioning Units		
818	Industrial	High efficiency non-	ICF	NA
		packaged HVAC equipment		
819	Industrial	High Efficiency Unitary AC	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
820	Industrial	Ground Source Heat Pump	US Department of Energy. 2003. Improving Compressed Air	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
			System Performance, a Sourcebook for Industry. Date accessed:	accessed: May, 2010
			May 2010	
821	Industrial	Ventilation Heat Recovery	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy	NA
022	to devote to the		Efficiency Reference Guide. Date accessed: July 2010	DOLL des 2000, OA Gescheid Techenken Effective Masserer Life Dete
822	Industrial	Automated Temperature	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
822	Industrial	Dostratification Fans	NPCan Office of Energy Efficiency 2007 Compressed Air Energy	BC Hydro 2006 OA Standard Technology: Effective Measure Life Date
825	muustnar	Destratification rans	Efficiency Reference Guide. Date accessed: May 2010	accessed: May. 2010
824	Industrial	Warehouse Loading Dock	US Department of Energy. 2005. Replace V-Belts with Cogged or	NA
		Seals	Synchronous Belt Drives. Date accessed: May 2010	
825	Industrial	Preventative Packaged	Stanley Assembly Technologies. 200Energy Consumption of	NA
		HVAC Maintenance	Pneumatic and DC Electric Assembly Tools. Date accessed: March	
			2010	
826	Industrial	Heat Recovery from	UK Department of the Environment, Transport and the Region's	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		Ventilation Make-up Air	compressors with integral variable speed control. Date accessed:	accessed: May, 2010
		Ventilation Make up All	May 2010	
827	Industrial	High efficiency ballasts for	Personnal communication with IFA (International Fertilizer	NA
		lighting	Association) experts.	
828	Industrial	High Efficiency Light	Design & Engineering Services, Air Source Heat Pump for	NA
		fixtures	Preheating of Emergency Diesel Backup Generators, December,	
020	to devote to the			De la Defensa 2012 l'ista fficiana Dellas Charana Gala France Cu
829	industrial	Efficient Lighting Design	NKCan Unice of Energy Efficiency. 2009. Industrial Battery Chargers: Date accessed: Sentember 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut
			Chargers. Date accessed. September 2010	(http://www.mhi.org/media/members/17127/130197612878638451.ndf)
830	Industrial	Lighting controls	The Cadmus Group Inc, Wisconsin Focus on Energy Technical	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for
			Reference Manual, 2014.	packaged air-conditioning Units, 2004.

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
831	Industrial	Premium efficiency	Illinois Statewide Technical Reference Manual for Energy	ICF
		ventilation control with	Efficiency, 2015, Version 4.0	
		VSD		105
832	Industrial	Demand-Controlled	Illinois Statewide Technical Reference Manual for Energy	ICF
		Ventilation	Efficiency, 2015, Version 4.0	
833	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
			date accessed: July 2010	
834	Industrial	Process Heat Recovery to	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
005		Preneat Makeup Water		
835	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
836	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
027	to do statel	December 2 and		
837	Industrial	Preventative Oven	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers -	RSIMEANS Electrical Cost Data 2009, pp200
020	la du ataint		Uate accessed. July 2010	DCMages Flastrical Cast Data 2000, pp 200
838	industriai	Air Curtains (Dryer)	date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
820	la du ataint	In a clatic of (Dar coar)	NDCan Office of Fronze Efficiency 2000 Dry Type Transformers	DCMAsses Flastrias Cast Data 2000, as 200
839	industriai	Insulation (Dryer)	date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
840	Inductrial	Droventative Drugs	NBCan Office of Energy Efficiency, 2000, Dry Type Transformers	DCMoone Flortrical Cost Data 2000, pp200
840	industriai	Maintonanco	date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
0/1	Industrial		NBCan Office of Energy Efficiency, 2000, Dry Type Transformers	PSMoone Electrical Cost Data 2000, pp200
041	industrial	Maintenance	date accessed: July 2010	KSIVIEAIIS Electrical Cost Data 2009, pp200
842	Industrial		NPCan Office of Energy Efficiency, 2009, Dry Type Transformers	PSMoons Electrical Cost Data 2009, pp200
842	industrial	insulation (Furnace)	date accessed: July 2010	Kolvieans Liectrical Cost Data 2009, pp200
8/13	Industrial	Preventative Kiln	NRCan Office of Energy Efficiency 2009 Dry-Type Transformers -	RSMeans Electrical Cost Data 2009 pp200
045	maastnar	Maintenance	date accessed: July 2010	Nomeans Electrical Cost Data 2005, pp200
844	Industrial	Insulation (Kiln)	NRCan Office of Energy Efficiency 2009 Dry-Type Transformers -	RSMeans Electrical Cost Data 2009 nn200
011	industrial		date accessed: July 2010	
845	Industrial	High Efficiency Chiller	NRCan Office of Energy Efficiency, 2009, Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
0.10	industrial		date accessed: July 2010	
846	Industrial	Optimized Distribution	NRCan Office of Energy Efficiency, 2009, Dry-Type Transformers -	RSMeans Electrical Cost Data 2009, pp200
		System	date accessed: July 2010	
847	Industrial	Premium efficiency	Energy Design Resources, Industrial Process Heat Recovery	Global Energy Partners, Industrial Waste-Heat Recovery: Benefits and Recent
		refrigeration control	Design Brief, 2009.	Advancements in Technology and Applications, 2007.
		system		
848	Industrial	Smart Defrost Controls	Vendor website - date accessed: March 2010	NA
849	Industrial	Optimized chilled water	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		temperature and/or	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
		optimized condenser	April 2010	
		temperature		
850	Industrial	Preventative	ICF	NA
		retrigeration/cooling		
	1	system maintenance		

Moosuro ID	Sub Soctor	Moasuro Namo	Poforonco 1	Pafaranca 2
851	Industrial	Ontimized condenser	Vendor website - date accessed: May 2010	NA
001	maastinai	pressure		
852	Industrial	VSD on chiller compressor	US Department of Energy, 2007. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
			System Performance: A Sourcebook for Industry 2nd edition-	Efficiency. Date accessed: April, 2010
			Date accessed: October 2015	
853	Industrial	Cooling Tower Optimization	ICF	NA
854	Industrial	Improve insulation of	ICF	NA
		refrigeration system		
855	Industrial	High/Premium Efficiency	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		Motors (Pumps)	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
856	Industrial	Impollor Trimming (Rump)		ΝΔ
850	industrial	impener minimig (Pump)	ICF	INA I
857	Industrial	Optimization of pumping	US Department of Energy, 2004. Improving Process Heating	US Environmental Protection Agency. 1998. Wiserules for Industrial
		system	System Performance: A Sourcebook for Industry- Date accessed:	Efficiency. Date accessed: April, 2010
			April 2010	
858	Industrial	Premium Efficiency Control	US Office of Energy Efficiency & Renewable Energy. 2011.	US Department of Energy. 2003. How to Buy an Energy Efficient Air-Cooled
		with ASDS (Pumps)	Covered Product Category: Water-Cooled Electric Chillers. Date	Chiller. Date accessed: May 2010
8E0	Industrial	Drovontativo Dump		NA
833	industriai	Maintenance		
860	Industrial	High/Premium Efficiency	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial
		Motors (Fans)		Refrigeration. Accessed October 2015.
861	Industrial	Premium efficiency control,	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
		with ASD (Fans)		accessed: July, 2010
862	Industrial	Synchronous Belts (Fans)	US Environmental Protection Agency. 1998. Wiserules for	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient
			Industrial Efficiency. Date accessed: July, 2010	Chillers. Date accessed: October 2015
863	Industrial	Preventative Fan	Betterbricks. Operation and Maintenance of Chillers. Date	NA
		Maintenance	accessed: July 2010	
864	Industrial	High/Premium Efficiency	US Environmental Protection Agency. 1998. Wiserules for	NA
		Motors	Industrial Efficiency. Date accessed: July, 2010	
865	Industrial	Correctly sized motors	Ontario Power Authority. 2009. 2009 Commercial and	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date
			Institutional Measures and Assumptions. Date accessed: May	accessed: May, 2010
966	to devote to the		2010	First Marries Colling France - 10 Colling To any ACUDAT to coll
866	Industrial	Optimized motor control	Energy Design Resources, Chiller Plant Efficiency Design Brief,	Frank Morrison, Saving Energy With Cooling Towers, ASHRAE Journal,
967	Inductrial	Droventative Mater	2010.	February 2014.
807	muustriai	Maintenance	for Walk-in Refrigerated Storage, Date accessed: July 2010	Canada Plan Service. Walk-in Cooler. Date accessed. July 2010
868	Industrial	Bromium officionay ASD	NPCon Office of Energy Efficiency, Promium Efficiency Motors	BC Hydro 2006, OA Standard Technology: Effective Measure Life Date
808	muustinai	compressor	Technical Fact sheet. Date accessed: May 2010	accessed: May, 2010
869	Industrial	Ontimized Distribution	LIS Department of Energy 2006 Trim or Replace Impellers on	Masanet F. Worrel F. Graus W. Galitsky C 2008 Energy Efficiency
005	maastria	System	Oversized Pumps, Date accessed: May 2010	Improvement and Cost Saving Opportunities for the Fruit and Vegetable
		-,		Processing Industry. Date accessed: May 2010
870	Industrial	Minimize operating air	Vendor website - Date accessed: May 2010	NA
		pressure		

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
871	Industrial	Optimized sizing of compressor system	US Department of Energy. 2004. Variable Speed Pumping. Date accessed: May 2010	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010
872	Industrial	Optimized sizes of air receiver tanks	ICF	NA
873	Industrial	Premium Efficiency Air Dryer (compressors)	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
874	Industrial	Sequencing Control	Neelis, M., Worrell, E., Masanet, E. 2008. Energy Efficiency Improvement and Cost Saving Opportunities for Petrochemical Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
875	Industrial	Eliminate air leaks	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
876	Industrial	Synchronous Belts for Air Compressors	ICF	NA
877	Industrial	Replace compressed air use with mechanical or electrical	NRCan Office of Energy Efficiency. Premium-Efficiency Motors Technical Fact sheet. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
878	Industrial	Premium efficiency ASD compressor	US Department of Energy. 2002. Industrial Electric Motor Systems Market Opportunities Assessment. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
879	Industrial	Retrofit internal parts of existing centrifugal compressors	Marbek in-house info	RS Means Mechanical Cost Data
880	Industrial	High efficiency battery charger (for forklifts)	ICF	NA
881	Industrial	Economizers for Packaged Air-Conditioning Units	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
882	Industrial	High efficiency non- packaged HVAC equipment	ICF	NA
883	Industrial	High Efficiency Unitary AC	ICF	NA
884	Industrial	Ground Source Heat Pump	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
885	Industrial	Ventilation Heat Recovery	US Department of Energy. 2003. Improving Compressed Air System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
886	Industrial	Automated Temperature Control	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
887	Industrial	Destratification Fans	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
888	Industrial	Warehouse Loading Dock Seals	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
889	Industrial	Preventative Packaged HVAC Maintenance	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA

Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
890	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
891	Industrial	High efficiency ballasts for lighting	UK Department of the Environment, Transport and the Region's Energy Efficiency Best Practice Programme. 1999. Air compressors with integral variable speed control. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
892	Industrial	High Efficiency Light fixtures	Personnal communication with IFA (International Fertilizer Association) experts.	NA
893	Industrial	Efficient Lighting Design	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
894	Industrial	Lighting controls	NRCan Office of Energy Efficiency. 2009. Industrial Battery Chargers. Date accessed: September 2010	Power Designers. 2012. High-efficiency Battery Chargers Save Energy, Cut Costs. Date accessed: October 2015 (http://www.mhi.org/media/members/17127/130197612878638451.pdf)
895	Industrial	Premium efficiency ventilation control with VSD	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.	NRCan Office of Energy Efficiency, Technical Fact Sheet: Economizers for packaged air-conditioning Units, 2004.
896	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF