



ComEd Energy Efficiency Potential Study, 2017–2030

Final Report

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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 4.3.

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

Figure 1. Net Cumulative Achievable Potential and Total Program Costs, by Rate Class			
	Residential Ratepayers	C&I 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

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,¹ 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.² Economically efficient potential was also calculated. Definitions of both economic and economically efficient potential are provided in the economic potential section of this report.

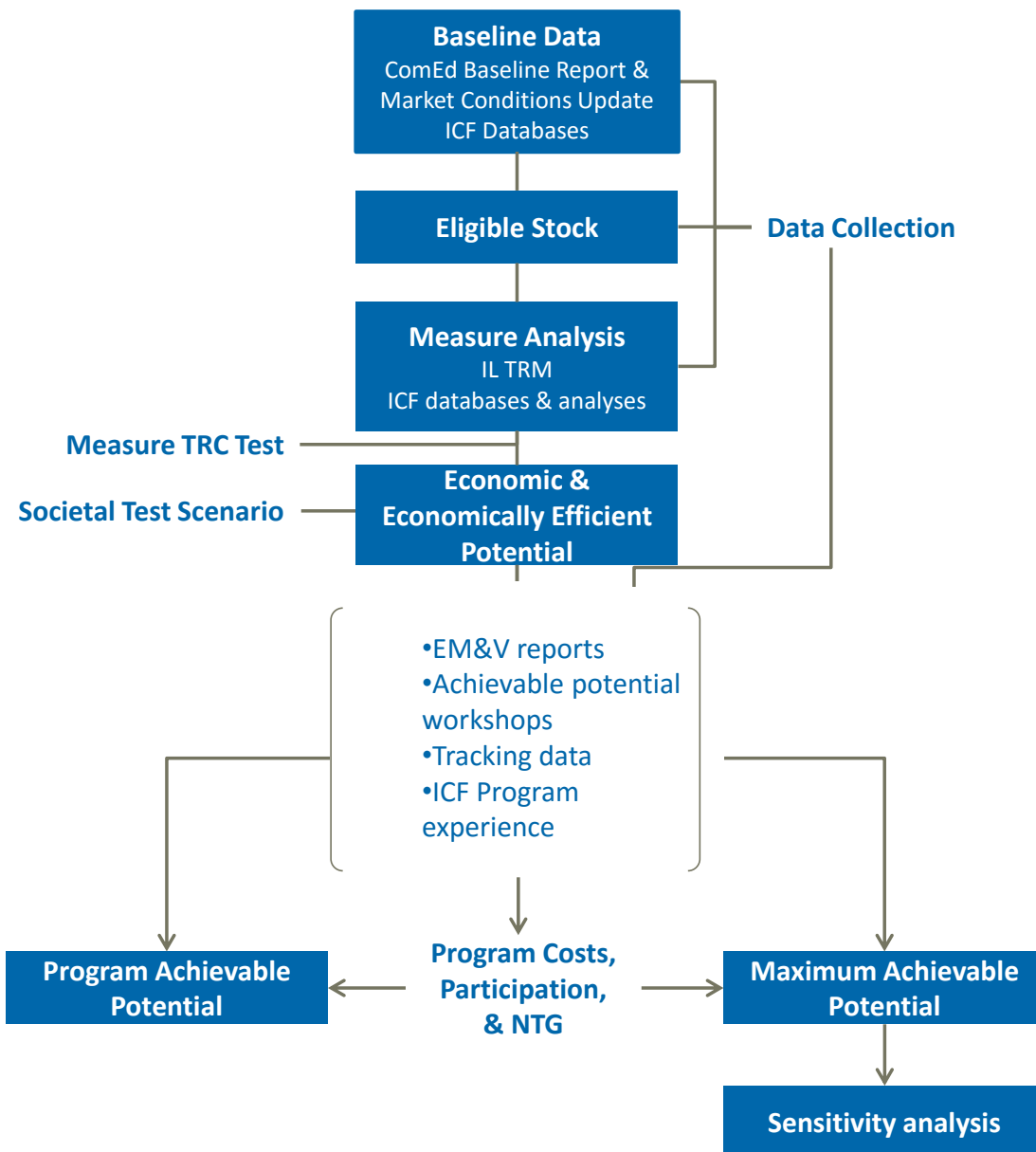
ICF then performed the achievable potential analysis. Program achievable potential is the level of cost-effective savings achievable under ComEd’s total program budget cap. Maximum achievable potential is the level of cost-effective savings absent the budget cap. ICF’s approach to estimating achievable 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.

¹ 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.

² 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.

Figure 2. Potential Study Approach



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 Corporation	Primary	Calculating eligible stock
Market Conditions Update	Opinion Dynamics Corporation	Secondary	Calculating eligible stock
ICF baseline databases	ICF International	Secondary	Calculating eligible stock
Measure Assumptions			
IL TRM 4.0; IL TRM 5.0	IL Stakeholder Advisory Group	Measure parameters	Measure database development
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 Advisory Group	Primary	Estimating achievable potential
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.³ 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).⁴

Figure 4. Example Eligible Stock Calculation

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

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.

³ For retrofit measures, annual replacement eligibility equals 100 percent.

⁴ 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).⁵ Each measure has the characteristics shown in Figure 5.

Figure 5. Example Measure Characteristics

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
6. Measure definition	Curtains or covers on top of open refrigerated or freezer display cases
7. Baseline definition	Vertical open display case, remote condensing, 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

* 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.⁶

⁵ Retrocommissioning includes some behavior-based measures for the commercial sector, and system measures include behavior-based options for the industrial sector.

⁶ Measure TRC benefits are avoided costs. Measure TRCs are incremental costs. The measure TRC test does not include program costs.

Figure 6. Number of Measures Evaluated and Included

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

In calculating achievable potential, there were a small number of cases where ICF included non-cost-effective 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.⁷

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

⁷ 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:

1. **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 PY8⁸ 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 ($S_{\max}$) was estimated for each measure. $S_{\max}$ is the highest estimated annual measure participation rate in the forecast. For most measures, a preliminary $S_{\max}$ estimate was calculated as a function of the customer payback acceptance rate (PAR)⁹ 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 $S_{\max}$ estimates were estimated as such:

$$S_{\max \text{ Preliminary}} = PAR_{\text{Existing Incentive}} \times MAS_{\text{Preliminary}}$$

$S_{\max}$ represents the maximum level of participation in the forecast, but participation in years prior to the $S_{\max}$ 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 $S_{\max}$ 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

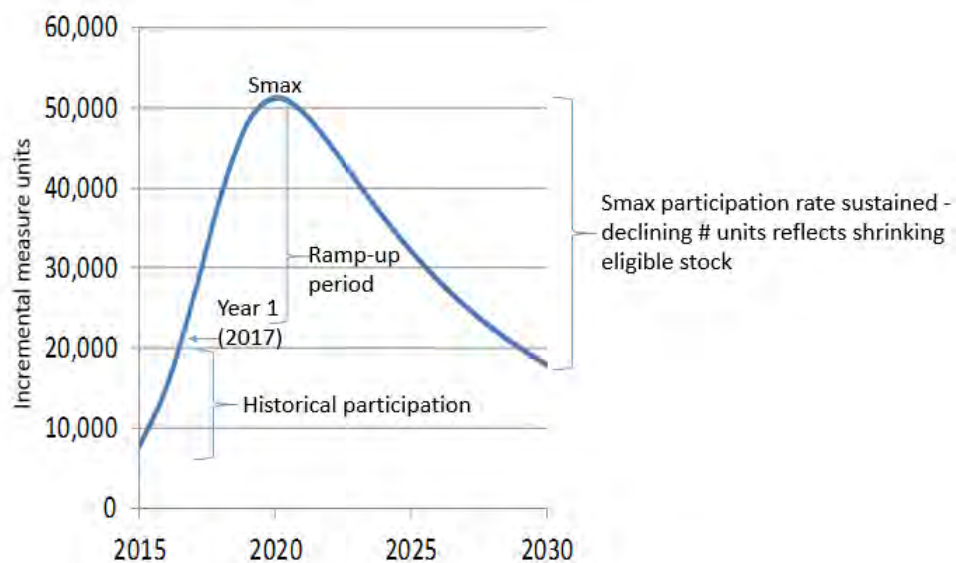
⁸ As published on the Net-To-Gross Framework section of the Illinois Stakeholder Advisory Group Web site in January 2016.

⁹ 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 $S_{\max}$ 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.

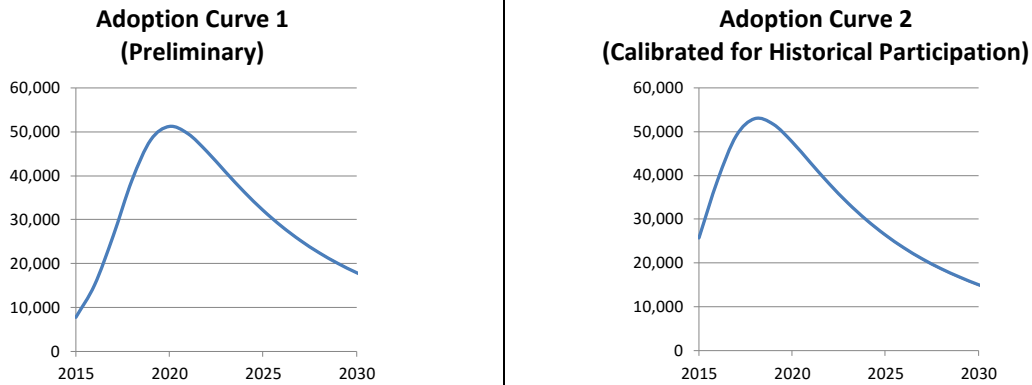
Figure 7. Illustrative Measure Market Diffusion Curve



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 to 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_{max} , 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_{max} . 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.

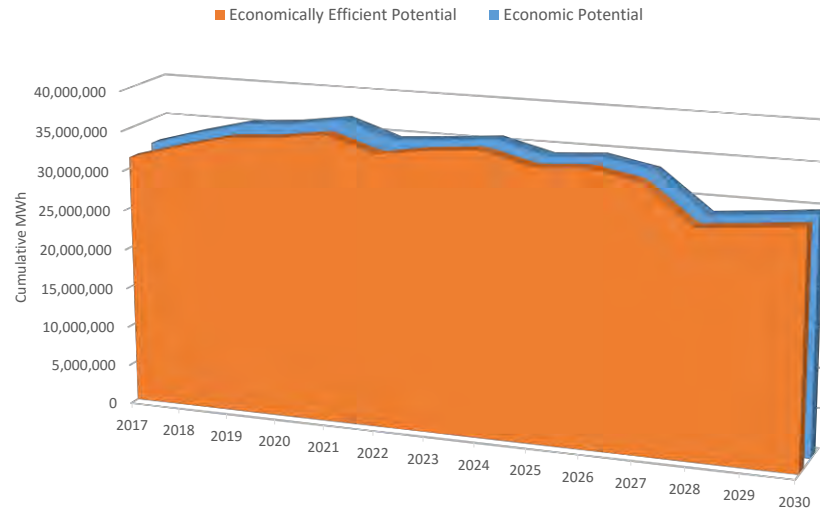
DCEO Programs

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, cost-effective 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

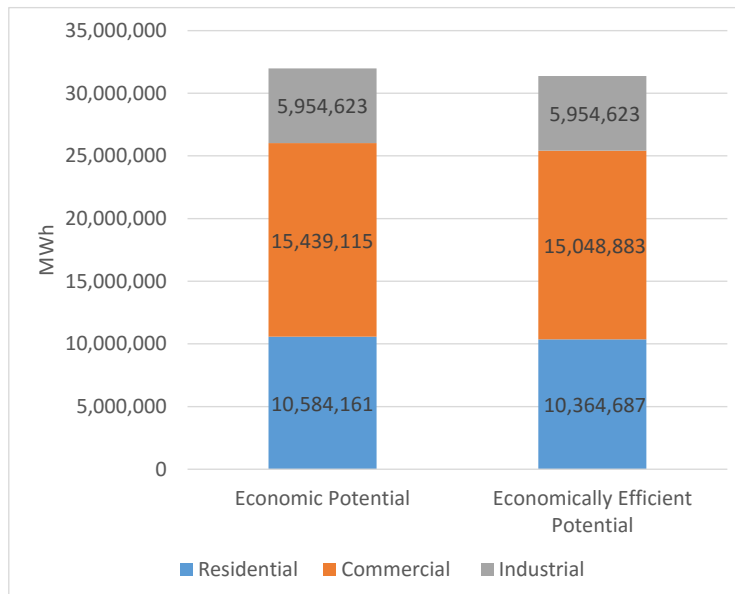


Total economic potential is 32 TWh in 2017, or about 35 percent of sales. Economically efficient potential is 2 percent lower than economic potential, or 31 TWh. Figure 10 shows the distribution of total economic potential and economically efficient potential by sector. The distribution of economic potential 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 11. Distribution of Residential Economic Potential by End Use in 2017

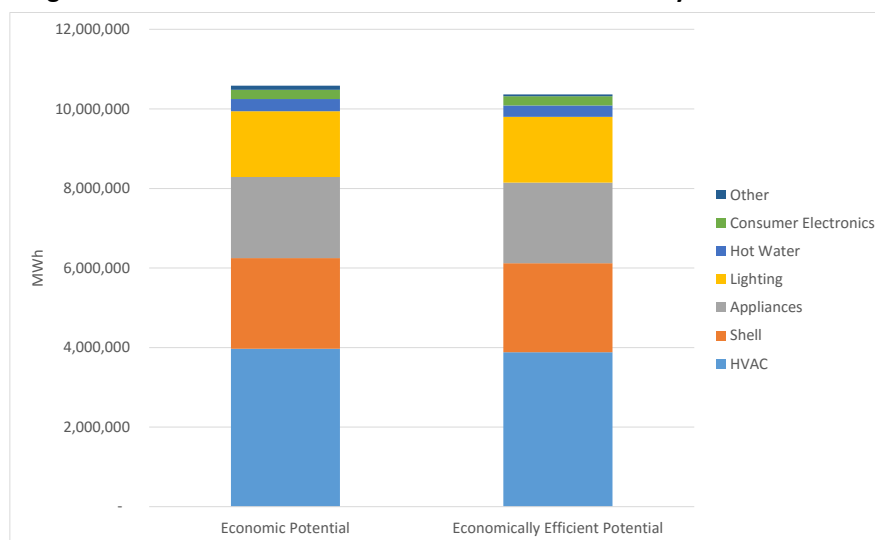


Figure 12 lists the 10 measure types with the highest economic potential in 2017. In total, these measures represent 82 percent of residential economic potential.

Figure 12. Top 10 Measures, 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%

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 13. Distribution of Commercial Economic Potential by End Use

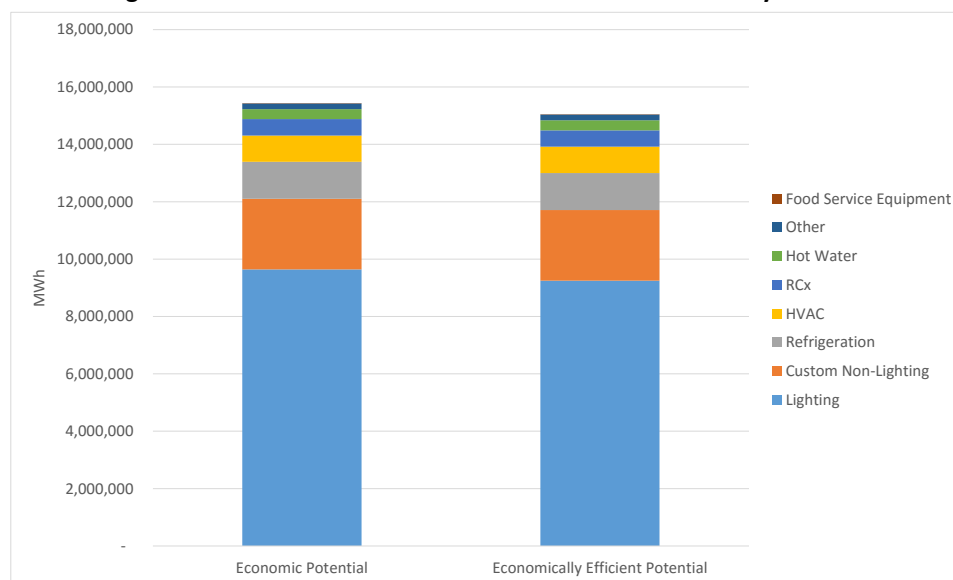


Figure 14 lists the 10 measure types with the highest economic potential in 2017. In total, these measures represent 90 percent of commercial economic potential. The amount of potential in small business projects is consistent with the high percentage of ComEd’s commercial customers who are small business 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.

Figure 14. Top 10 Measures, Commercial Economic Potential

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%

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 three-fourths of industrial economic potential.

Figure 15. Distribution of Industrial Economic Potential by End Use

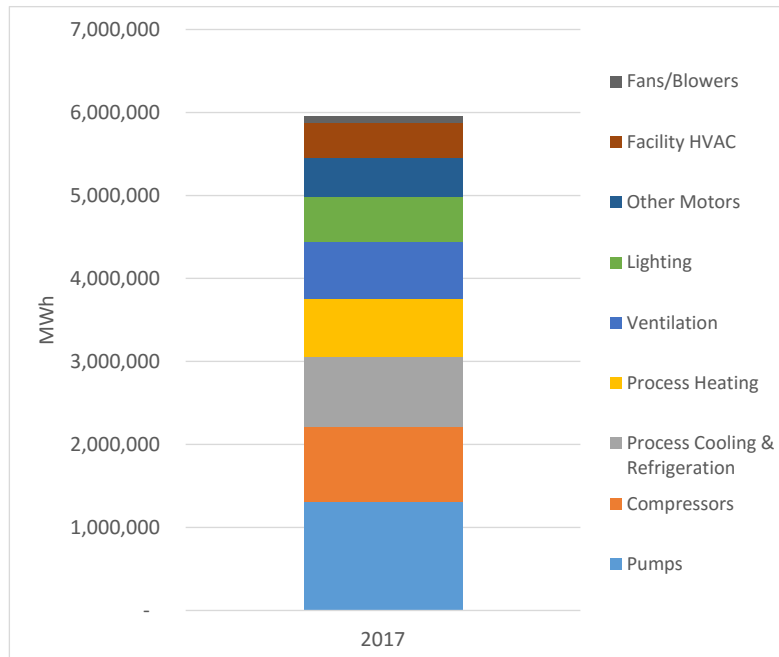


Figure 16 lists the 10 measure types with the highest economic potential in 2017. In total, these measures represent 73 percent of industrial economic potential.

Figure 16. Top 10 Measures, Industrial Economic Potential

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.¹⁰

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.

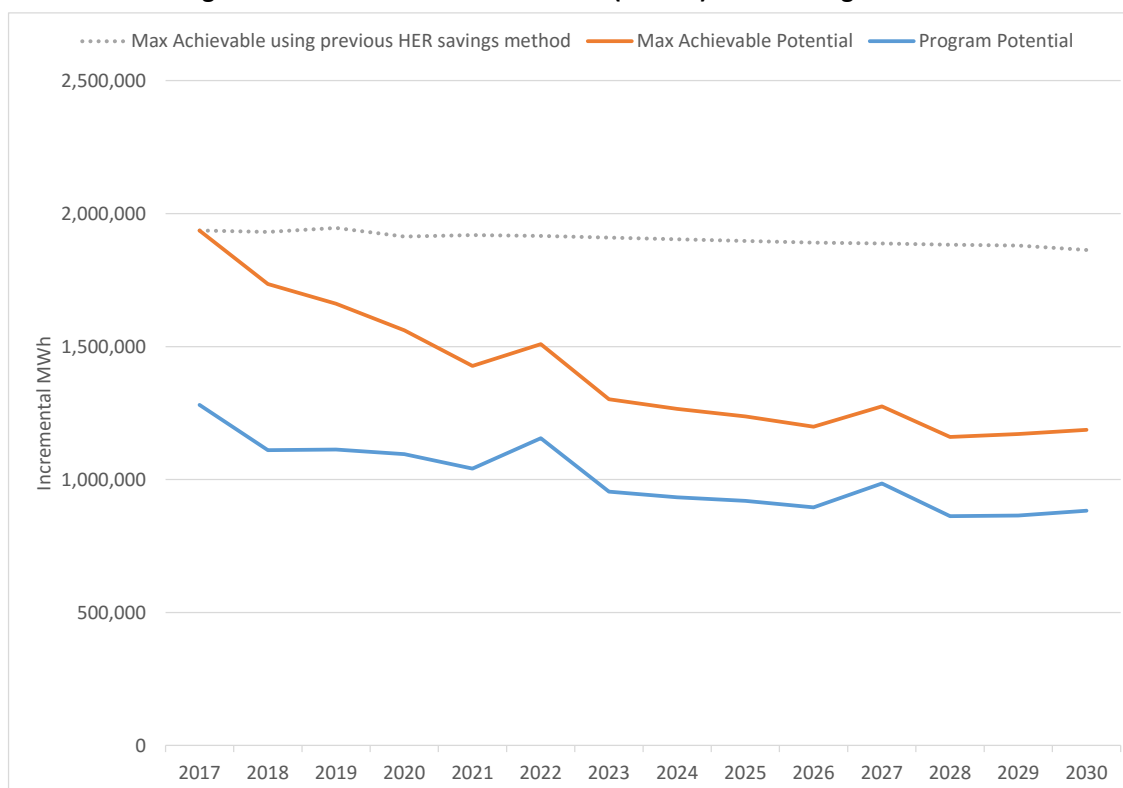
Achievable Potential

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

¹⁰ 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.¹¹ 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 savings¹² 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.

¹¹ See the IL TRM Version 5.0, Volume 4: Cross-Cutting Measures and Attachments.

¹² 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 18. Achievable Net Cumulative MWh Savings Forecast

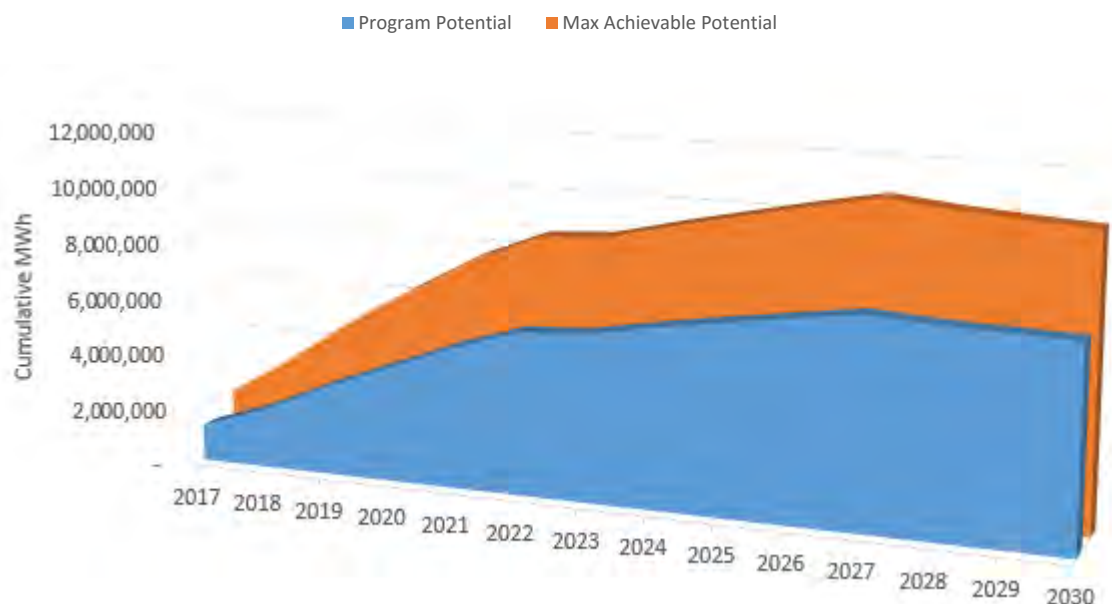


Figure 19 shows the distribution of cumulative MWh savings forecasted for 2030 in each scenario.

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

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

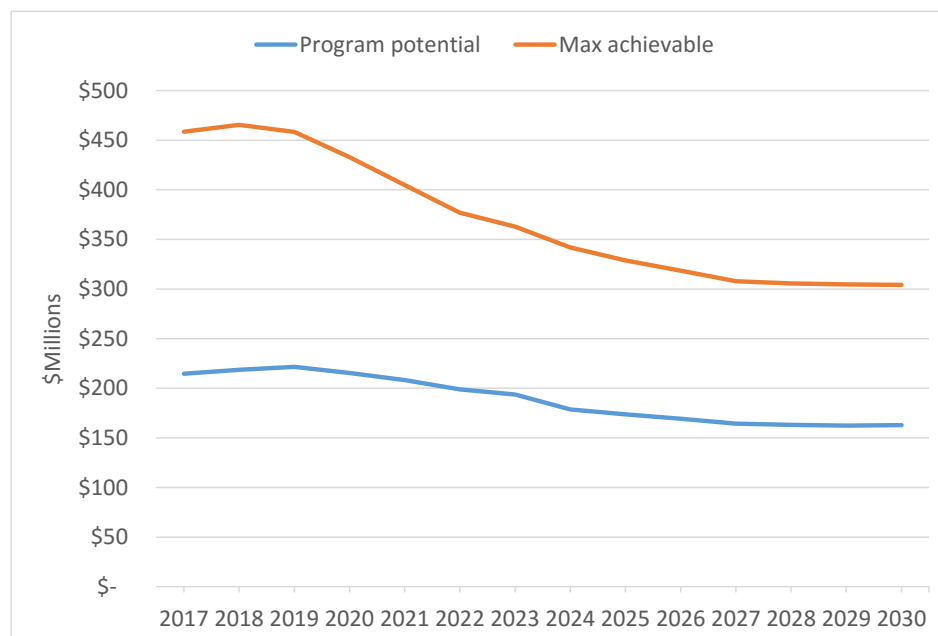
Additional cumulative savings of 3,128,361 MWh are achievable in the maximum achievable scenario. Ninety-six percent of additional savings are achievable through the 10 programs shown in Figure 20. Each of these programs contributes 1 percent or more to additional savings in this scenario.

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

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



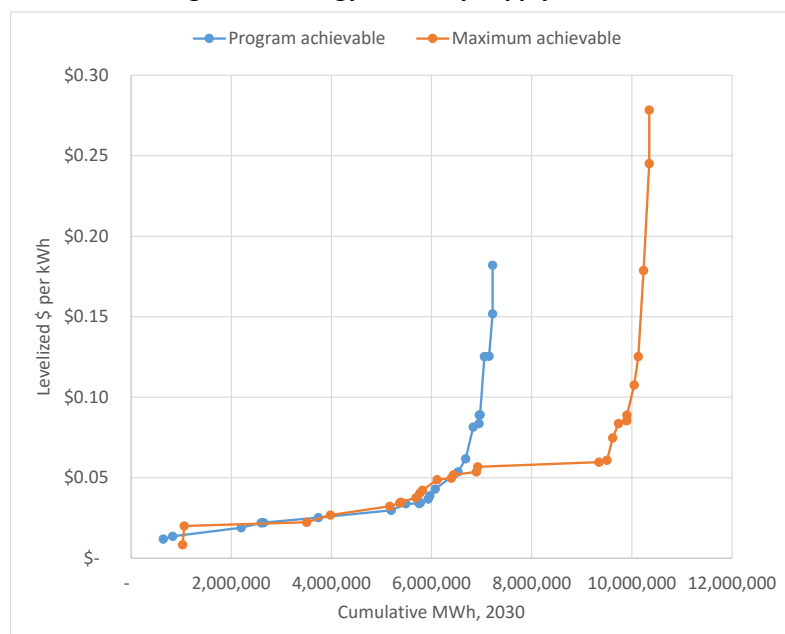
Recall that in the maximum achievable scenario, incentives are set to 100 percent of incremental costs. Exceptions were made for measures such as Appliance Recycling where there are no measure incremental costs—for this program, the incentive is a bounty fee for secondary appliance harvesting. In this 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.

Figure 22. Energy Efficiency Supply Curves



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.

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	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	Commercial Prescriptive & Custom	\$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 24. Maximum Achievable 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	Commercial Prescriptive & Custom	\$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

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

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 cost-effectiveness 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, non-

incentive 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.¹³

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.¹⁴ 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

¹³ Since all non-incentive program costs are TRCs, a large increase in the share of non-incentive costs would result in lower cost-effectiveness.

¹⁴ 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.

2. **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 to develop a range of retail rates for the sensitivity analysis.
3. **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.

Figure 26. Range of Cumulative Energy Savings in 2030

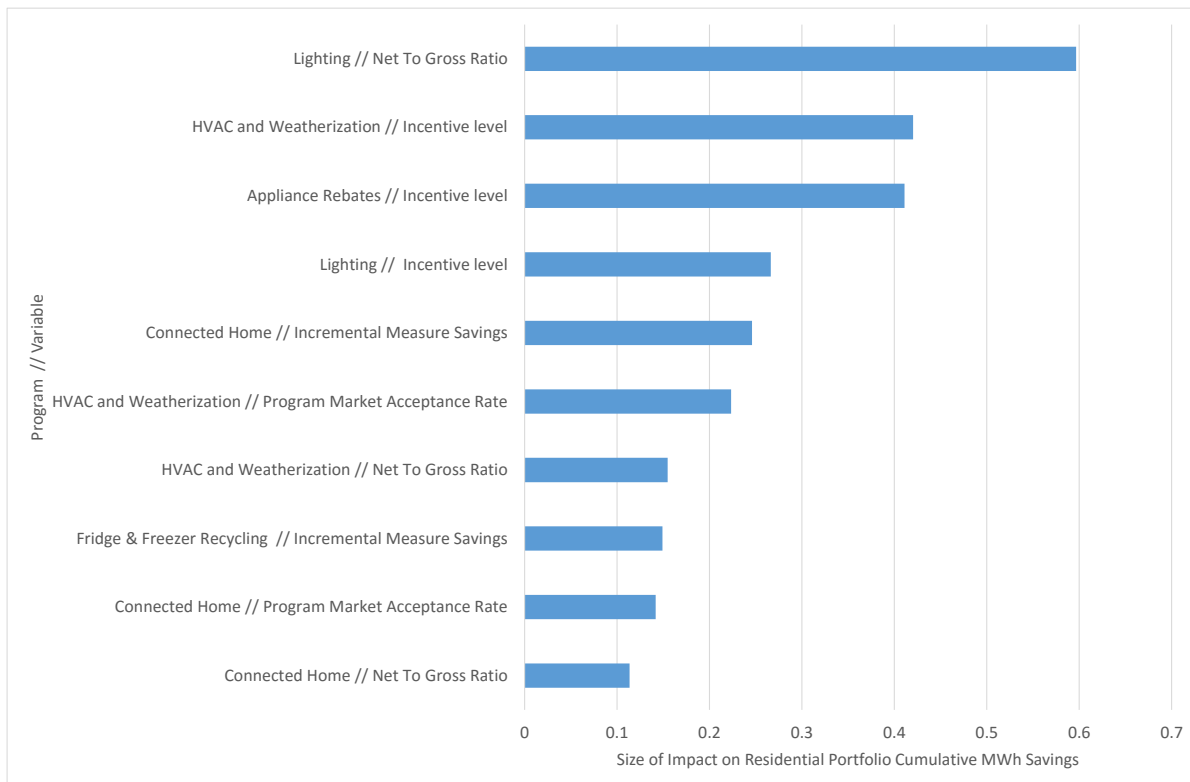
Sector	Net Cumulative GWh Savings 2030	
	Min	Max
Residential	1,799	2,818
Commercial	4,679	8,766
Industrial	501	708
Total	6,979	12,292

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 residential savings, as the Lighting Program makes up 53 percent of residential cumulative savings in 2030 in the maximum achievable scenario. The large impact of the HVAC and Weatherization Program incentive costs and the Appliance Rebates 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.

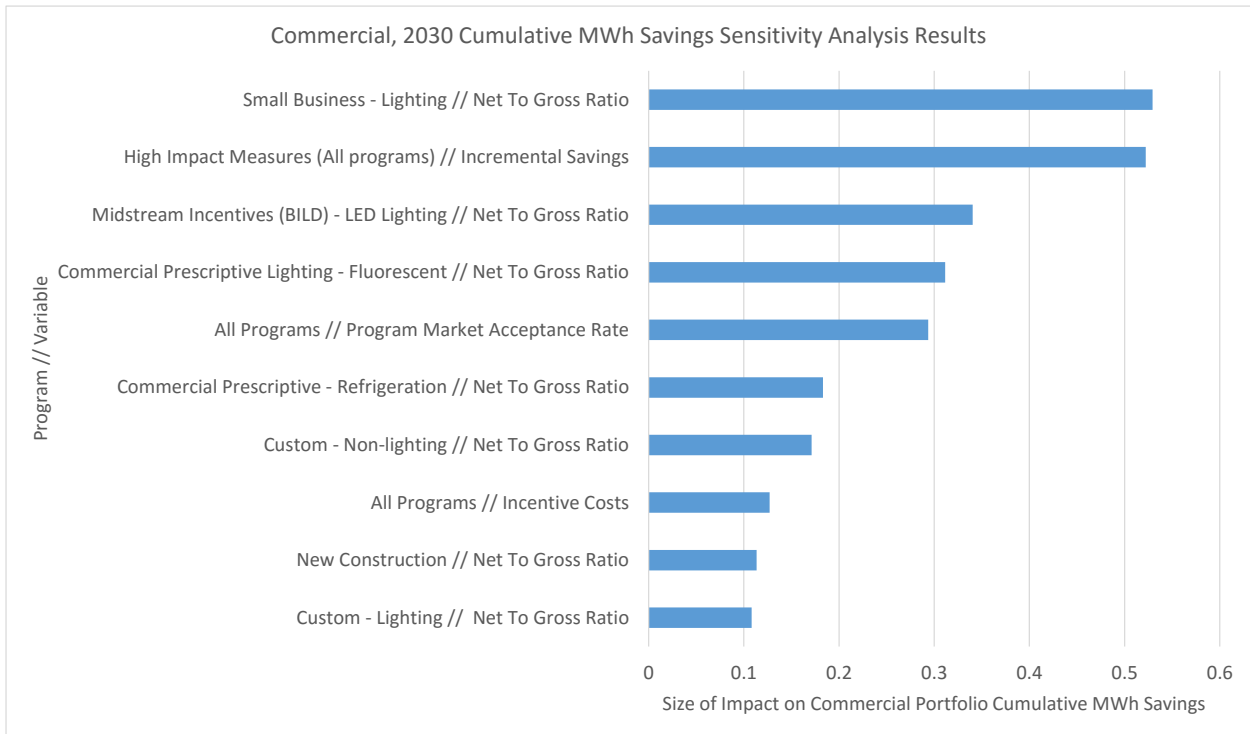
Figure 27. Key Factors Driving Variance in Residential Cumulative Savings



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.

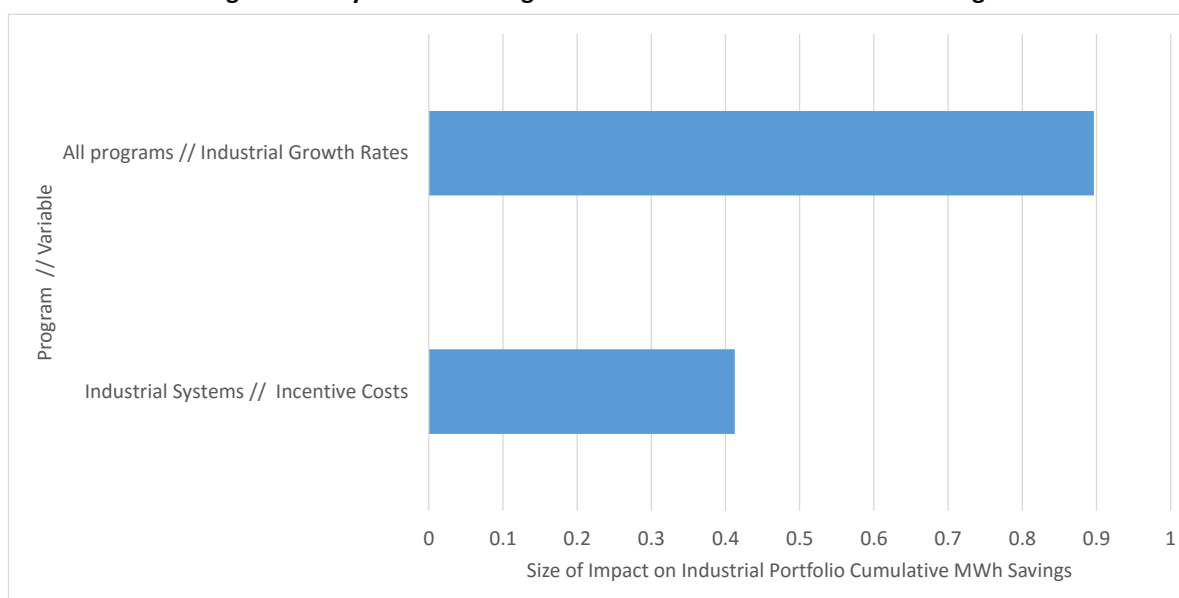
Figure 28. Key Factors Driving Variance in Commercial Cumulative Savings



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.¹⁵ This number has only increased with grid modernization efforts

¹⁵ 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 AML, 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.

Figure 30. Emerging Technologies Modeled

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

* 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

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 - MW						
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

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 - \$ mil						
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

Residential Maximum Achievable Potential Forecast, by Program

Incremental Electricity Savings - 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

Residential Maximum Achievable Potential Forecast, by Program

Cumulative Electricity Savings - 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 - MW						
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

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

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

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

Commercial Maximum Achievable Potential Forecast, by Program

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

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

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

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

Program Name	Net to Gross Description	Net to Gross Ratio
Lighting	Standard CFLs	0.59
Lighting	Standard LED pre-2020	0.73
Lighting	Standard LED 2020-2030	0.59
Lighting	Specialty LEDs	0.59
Lighting	LED Trim Kits	0.70
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

Program Name	Net to Gross Description	Net to Gross 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

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

Appendix C: Market Penetration Estimates

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%
Faucet Aerators and Showerheads	%	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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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

Appendix C: Market Penetration Estimates

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%

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%

Appendix C: Market Penetration Estimates

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

Annual Installs							
RetroCommissioning	Units	2017	2018	2019	2020	2025	2030
RetroCommissioning	Measures	38,770,384	41,718,369	41,037,856	38,864,744	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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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

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%

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates
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	52,639	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	5,537	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

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates
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	39,458	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

Appendix C: Market Penetration Estimates

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%

Appendix C: Market Penetration Estimates

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	5,835	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

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 Incremental 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 Construction	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 Construction	AC unit	12	\$40.0	7	0.011	0.0
5	All	AC/Electric Resistance 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 Replacement	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 Replacement	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 Construction	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 Construction	AC unit	12	\$100.0	34	0.048	0.0

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

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 Construction	AC unit	12	\$40.0	6	0.009	0.0
13	All	AC/Electric Resistance 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 Replacement	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 Replacement	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 Construction	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

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

Appendix D: Residential Measure Assumptions

18	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	New Construction	AC unit	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 Construction	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 Construction	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 Construction	air purifier	9	\$70.0	524	0.004	0.0
27	All	Electric DHW w/Electric 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 Construction	Clothes washer	14	\$65.0	163	0.021	0.0

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

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28	All	Electric DHW w/Electric 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)	Time of Sale	Clothes washer	14	\$65.0	163	0.021	0.0
29	All	Electric DHW w/Non-Electric 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 Construction	Clothes washer	14	\$65.0	163	0.021	0.0
30	All	Electric DHW w/Non-Electric 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)	Time of Sale	Clothes washer	14	\$65.0	163	0.021	0.0
31	All	Gas Water Heater	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 Construction	Clothes washer	14	\$65.0	76	0.010	3.7
32	All	Gas Water Heater	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 Construction	Clothes washer	14	\$65.0	76	0.010	3.7
33	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	Time of Sale	Clothes washer	14	\$65.0	76	0.010	3.7
34	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	Time of Sale	Clothes washer	14	\$65.0	76	0.010	3.7

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

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35	All	Electric DHW w/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 Construction	Clothes washer	14	\$65.0	100	0.013	2.2
36	All	Electric DHW w/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
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 Construction	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 dryer)	New Construction	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 Construction	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

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

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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 Construction	Clothes washer	14	\$210.0	242	0.031	0.0
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	Clothes washer	14	\$210.0	242	0.031	0.0
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	Clothes washer	14	\$210.0	242	0.031	0.0
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 Construction	Clothes washer	14	\$210.0	242	0.031	0.0
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 Construction	Clothes washer	14	\$210.0	89	0.011	6.6
48	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 Construction	Clothes washer	14	\$210.0	89	0.011	6.6
49	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)	Time of Sale	Clothes washer	14	\$210.0	89	0.011	6.6

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

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50	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)	Time of Sale	Clothes washer	14	\$210.0	89	0.011	6.6
51	All	Electric DHW w/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 Construction	Clothes washer	14	\$210.0	150	0.019	3.1
52	All	Electric DHW w/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
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 Construction	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 Construction	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 Construction	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

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

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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/automatic defrost/bottom mounted freezer/without through the door ice service	New Construction	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	Retrofit	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	New Construction	Refrigerator	12	\$140.0	136	0.021	0.0

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

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63	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/automatic defrost/bottom mounted freezer/without through the door ice service	Retrofit	Refrigerator	12	\$551.0	136	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/automatic defrost/bottom mounted freezer/without through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	New Construction	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Retrofit	Refrigerator	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/automatic defrost/side	Time of Sale	Refrigerator	12	\$140.0	163	0.025	0.0

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

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					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/automatic defrost/sidemounted freezer/with through the door ice service	New Construction	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Retrofit	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	New Construction	Refrigerator	12	\$140.0	129	0.019	0.0

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

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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/automatic defrost/sidemounted freezer/without through the door ice service	Retrofit	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	New Construction	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	Retrofit	Refrigerator	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/automatic defrost/side	Time of Sale	Refrigerator	12	\$140.0	129	0.019	0.0

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

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					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 refrigerator- 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 refrigerator- 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 refrigerator- 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 refrigerator- 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 refrigerator- freezer/auto matic	Retrofit	Refrigerato r	12	\$551.0	151	0.023	0.0

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

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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 refrigerator- 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

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

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					defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	defrost/top mounted freezer/without 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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	New Construction	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Retrofit	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice	Time of Sale	Refrigerator	12	\$140.0	110	0.017	0.0

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

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					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

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

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96	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerators&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Retrofit	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Time of Sale	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	New Construction	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Retrofit	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Time of Sale	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	12	\$551.0	226	0.034	0.0

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

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					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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	12	\$551.0	221	0.033	0.0

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

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					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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	12	\$551.0	307	0.046	0.0

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

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					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) 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	\$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) 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	\$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

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

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118	All	Gas 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 Replacement	Refrigerator	12	\$451.0	144	0.022	0.0
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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	12	\$451.0	293	0.044	0.0

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

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123	All	Electric 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 Replacement	Refrigerator	12	\$451.0	169	0.025	0.0
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 Replacement	Refrigerator	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 Replacement	Refrigerator	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 Replacement	Refrigerator	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&Refrigerator-freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacement	Refrigerator	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 Replacement	Refrigerator	12	\$451.0	257	0.039	0.0

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

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					Refrigerators&Refrigerator-freezer/manual defrost	remaining useful life							
129	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	New Construction	Refrigerator	12	\$40.0	52	0.008	0.0
130	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Retrofit	Refrigerator	12	\$451.0	52	0.008	0.0
131	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Time of Sale	Refrigerator	12	\$40.0	52	0.008	0.0
132	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	New Construction	Refrigerator	12	\$40.0	52	0.008	0.0
133	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/top mounted	federal standard refrigerator-freezer/automatic defrost/top	Retrofit	Refrigerator	12	\$451.0	52	0.008	0.0

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

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					freezer/through the door ice service	mounted freezer/through the door ice service							
134	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	New Construction	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	Retrofit	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	Time of Sale	Refrigerator	12	\$40.0	54	0.008	0.0

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

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138	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/automatic defrost/bottom mounted freezer/without through the door ice service	New Construction	Refrigerator	12	\$40.0	54	0.008	0.0
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/automatic defrost/bottom mounted freezer/without through the door ice service	Retrofit	Refrigerator	12	\$451.0	54	0.008	0.0
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/automatic defrost/bottom mounted freezer/without through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	New Construction	Refrigerator	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/automatic defrost/side	Retrofit	Refrigerator	12	\$451.0	57	0.009	0.0

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

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					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/automatic defrost/sidemounted freezer/with through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	New Construction	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Retrofit	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Time of Sale	Refrigerator	12	\$40.0	57	0.009	0.0

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

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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/automatic defrost/sidemounted freezer/without through the door ice service	New Construction	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	Retrofit	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	Time of Sale	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	New Construction	Refrigerator	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/automatic defrost/side	Retrofit	Refrigerator	12	\$451.0	52	0.008	0.0

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

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					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
154	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

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

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					freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	matic defrost/top mounted freezer/without 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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	New Construction	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Retrofit	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service &	Time of Sale	Refrigerator	12	\$40.0	44	0.007	0.0	

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

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					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	

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

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166	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerators&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Retrofit	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Time of Sale	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	New Construction	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Retrofit	Refrigerator	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&Refrigerator-freezer/manual defrost	federal standard Refrigerators &Refrigerator-freezer/manual defrost	Time of Sale	Refrigerator	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 Construction	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 Construction	Clothes washer	14	\$152.0	160	0.022	0.0

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

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174	All	Gas 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
175	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	New Construction	Clothes washer	14	\$152.0	25	0.003	4.4
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 Construction	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	Dehumidifier	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 Construction	Dehumidifier	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	Dehumidifier	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 Construction	Dehumidifier	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	Dehumidifier	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 Construction	Dehumidifier	12	\$60.0	178	0.041	0.0

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

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185	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	Time of Sale	Dehumidifier	12	\$60.0	178	0.041	0.0
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 Construction	Dehumidifier	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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

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

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197	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	New Construction	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 Construction	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/manual 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/manual 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/manual defrost	New Construction	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/manual defrost	New Construction	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/automatic 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/automatic 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/automatic defrost	New Construction	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/automatic defrost	New Construction	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

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

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209	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact chest	NAECA - compact chest	New Construction	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 Construction	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/automatic 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/automatic 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/automatic 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/automatic 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/automatic defrost	New Construction	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/automatic defrost	New Construction	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/manual 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/manual defrost	Time of Sale	Freezer	11	\$35.0	32	0.008	0.0

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

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219	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/manual defrost	NAECA - compact upright/manual defrost	New Construction	Freezer	11	\$35.0	32	0.008	0.0
220	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/manual defrost	NAECA - compact upright/manual defrost	New Construction	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 Retirement	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 Retirement	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/automatic defrost freezer	Early Retirement	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/automatic defrost freezer	Early Retirement	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/manual defrost freezer	Early Retirement	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/manual defrost freezer	Early Retirement	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 Retirement	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 Retirement	Freezer	8	\$120.0	1004	0.118	0.0

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

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229	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 upright/automatic defrost freezer	Keeping pre-1990 upright/automatic defrost freezer	Early Retirement	Freezer	8	\$120.0	1021	0.120	0.0
230	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 upright/automatic defrost freezer	Keeping pre-1990 upright/automatic defrost freezer	Early Retirement	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/manual defrost freezer	Early Retirement	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/manual defrost freezer	Early Retirement	Freezer	8	\$120.0	1021	0.120	0.0
233	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping post-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	Refrigerator	8	\$120.0	588	0.073	0.0
234	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping post-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	Early Retirement	Refrigerator	8	\$120.0	588	0.073	0.0

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

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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/automatic defrost/bottom mounted freezer/without through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	Early Retirement	Refrigerator	8	\$120.0	945	0.117	0.0

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

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240	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator-freezer/automatic defrost/sidemounted freezer/without through the door ice service	Keeping post-1990 Refrigerator-freezer/automatic defrost/sidemounted freezer/without through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	Refrigerator	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/partial automatic defrost	Early Retirement	Refrigerator	8	\$120.0	588	0.073	0.0

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

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244	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator-freezer/partial automatic defrost	Keeping post-1990 Refrigerator-freezer/partial automatic defrost	Early Retirement	Refrigerator	8	\$120.0	588	0.073	0.0
245	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping post-1990 Refrigerators &Refrigerator-freezer/manual defrost	Early Retirement	Refrigerator	8	\$120.0	588	0.073	0.0
246	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping post-1990 Refrigerators &Refrigerator-freezer/manual defrost	Early Retirement	Refrigerator	8	\$120.0	588	0.073	0.0
247	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping pre-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	Refrigerator	8	\$120.0	1014	0.125	0.0
248	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping pre-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/bottom mounted freezer/without through the door ice service	Early Retirement	Refrigerator	8	\$120.0	1014	0.125	0.0

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

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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/automatic defrost/bottom mounted freezer/without through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/sidemounted freezer/with through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/sidemounted freezer/without through the door ice service	Early Retirement	Refrigerator	8	\$120.0	1370	0.169	0.0

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

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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/automatic defrost/sidemounted freezer/without through the door ice service	Early Retirement	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	Refrigerator	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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	Refrigerator	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/partial automatic defrost	Early Retirement	Refrigerator	8	\$120.0	1014	0.125	0.0

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

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258	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator-freezer/partial automatic defrost	Keeping pre-1990 Refrigerator-freezer/partial automatic defrost	Early Retirement	Refrigerator	8	\$120.0	1014	0.125	0.0
259	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping pre-1990 Refrigerators &Refrigerator-freezer/manual defrost	Early Retirement	Refrigerator	8	\$120.0	1014	0.125	0.0
260	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping pre-1990 Refrigerators &Refrigerator-freezer/manual defrost	Early Retirement	Refrigerator	8	\$120.0	1014	0.125	0.0
261	All	Gas Heating	Appliances	Room Air Conditioner Recycling	Recycling old unit	existing inefficient room air conditioner, EER 7.7	Early Retirement	AC unit	4	\$120.0	232	0.331	0.0
262	All	Electric Heating	Appliances	Room Air Conditioner Recycling	Recycling old unit	existing inefficient room air conditioner, EER 7.7	Early Retirement	AC unit	4	\$120.0	232	0.331	0.0
263	All	Electric Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Time of Sale	power strip	4	\$16.0	57	0.006	0.0
264	Single Family & Duplex	Electric Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	power strip	4	\$16.0	57	0.006	0.0
265	Multifamily	Electric Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	power strip	4	\$16.0	57	0.006	0.0
266	All	Gas Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Time of Sale	power strip	4	\$16.0	57	0.006	0.0

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

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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

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

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277	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Faucet Aerators and Showerheads	1.5 GPM or less	2.25 GPM or more	Retrofit	Faucet	9	\$8.0	45	0.071	0.0
278	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
279	Mult ifami ly	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	70	0.070	0.0
280	Mult ifami ly	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	70	0.070	0.0
281	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	New Constructi on	Faucet	9	\$8.0	45	0.071	0.0
282	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	New Constructi on	Faucet	9	\$8.0	45	0.071	0.0
283	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	New Constructi on	Faucet	9	\$8.0	70	0.070	0.0
284	Mult ifami ly	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	Faucet	9	\$8.0	70	0.070	0.0

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

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285	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
286	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
287	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Faucet Aerators and Showerheads	2.2 GPM or less	2.75 GPM or more	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
288	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	Faucet	9	\$8.0	131	0.031	0.0
289	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	Faucet	9	\$8.0	103	0.029	0.0
290	Mult ifami ly	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	Retrofit	Faucet	9	\$8.0	103	0.029	0.0
291	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Constructi on	Faucet	9	\$8.0	131	0.031	0.0
292	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Constructi on	Faucet	9	\$8.0	131	0.031	0.0

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

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293	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Construction	Faucet	9	\$8.0	107	0.031	0.0
294	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Construction	Faucet	9	\$8.0	107	0.031	0.0
295	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	328	0.034	0.0
296	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	238	0.025	0.0
297	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	238	0.025	0.0
298	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	238	0.025	0.0
299	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	359	0.046	0.0
300	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	261	0.033	0.0

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

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301	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	261	0.033	0.0
302	Single Family & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	328	0.034	0.0
303	Single Family & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	238	0.025	0.0
304	Single Family & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	238	0.025	0.0
305	Single Family & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	238	0.025	0.0
306	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	359	0.046	0.0
307	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	261	0.033	0.0
308	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	261	0.033	0.0

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

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309	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	Showerhea d	10	\$17.0	238	0.025	0.0
310	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	Showerhea d	10	\$17.0	261	0.033	0.0
311	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	Showerhea d	10	\$17.0	238	0.025	0.0
312	Mult ifami ly	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	New Constructi on	Showerhea d	10	\$17.0	261	0.033	0.0
313	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	Showerhea d	10	\$17.0	258	0.027	0.0
314	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	Showerhea d	10	\$17.0	168	0.018	0.0
315	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	Showerhea d	10	\$12.0	168	0.018	0.0
316	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	Showerhea d	10	\$17.0	282	0.036	0.0

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

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317	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	184	0.023	0.0
318	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	184	0.023	0.0
319	SingleFamily & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	258	0.027	0.0
320	SingleFamily & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	168	0.018	0.0
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	Showerhead	10	\$12.0	168	0.018	0.0
322	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	282	0.036	0.0
323	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	184	0.023	0.0
324	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	1.75 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	184	0.023	0.0

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

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325	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	Showerhea d	10	\$17.0	188	0.020	0.0
326	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	Showerhea d	10	\$17.0	98	0.010	0.0
327	Singl eFa mily &Du plex	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	Showerhea d	10	\$12.0	98	0.010	0.0
328	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	Showerhea d	10	\$17.0	206	0.026	0.0
329	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	Showerhea d	10	\$17.0	107	0.014	0.0
330	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	Showerhea d	10	\$12.0	107	0.014	0.0
331	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	Showerhea d	10	\$17.0	188	0.020	0.0
332	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	Showerhea d	10	\$17.0	98	0.010	0.0

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

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333	Single Family & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	98	0.010	0.0
334	Multi-family	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	Showerhead	10	\$17.0	206	0.026	0.0
335	Multi-family	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Retrofit	Showerhead	10	\$17.0	107	0.014	0.0
336	Multi-family	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Time of Sale	Showerhead	10	\$12.0	107	0.014	0.0
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	Home	5	\$27.0	225	0.026	0.0
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	Home	5	\$27.0	225	0.026	0.0
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	Home	5	\$27.0	225	0.026	0.0
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	Home	5	\$27.0	225	0.026	0.0

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

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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	Home	5	\$27.0	157	0.018	0.0
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	Home	5	\$27.0	255	0.029	0.0
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	Home	5	\$27.0	157	0.018	0.0
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	Home	5	\$27.0	255	0.029	0.0
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	Home	5	\$27.0	157	0.018	0.0
346	All	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R-18	50 gal No wrap (R-8)	Retrofit	Home	5	\$27.0	255	0.029	0.0
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	Home	5	\$27.0	157	0.018	0.0
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	Home	5	\$27.0	255	0.029	0.0

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

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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	Home	5	\$27.0	115	0.013	0.0
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	Home	5	\$27.0	180	0.021	0.0
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	Home	5	\$27.0	115	0.013	0.0
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	Home	5	\$27.0	180	0.021	0.0
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	Home	5	\$27.0	115	0.013	0.0
354	All	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R-20	50 gal No wrap (R-10)	Retrofit	Home	5	\$27.0	180	0.021	0.0
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	Home	5	\$27.0	115	0.013	0.0
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	Home	5	\$27.0	180	0.021	0.0

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

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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	Home	5	\$27.0	134	0.015	0.0
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	Home	5	\$27.0	134	0.015	0.0
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	Home	5	\$27.0	134	0.015	0.0
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	Home	5	\$27.0	134	0.015	0.0
361	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Retrofit	Home	2	\$5.0	63	0.007	0.0
362	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	New Construction	Home	2	\$5.0	63	0.007	0.0
363	All	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Time of Sale	Home	2	\$5.0	63	0.007	0.0
364	All	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Retrofit	Home	2	\$5.0	94	0.011	0.0

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

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365	All	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	New Construction	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	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	Home	2	\$5.0	79	0.009	0.0
368	Multi-family	Electric DHW w/Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	Home	2	\$5.0	79	0.009	0.0
369	Single Family & Duplex	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	Multi-family	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	Multi-family	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Existing air source heat pump	Early Replacement	per ton	18	\$1,518.0	1866	0.199	0.0
372	Single Family & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Existing air source heat pump	Early Replacement	per ton	18	\$1,518.0	1899	0.199	0.0
373	Multi-family	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Existing air source heat pump	Early Replacement	per ton	18	\$1,655.0	1892	0.217	0.0

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374	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,655.0	1928	0.217	0.0
375	Mult ifami ly	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,792.0	1914	0.232	0.0
376	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,792.0	1953	0.232	0.0
377	Mult ifami ly	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,929.0	1934	0.245	0.0
378	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Existing air source heat pump	Early Replacem ent	per ton	18	\$1,929.0	1975	0.245	0.0
379	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,518.0	3617	0.000	0.0
380	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,518.0	3566	0.000	0.0
381	Mult ifami ly	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,655.0	3642	0.000	0.0
382	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance no AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,655.0	3594	0.000	0.0

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

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383	Multifamily	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance no AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,792.0	3665	0.000	0.0
384	Single Family & Duplex	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance no AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,792.0	3619	0.000	0.0
385	Multifamily	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance no AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,929.0	3684	0.000	0.0
386	Single Family & Duplex	Electric Resistance Heat/No CAC	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance no AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,929.0	3642	0.000	0.0
387	Single Family & Duplex	AC/Electric Resistance 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	Multifamily	AC/Electric Resistance 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	Single Family & Duplex	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	Multifamily	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	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	per ton	18	\$119.0	54	0.035	0.0

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

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392	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	per ton	18	\$119.0	48	0.035	0.0
393	Single Family & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	per ton	18	\$119.0	54	0.035	0.0
394	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	per ton	18	\$119.0	48	0.035	0.0
395	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,001.6	212	0.143	0.0
396	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,001.6	188	0.143	0.0
397	Single Family & Duplex	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 Replacement	per ton	18	\$3,001.6	212	0.143	0.0
398	Multifamily	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 Replacement	per ton	18	\$3,001.6	188	0.143	0.0

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

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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

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

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						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

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

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417	Singl eFa mily &Du plex	AC/Gas 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
418	Mult ifami ly	AC/Gas 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
419	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,239.6	257	0.171	0.0
420	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,239.6	228	0.171	0.0
421	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,239.6	257	0.171	0.0
422	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,239.6	228	0.171	0.0
423	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$476.0	124	0.078	0.0

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

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424	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$476.0	110	0.078	0.0
425	Single Family & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$476.0	124	0.078	0.0
426	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$476.0	110	0.078	0.0
427	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	per ton	18	\$476.0	124	0.078	0.0
428	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	per ton	18	\$476.0	110	0.078	0.0
429	Single Family & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	per ton	18	\$476.0	124	0.078	0.0
430	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	per ton	18	\$476.0	110	0.078	0.0
431	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,358.6	282	0.186	0.0
432	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,358.6	250	0.186	0.0

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

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433	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,358.6	282	0.186	0.0
434	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,358.6	250	0.186	0.0
435	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$596.0	146	0.091	0.0
436	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$596.0	130	0.091	0.0
437	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$596.0	146	0.091	0.0
438	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$596.0	130	0.091	0.0
439	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$596.0	146	0.091	0.0
440	Mult ifami ly	AC/Elect ric Resistan ce 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
441	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Constructi on	per ton	18	\$596.0	146	0.091	0.0

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

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442	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Construction	per ton	18	\$596.0	130	0.091	0.0
443	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,478.6	304	0.199	0.0
444	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	270	0.199	0.0
445	Single Family & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	304	0.199	0.0
446	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	270	0.199	0.0
447	Single Family & Duplex	AC/Electric Resistance 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	Multifamily	AC/Electric Resistance 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

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

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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

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

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						to Federal minimum SEER13 equipment							
458	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	288	0.210	0.0
459	SingleFamily & Duplex	AC/Electric Resistance 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	Multifamily	AC/Electric Resistance 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	SingleFamily & Duplex	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	Multifamily	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	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	per ton	18	\$834.0	184	0.111	0.0
464	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	per ton	18	\$834.0	163	0.111	0.0
465	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	per ton	18	\$834.0	184	0.111	0.0
466	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	per ton	18	\$834.0	163	0.111	0.0

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

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467	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	342	0.219	0.0
468	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	304	0.219	0.0
469	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	342	0.219	0.0
470	Mult ifami ly	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacem ent	per ton	18	\$3,431.0	304	0.219	0.0
471	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$908.0	200	0.119	0.0
472	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$908.0	178	0.119	0.0
473	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$908.0	200	0.119	0.0

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

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474	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	per ton	18	\$908.0	178	0.119	0.0
475	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	per ton	18	\$908.0	200	0.119	0.0
476	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	per ton	18	\$908.0	178	0.119	0.0
477	Single Family & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	per ton	18	\$908.0	200	0.119	0.0
478	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	per ton	18	\$908.0	178	0.119	0.0
479	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	358	0.227	0.0
480	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	318	0.227	0.0
481	Single Family & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	358	0.227	0.0

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

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482	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	per ton	18	\$3,431.0	318	0.227	0.0
483	Single Family & Duplex	AC/Gas Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$415.0	466	0.262	159.1
484	Single Family & Duplex	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$415.0	146	0.000	159.1
485	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$415.0	3771	0.262	0.0
486	Single Family & Duplex	Electric Resistance Heat/No CAC	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$415.0	3451	0.000	0.0
487	Single Family & Duplex	Heat Pump	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections sealed with mastic Ducts	50% or more ducts inside envelope Significant leaks Ducts	Retrofit	per home	20	\$415.0	1950	0.262	0.0

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

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					outside envelope are insulated to R8	outside envelope are insulated to R4 to R7							
488	Singl eFa mily &Du plex	AC/Gas Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$204.3	260	0.143	92.0
489	Singl eFa mily &Du plex	Gas Heat (No AC)	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$204.3	85	0.000	92.0
490	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$204.3	2332	0.143	0.0
491	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$204.3	2157	0.000	0.0
492	Singl eFa mily &Du plex	Heat Pump	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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	per home	20	\$204.3	1115	0.133	0.0

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

Appendix D: Residential Measure Assumptions

493	Multifamily	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	Multifamily	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	Multifamily	AC/Electric Resistance 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	Multifamily	Electric Resistance 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	Multifamily	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	Multifamily	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 Construction	per home	20	\$131.5	55	0.034	19.4

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

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					outside envelope are insulated to R8	outside envelope are insulated to R4 to R7							
499	Multifamily	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 Construction	per home	20	\$131.5	18	0.000	19.4
500	Multifamily	AC/Electric Resistance 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 Construction	per home	20	\$131.5	548	0.034	0.0
501	Multifamily	Electric Resistance 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 Construction	per home	20	\$131.5	511	0.000	0.0
502	Multifamily	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 Construction	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 Construction	per home	20	\$97.0	732	0.215	0.0

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

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505	All	AC/Electric Resistance 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
506	All	AC/Electric Resistance Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	per home	20	\$97.0	732	0.215	0.0
507	All	Electric Resistance 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 Resistance Heat/No CAC	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	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 Construction	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 Construction	per home	20	\$97.0	644	0.143	0.0
513	Multi-family	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	Single Family & Duplex	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	Multi-family	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Construction	per ton	25	\$2,021.0	981	0.090	0.0

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516	Singl eFa mily &Du plex	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	999	0.090	0.0
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

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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	per ton	25	\$2,021.0	957	0.042	0.0
526	Single Family & 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	per ton	25	\$2,021.0	965	0.042	0.0
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 Construction	per ton	25	\$2,021.0	1047	0.097	0.0
528	Single Family & 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 Construction	per ton	25	\$2,021.0	1066	0.097	0.0
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	per ton	25	\$1,100.0	4796	0.093	0.0
530	Single Family & 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	per ton	25	\$1,100.0	4811	0.093	0.0
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 Construction	per ton	25	\$1,100.0	4773	0.077	0.0
532	Single Family & 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 Construction	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

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

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534	Singl eFa mily &Du plex	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	per bathroom fan	19	\$43.5	89	0.010	0.0
535	Mult ifami ly	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	per bathroom fan	19	\$43.5	89	0.010	0.0
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	per bathroom fan	19	\$43.5	89	0.010	0.0
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	per bathroom fan	19	\$43.5	89	0.010	0.0
538	Singl eFa mily &Du plex	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	Retrofit	per bathroom fan	19	\$43.5	89	0.010	0.0
539	Mult ifami ly	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	Retrofit	per bathroom fan	19	\$43.5	89	0.010	0.0
540	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	New Constructi on	per bathroom fan	19	\$43.5	89	0.010	0.0
541	Singl eFa mily &Du plex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$30.0	721	0.000	0.0
542	Mult ifami ly	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$30.0	469	0.000	0.0
543	Singl eFa mily &Du plex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	New Constructi on	per unit	5	\$30.0	721	0.000	0.0

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

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544	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$30.0	469	0.000	0.0
545	Single Family & Duplex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$30.0	32	0.000	34.9
546	Multifamily	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$30.0	21	0.000	22.7
547	Single Family & Duplex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$30.0	32	0.000	34.9
548	Multifamily	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$30.0	21	0.000	22.7
549	Single Family & Duplex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	per unit	5	\$30.0	721	0.000	0.0
550	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	per unit	5	\$30.0	469	0.000	0.0
551	Single Family & Duplex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$30.0	1288	0.000	0.0
552	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$30.0	837	0.000	0.0
553	Single Family & Duplex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$30.0	424	0.000	0.0
554	Multifamily	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$30.0	276	0.000	0.0

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

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555	Singl eFa mily &Du plex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$30.0	424	0.000	0.0
556	Mult ifami ly	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$30.0	276	0.000	0.0
557	Singl eFa mily &Du plex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$30.0	57	0.000	34.9
558	Mult ifami ly	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$30.0	37	0.000	22.7
559	Singl eFa mily &Du plex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$30.0	32	0.000	34.9
560	Mult ifami ly	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$30.0	21	0.000	22.7
561	Singl eFa mily &Du plex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$30.0	758	0.000	0.0
562	Mult ifami ly	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Direct Install	per unit	5	\$30.0	492	0.000	0.0
563	Singl eFa mily &Du plex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$30.0	424	0.000	0.0
564	Mult ifami ly	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$30.0	276	0.000	0.0
565	Singl eFa mily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Retrofit	per unit	5	\$225.0	1506	0.000	0.0

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

Appendix D: Residential Measure Assumptions

	&Duple												
566	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$225.0	979	0.000	0.0
567	SingleFamily &Duple	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$225.0	1506	0.000	0.0
568	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$225.0	979	0.000	0.0
569	SingleFamily &Duple	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$225.0	67	0.000	72.9
570	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$225.0	44	0.000	47.4
571	SingleFamily &Duple	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$225.0	67	0.000	72.9
572	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$225.0	44	0.000	47.4
573	SingleFamily &Duple	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	per unit	5	\$225.0	1506	0.000	0.0
574	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	per unit	5	\$225.0	979	0.000	0.0
575	SingleFamily &Duple	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$225.0	2690	0.000	0.0

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

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576	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$225.0	1748	0.000	0.0
577	Single Family & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$225.0	1506	0.000	0.0
578	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	per unit	5	\$225.0	979	0.000	0.0
579	Single Family & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$225.0	67	0.000	72.9
580	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	per unit	5	\$225.0	44	0.000	47.4
581	Single Family & Duplex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$225.0	120	0.000	130.1
582	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$225.0	44	0.000	47.4
583	Single Family & Duplex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	per unit	5	\$225.0	67	0.000	72.9
584	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	per unit	5	\$225.0	44	0.000	47.4
585	Single Family & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$225.0	1582	0.000	0.0
586	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	per unit	5	\$225.0	1028	0.000	0.0

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

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587	Singl eFa mily &Du plex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$225.0	886	0.000	0.0
588	Mult ifami ly	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non- Programmab le Thermostat	Time of Sale	per unit	5	\$225.0	576	0.000	0.0
589	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	17	0.002	0.0
590	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	14	0.002	0.0
591	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	17	0.002	0.0
592	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$0.9	13	0.002	0.0
593	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	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
594	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	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
595	All	Gas Heating	Lighting	Efficient light bulbs	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
596	All	Electric Heating	Lighting	Efficient light bulbs	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

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

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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

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

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607	Multifamily	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	Multifamily	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	Single Family & Duplex	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	Single Family & Duplex	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	Multifamily	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	Multifamily	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

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

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617	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	26	0.003	0.0
618	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	20	0.003	0.0
619	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	26	0.003	0.0
620	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.1	20	0.003	0.0
621	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.1	26	0.003	0.0
622	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.1	21	0.003	0.0
623	Singl eFa mily &Du plex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	26	0.003	0.0
624	Singl eFa mily &Du plex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	20	0.003	0.0
625	Mult ifami ly	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	26	0.003	0.0
626	Mult ifami ly	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post- 2020 EISA compliant lamp	Direct Install	per lamp	1	\$1.4	20	0.003	0.0
627	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post- 2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.4	26	0.003	0.0

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628	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Time of Sale	per lamp	1	\$1.4	21	0.003	0.0
631	Multifamily	Gas Heating	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	High Performance T8/T5, Reduced Wattage 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	Multifamily	Electric Heating	Lighting	High Performance and Reduced Wattage T8 Fixtures and Lamps	High Performance T8/T5, Reduced Wattage 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 Construction	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 Construction	per lamp	2	-\$10.5	25	0.004	0.0
637	Single Family & Duplex	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	Single Family & Duplex	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

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

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639	Mult ifamily	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
640	Mult ifamily	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
641	All	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	Time of Sale	per lamp	1	-\$1.4	25	0.003	0.0
642	All	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	Time of Sale	per lamp	1	-\$1.4	20	0.003	0.0
643	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$4.5	23	0.002	0.0
644	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$4.5	18	0.002	0.0
645	Mult ifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$4.5	23	0.002	0.0
646	Mult ifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$4.5	18	0.002	0.0
647	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	-\$0.5	25	0.003	0.0
648	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	-\$0.5	20	0.003	0.0

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

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649	Singl eFa mily &Du plex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$5.3	23	0.002	0.0
650	Singl eFa mily &Du plex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$5.3	18	0.002	0.0
651	Mult ifami ly	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$5.3	23	0.002	0.0
652	Mult ifami ly	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	per lamp	1	\$5.3	18	0.002	0.0
653	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	\$0.3	25	0.003	0.0
654	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	per lamp	1	\$0.3	20	0.003	0.0
655	Singl eFa mily &Du plex	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	Direct Install	per lamp	1	\$6.0	23	0.002	0.0
656	Singl eFa mily &Du plex	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	Direct Install	per lamp	1	\$6.0	18	0.002	0.0
657	Mult ifami ly	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	Direct Install	per lamp	1	\$6.0	23	0.002	0.0
658	Mult ifami ly	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	Direct Install	per lamp	1	\$6.0	18	0.002	0.0

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

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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	Single Family & Duplex	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	Single Family & Duplex	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	Multi-family	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	Multi-family	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 Construction	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

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

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				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

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

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				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

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

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685	All	Gas 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 Construction	per lamp	20	\$30.6	69	0.000	0.0
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 Construction	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 Construction	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 Construction	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 Construction	per lamp	20	\$30.9	35	0.004	0.0

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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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

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703	All	Gas 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 Construction	per lamp	20	\$31.9	45	0.004	0.0
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 Construction	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	Multifamily	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	Multifamily	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 Construction	per lamp	2	\$3.1	158	0.010	0.0
709	Multifamily	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	Multifamily	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	Multifamily	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 Construction	per lamp	2	\$3.1	136	0.010	0.0

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					less than 1050 lumens								
712	Multifamily	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 Construction	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 Construction	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 Construction	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 Construction	per lamp	20	\$30.9	36	0.004	0.0

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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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

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729	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2020 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Construction	per lamp	20	\$31.9	46	0.004	0.0
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 Construction	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	Single Family & Duplex	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	Single Family & Duplex	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	Multifamily	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	Multifamily	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

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

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739	Singl eFa mily &Du plex	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
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

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

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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 Construction	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 Construction	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 Construction	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 Construction	per lamp	2	\$0.1	27	0.004	0.0

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

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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

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

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771	All	Gas 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	29	0.003	0.0
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 eFamily & Duplex	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 eFamily & Duplex	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 ifamily	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 ifamily	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 eFamily & Duplex	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 eFamily & Duplex	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 ifamily	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

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

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782	Multifamily	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	Single Family & Duplex	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	Single Family & Duplex	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	Multifamily	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	Multifamily	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 Construction	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

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

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793	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2016	53W EISA compliant lamp - Exterior Hardwired	New Construction	per lamp	20	\$20.6	80	0.000	0.0
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 Construction	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 Construction	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 Construction	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 Construction	per lamp	20	\$27.6	80	0.000	0.0

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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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

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819	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	New Construction	per lamp	20	\$31.4	52	0.005	0.0
820	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.4	52	0.005	0.0
821	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	New Construction	per lamp	20	\$31.4	41	0.005	0.0
822	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.4	41	0.005	0.0
823	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	New Construction	per lamp	20	\$31.8	52	0.005	0.0
824	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.8	52	0.005	0.0
825	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	New Construction	per lamp	20	\$31.8	41	0.005	0.0
826	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.8	41	0.005	0.0

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

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827	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	New Construction	per lamp	20	\$31.9	52	0.005	0.0
828	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.9	52	0.005	0.0
829	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	New Construction	per lamp	20	\$31.9	41	0.005	0.0
830	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	Time of Sale	per lamp	20	\$31.9	41	0.005	0.0
831	All	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Time of Sale	per lamp	1	-\$10.3	40	0.004	0.0
832	Single Family & Duplex	Gas 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	39	0.004	0.0
833	Multi-family	Gas 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	38	0.004	0.0
834	All	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	New Construction	per lamp	1	-\$10.3	40	0.004	0.0
835	All	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Time of Sale	per lamp	1	-\$10.3	31	0.004	0.0

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

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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

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

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845	Mult ifami ly	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
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

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

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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

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

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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

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

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

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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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

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				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

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

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				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 Construction	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	Multifamily	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	Multifamily	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	Multifamily	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	New Construction	per exit sign	1	-\$28.5	82	0.010	0.0
916	Multifamily	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	Multifamily	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	Multifamily	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	New Construction	per exit sign	1	-\$28.5	64	0.010	0.0
919	Multifamily	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

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

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920	Multifamily	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 Torchiera - OM	Energy Star Torchiera	Incandescent /Halogen Torchiera	Time of Sale	per torchiera	2	-\$15.9	116	0.009	0.0
922	All	Gas Heating	Lighting	ENERGY STAR Torchiera	Energy Star Torchiera	Incandescent /Halogen Torchiera	New Construction	per torchiera	2	-\$15.9	116	0.009	0.0
923	All	Electric Heating	Lighting	ENERGY STAR Torchiera - OM	Energy Star Torchiera	Incandescent /Halogen Torchiera	Time of Sale	per torchiera	2	-\$15.9	90	0.009	0.0
924	All	Electric Heating	Lighting	ENERGY STAR Torchiera	Energy Star Torchiera	Incandescent /Halogen Torchiera	New Construction	per torchiera	2	-\$15.9	90	0.009	0.0
925	Single Family & Duplex	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	Single Family & Duplex	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	Multifamily	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

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

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928	Multifamily	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	13	0.002	0.0
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	Single Family & Duplex	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	Single Family & Duplex	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	Multifamily	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

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

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934	Multifamily	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

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

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940	All	Electric 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	14	0.002	0.0
941	Single Family & Duplex	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	Single Family & Duplex	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	Multi-family	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	Multi-family	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

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

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946	All	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	Time of Sale	per lamp	1	\$2.3	14	0.002	0.0
947	Single Family & Duplex	Gas 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	Direct Install	per lamp	1	\$2.5	17	0.002	0.0
948	Single Family & Duplex	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	Direct Install	per lamp	1	\$2.5	14	0.002	0.0
949	Multi-family	Gas 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	Direct Install	per lamp	1	\$2.5	17	0.002	0.0
950	Multi-family	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	Direct Install	per lamp	1	\$2.5	13	0.002	0.0
951	All	Gas 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	18	0.002	0.0

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

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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 eFamily & Duplex	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 eFamily & Duplex	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 ifamily	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 ifamily	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

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

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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

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

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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

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

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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

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

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976	All	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	Time of Sale	per lamp	1	\$2.5	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

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

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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

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

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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

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

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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

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

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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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1007	Multifamily	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 Construction	per home	15	\$315.0	213	0.196	63.9
1008	Multifamily	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 Construction	per home	15	\$315.0	0	0.000	63.9
1009	SingleFamily & Duplex	AC/Electric Resistance 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	SingleFamily & Duplex	Electric Resistance 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	SingleFamily & Duplex	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	SingleFamily & Duplex	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	SingleFamily & Duplex	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	Multifamily	AC/Electric Resistance 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	Multifamily	Electric Resistance 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	Multifamily	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$263.3	1554	0.223	0.0
1017	Multifamily	AC/Gas Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$263.3	243	0.223	63.9
1018	Multifamily	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	per home	15	\$263.3	0	0.000	63.9
1019	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	7926	0.220	0.0
1020	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	7657	0.000	0.0
1021	SingleFamily & Duplex	Heat Pump	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	4539	0.220	0.0
1022	SingleFamily & Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	612	0.220	373.0
1023	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	343	0.000	373.0
1024	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	3880	0.121	0.0
1025	Multifamily	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	3748	0.000	0.0

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1026	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	2222	0.121	0.0
1027	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	299	0.121	182.6
1028	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	168	0.000	182.6
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	per home	25	\$925.3	3940	0.073	0.0
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	per home	25	\$925.3	3850	0.000	0.0
1031	SingleFamily & Duplex	Heat Pump	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$925.3	2237	0.073	0.0
1032	SingleFamily & Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$925.3	262	0.073	187.5
1033	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$925.3	173	0.000	187.5
1034	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$452.9	1928	0.040	0.0
1035	Multifamily	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$452.9	1885	0.000	0.0

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1036	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$452.9	1095	0.040	0.0
1037	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	per home	25	\$452.9	128	0.040	91.8
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	per home	25	\$452.9	84	0.000	91.8
1039	Single Family & Duplex	Heat Pump	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	2661	0.073	0.0
1040	Single Family & Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	296	0.073	224.6
1041	Single Family & Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	207	0.000	224.6
1042	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	2301	0.040	0.0
1043	Multifamily	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	2257	0.000	0.0
1044	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	1303	0.040	0.0
1045	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	145	0.040	109.9

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1046	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$1,811.7	101	0.000	109.9
1047	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	UnConditioned space with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	4701	0.073	0.0
1048	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	UnConditioned space with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	per home	25	\$3,701.3	4611	0.000	0.0
1049	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$2,024.6	5033	0.094	0.0
1050	SingleFamily & Duplex	Electric Resistance 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	SingleFamily & Duplex	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	SingleFamily & Duplex	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	SingleFamily & Duplex	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	Multifamily	AC/Electric Resistance Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	4824	0.101	0.0
1055	Multifamily	Electric Resistance 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

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1056	Mult ifamily	Heat Pump	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	2739	0.101	0.0
1057	Mult ifamily	AC/Gas Heat	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	321	0.101	229.8
1058	Mult ifamily	Gas Heat (No AC)	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	per home	25	\$1,940.4	211	0.000	229.8
1059	Singl eFamily &Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$1,738.3	289	0.023	0.0
1060	Singl eFamily &Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$1,738.3	497	0.023	0.0
1061	Singl eFamily &Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$1,738.3	469	0.000	0.0
1062	Singl eFamily &Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$1,738.3	28	0.023	22.9
1063	Singl eFamily &Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$1,738.3	21	0.000	22.9
1064	Mult ifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$522.5	87	0.008	0.0
1065	Mult ifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$522.5	149	0.008	0.0
1066	Mult ifamily	Electric Resistance	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	per home	25	\$522.5	141	0.000	0.0

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Heat/No CAC													
1067	Mult ifami ly	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Constructi on	per home	25	\$522.5	8	0.008	6.9
1068	Mult ifami ly	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Constructi on	per home	25	\$522.5	6	0.000	6.9
1069	Singl eFa mily &Du plex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$3,608.8	2964	0.231	0.0
1070	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$3,608.8	5092	0.231	0.0
1071	Singl eFa mily &Du plex	Electric Resistan ce Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$3,608.8	4810	0.000	0.0
1072	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$3,608.8	282	0.231	234.3
1073	Singl eFa mily &Du plex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$3,608.8	216	0.000	234.3
1074	Mult ifami ly	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$1,084.8	891	62.747	0.0
1075	Mult ifami ly	AC/Elect ric Resistan ce Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$1,084.8	1531	62.747	0.0
1076	Mult ifami ly	Electric Resistan ce	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	per home	25	\$1,084.8	1446	62.747	0.0

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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

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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

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1096	Multifamily	Electric Resistance 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	Multifamily	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	Multifamily	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	Multifamily	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	Multifamily	AC/Electric Resistance 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	Multifamily	Electric Resistance 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	Multifamily	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	Multifamily	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	Multifamily	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	Multifamily	AC/Electric Resistance 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	Multifamily	Electric Resistance 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

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1107	Multifamily	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	Multifamily	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	SingleFamily & Duplex	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	SingleFamily & Duplex	AC/Electric Resistance 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	SingleFamily & Duplex	Electric Resistance 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	SingleFamily & Duplex	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	SingleFamily & Duplex	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	SingleFamily & Duplex	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	SingleFamily & Duplex	AC/Electric Resistance 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	SingleFamily & Duplex	Electric Resistance 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

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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

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1127	Singl eFa mily &Du plex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	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

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1138	Multifamily	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	Multifamily	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	Multifamily	AC/Electric Resistance 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	Multifamily	Electric Resistance 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	Multifamily	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	Multifamily	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	Multifamily	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	Multifamily	AC/Electric Resistance 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	Multifamily	Electric Resistance 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	Multifamily	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	Multifamily	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

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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

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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 Construction	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 Construction	AC unit	12	\$40.0	8	0.011	0.0
1163	Multi-family	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,518.0	4323	0.232	0.0
1164	Single-Family & Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,518.0	4361	0.232	0.0
1165	Multi-family	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 16	Existing electric resistance with AC/dual baseline = heat pump	Early Replacement	per ton	18	\$1,655.0	4348	0.249	0.0

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1166	Singl eFa mily &Du plex	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	4390	0.249	0.0
1167	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,792.0	4371	0.264	0.0
1168	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 17	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,792.0	4415	0.264	0.0
1169	Mult ifami ly	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,929.0	4390	0.277	0.0
1170	Singl eFa mily &Du plex	AC/Elect ric Resistan ce Heat	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance with AC/dual baseline = heat pump	Early Replacem ent	per ton	18	\$1,929.0	4437	0.277	0.0
1171	Mult ifami ly	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	per ton	18	\$137.0	268	0.019	0.0
1172	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	per ton	18	\$137.0	272	0.019	0.0
1173	Mult ifami ly	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	per ton	18	\$137.0	294	0.037	0.0
1174	Singl eFa mily &Du plex	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	New Constructi on	per ton	18	\$137.0	300	0.037	0.0

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1175	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	New Construction	per ton	18	\$137.0	316	0.052	0.0
1176	Single Family & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	New Construction	per ton	18	\$137.0	326	0.052	0.0
1177	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	New Construction	per ton	18	\$137.0	336	0.065	0.0
1178	Single Family & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	New Construction	per ton	18	\$137.0	348	0.065	0.0
1179	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	268	0.019	0.0
1180	Single Family & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	272	0.019	0.0
1181	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	294	0.037	0.0
1182	Single Family & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	300	0.037	0.0
1183	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	316	0.052	0.0
1184	Single Family & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Federal minimum SEER14 and HSPF 8.2 equipment	Time of Sale	per ton	18	\$137.0	326	0.052	0.0

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

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1185	Multifamily	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	336	0.065	0.0
1186	Single Family & Duplex	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	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing air source heat pump	Early Replacement	per ton	25	\$3,957.0	2555	0.222	0.0
1188	Single Family & Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing air source heat pump	Early Replacement	per ton	25	\$3,957.0	2592	0.222	0.0
1189	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing AC, electric heating	Early Replacement	per ton	25	\$3,957.0	5011	0.254	0.0
1190	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Closed Loop	Existing AC, electric heating	Early Replacement	per ton	25	\$3,957.0	5054	0.254	0.0
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	per ton	25	\$2,021.0	1178	0.044	0.0
1192	Single Family & 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	per ton	25	\$2,021.0	1186	0.044	0.0
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 Construction	per ton	25	\$2,021.0	957	0.042	0.0
1194	Single Family & 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 Construction	per ton	25	\$2,021.0	965	0.042	0.0

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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	per ton	25	\$1,100.0	5082	0.132	0.0
1196	Single Family & 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	per ton	25	\$1,100.0	5105	0.132	0.0
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 Construction	per ton	25	\$1,100.0	4796	0.093	0.0
1198	Single Family & 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 Construction	per ton	25	\$1,100.0	4811	0.093	0.0
1199	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replacement	per ton	25	\$3,957.0	2579	0.238	0.0
1200	Single Family & Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replacement	per ton	25	\$3,957.0	2619	0.238	0.0
1201	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing AC, electric heating	Early Replacement	per ton	25	\$3,957.0	5035	0.270	0.0
1202	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing AC, electric heating	Early Replacement	per ton	25	\$3,957.0	5081	0.270	0.0
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	per ton	25	\$2,021.0	691	0.058	0.0

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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

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1213	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing AC, electric heating	Early Replacement	per ton	25	\$3,957.0	5321	0.309	0.0
1214	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing AC, electric heating	Early Replacement	per ton	25	\$3,957.0	5374	0.309	0.0
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	per ton	25	\$2,021.0	981	0.090	0.0
1216	Single Family & 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	per ton	25	\$2,021.0	999	0.090	0.0
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 Construction	per ton	25	\$2,021.0	691	0.058	0.0
1218	Single Family & 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 Construction	per ton	25	\$2,021.0	702	0.058	0.0
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	per ton	25	\$1,100.0	4797	0.124	0.0
1220	Single Family & 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	per ton	25	\$1,100.0	4819	0.124	0.0
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 Construction	per ton	25	\$1,100.0	4485	0.078	0.0
1222	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Federal standard central AC, electric	New Construction	per ton	25	\$1,100.0	4497	0.078	0.0

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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

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1232	Multifamily	AC/Electric Resistance 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	3314	0.209	0.0
1233	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	per unit	18	\$3,750.0	5128	0.376	0.0
1234	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton 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	Single Family & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVHP < 65kBtu/hr	Retrofit	per unit	18	\$3,750.0	5008	0.134	0.0
1236	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPVHP < 65kBtu/hr	Retrofit	per unit	18	\$3,750.0	3255	0.087	0.0
1237	Single Family & Duplex	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	Single Family & Duplex	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	Multifamily	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	Single Family & 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	per unit	18	\$3,000.0	3099	0.000	0.0

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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	per unit	18	\$3,000.0	2014	0.000	0.0
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	per unit	18	\$3,000.0	3439	0.215	0.0
1243	Multifamily	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	per unit	18	\$3,000.0	2236	0.140	0.0
1244	SingleFamily & Duplex	AC/Electric Resistance 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	Multifamily	AC/Electric Resistance 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	SingleFamily & Duplex	AC/Electric Resistance 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	Multifamily	AC/Electric Resistance 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	SingleFamily & Duplex	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	Multifamily	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

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1250	Single Family & 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	per unit	18	\$4,500.0	4740	0.000	0.0
1251	Multi-family	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	per unit	18	\$4,500.0	3081	0.000	0.0
1252	Single Family & 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	per unit	18	\$4,500.0	5422	0.430	0.0
1253	Multi-family	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	per unit	18	\$4,500.0	3524	0.279	0.0
1254	Single Family & 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	per unit	18	\$4,500.0	5460	0.501	0.0
1255	Multi-family	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	per unit	18	\$4,500.0	3549	0.326	0.0
1256	Single Family & Duplex	AC/Electric Resistance 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	Multi-family	AC/Electric Resistance 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	Single Family & 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	per unit	13	\$1,000.0	1961	0.093	0.0

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1259	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	New Constructi on	per unit	13	\$1,000.0	1961	0.093	0.0
1260	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	Retrofit	per unit	13	\$1,575.0	1961	0.093	0.0
1261	Mult ifami ly	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	1344	0.064	0.0
1262	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	New Constructi on	per unit	13	\$1,000.0	1344	0.064	0.0
1263	Mult ifami ly	Electric DHW w/Electri c Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Retrofit	per unit	13	\$1,575.0	1344	0.064	0.0
1264	Singl eFa mily &Du plex	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	per unit	13	\$1,000.0	2279	0.108	0.0
1265	Singl eFa mily &Du plex	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	per unit	13	\$1,000.0	2279	0.108	0.0
1266	Singl eFa mily &Du plex	Electric DHW w/Non- Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.0	Electric Water Heater	Retrofit	per unit	13	\$1,575.0	2279	0.108	0.0

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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	per unit	13	\$1,000.0	1604	0.076	0.0
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 Construction	per unit	13	\$1,000.0	1604	0.076	0.0
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	per unit	13	\$1,575.0	1604	0.076	0.0
1270	Single Family & Duplex	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	per unit	13	\$1,134.0	2229	0.106	0.0
1271	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	New Construction	per unit	13	\$1,134.0	2229	0.106	0.0
1272	Single Family & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Heat Pump Water Heaters	Heat Pump Water Heater EF 2.35	Electric Water Heater	Retrofit	per unit	13	\$1,703.0	2229	0.106	0.0
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	per unit	13	\$1,134.0	1524	0.072	0.0
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 Construction	per unit	13	\$1,134.0	1524	0.072	0.0

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

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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	per unit	13	\$1,703.0	1524	0.072	0.0
1276	Single Family & 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	per unit	13	\$1,134.0	2593	0.123	0.0
1277	Single Family & 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 Construction	per unit	13	\$1,134.0	2593	0.123	0.0
1278	Single Family & 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	per unit	13	\$1,703.0	2593	0.123	0.0
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	per unit	13	\$1,134.0	1822	0.086	0.0
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 Construction	per unit	13	\$1,134.0	1822	0.086	0.0
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	per unit	13	\$1,703.0	1822	0.086	0.0
1282	Single Family & Duplex	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	181	0.008	0.0

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

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1283	Multifamily	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	Single Family & Duplex	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	Multifamily	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	Single Family & 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 - first year	Retrofit	per home	1	\$1.0	181	0.008	0.0
1287	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 - first year	Retrofit	per home	1	\$1.0	83	0.004	0.0
1288	Single Family & 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 - first year	Retrofit	per home	1	\$1.0	419	0.018	0.0
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	per home	1	\$1.0	196	0.008	0.0
1290	Single Family & 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	per home	1	\$1.0	181	0.008	0.0

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

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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	per home	1	\$1.0	83	0.004	0.0
1292	Single Family & 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	per home	1	\$1.0	419	0.018	0.0
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	per home	1	\$1.0	196	0.008	0.0
1294	Single Family & 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	per home	1	\$1.0	181	0.008	0.0
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	per home	1	\$1.0	83	0.004	0.0
1296	Single Family & 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	per home	1	\$1.0	419	0.018	0.0
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	per home	1	\$1.0	196	0.008	0.0
1298	Single Family & 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	per home	1	\$1.0	181	0.008	0.0

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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	per home	1	\$1.0	83	0.004	0.0
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	per home	1	\$1.0	419	0.018	0.0
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	per home	1	\$1.0	196	0.008	0.0
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	per home	1	\$1.0	181	0.008	0.0
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	per home	1	\$1.0	83	0.004	0.0
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	per home	1	\$1.0	419	0.018	0.0
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	per home	1	\$1.0	196	0.008	0.0
1306	SingleFamily	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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	&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

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							opt-in C3 platform w/eHER							
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	

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1320	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 - Year 4th and after	Retrofit	per home	1	\$1.0	439	0.000	0.0
1321	Mult ifami ly	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	per home	1	\$1.0	205	0.000	0.0
1322	All	Gas Heating	Other	Smart WiFi Thermostat	Smart WiFi Thermostat	Non- programmab le Thermostat	Retrofit	per home	5	\$225.0	234	0.188	0.0
1323	All	Gas Heating	Other	Connected homes - Old Remove	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	538	0.188	0.0
1324	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 platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1945	0.000	0.0
1325	Mult ifami ly	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1184	0.000	0.0
1326	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 platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1945	0.000	0.0

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1327	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	1184	0.000	0.0
1328	SingleFamily & Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	256	0.000	72.9
1329	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	131	0.000	47.4
1330	SingleFamily & Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	256	0.000	72.9
1331	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	131	0.000	47.4
1332	SingleFamily & Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	1945	0.000	0.0
1333	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	1184	0.000	0.0

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1334	Singl eFa mily &Du plex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1325	0.000	0.0
1335	Mult ifami ly	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	781	0.000	0.0
1336	Singl eFa mily &Du plex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1325	0.000	0.0
1337	Mult ifami ly	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	781	0.000	0.0
1338	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 platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	67	0.000	72.9
1339	Mult ifami ly	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	44	0.000	47.4
1340	Singl eFa mily &Du plex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web- based platform with eHER	Home w/no web-based platform and non- programmab le Thermostat	Retrofit	per unit	5	\$225.0	1325	0.000	0.0

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1341	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	per unit	5	\$225.0	781	0.000	0.0
1342	Single Family & 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	per home	1	\$1.0	0	0.000	0.0
1343	Multifamily	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	Single Family & Duplex	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	Multifamily	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	\$6,035,635.3	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	\$6,035,635.3	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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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 Construction	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 Construction	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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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

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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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	6	\$1.0	257	0.065	0.0

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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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	6	\$1.0	107	0.027	0.0

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1405	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")	New Construction	per unit	6	\$1.0	163	0.041	0.0
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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	4	\$1.0	77	0.012	0.0
1416	Single Family	AC/Electric Resistance 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

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Appendix D: Residential Measure Assumptions

&Du plex													
1417	Singl eFa mily &Du plex	AC/Gas 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
1418	Mult ifami ly	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	46	0.027	0.0
1419	Mult ifami ly	AC/Gas Heat	HVAC	AC Tune-up w/iManifold device	SEER 10	Central Air Conditioning Unit	Retrofit	per home	2	\$100.0	46	0.027	0.0

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Appendix D: Residential Assumptions

Measure ID	Sub-Sector	Building 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	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	0.64	No	No	6%	30%	100%	IL TRM
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 Construction	0.64	No	No	6%	30%	100%	IL TRM
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	0.64	No	No	94%	30%	100%	IL TRM
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 Construction	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 Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	average existing room air conditioner casement only	Early Replacement	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 Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement only	average existing room air conditioner	Early Replacement	0.41	No	No	69%	30%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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	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	0.54	No	No	6%	30%	100%	IL TRM
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 Construction	0.54	No	No	6%	30%	100%	IL TRM
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	1.17	Yes	No	6%	30%	100%	IL TRM
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 < 14000 Btu/h	New Construction	1.17	Yes	No	6%	30%	100%	IL TRM
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	0.54	No	No	94%	30%	100%	IL TRM
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 Construction	0.54	No	No	94%	30%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
13	All	AC/Electric Resistance 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 Replacement	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 Conditioner	CEE Tier 1 and ENERGY STAR V3.0 casement-slider	average existing room air conditioner casement only	Early Replacement	0.53	No	No	69%	30%	100%	IL TRM
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	0.75	No	No	6%	30%	100%	IL TRM
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 Construction	0.75	No	No	6%	30%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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	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	0.75	No	No	94%	30%	100%	IL TRM
18	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	New Construction	0.75	No	No	94%	30%	100%	IL TRM
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	1.17	Yes	No	94%	30%	100%	IL TRM
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 Construction	1.17	Yes	No	94%	30%	100%	IL TRM
21	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	4.01	Yes	Yes	6%	36%	98%	IL TRM

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Measure ID	Sub-Sector	Building 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
22	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cleaner - RPP	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	4.01	#N/A	Yes	6%	36%	98%	IL TRM
23	All	Electric Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	New Construction	4.01	Yes	Yes	6%	36%	98%	IL TRM
24	All	Gas Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	4.01	Yes	Yes	94%	36%	98%	IL TRM
25	All	Gas Heating	Appliances	ENERGY STAR Air Purifier/Cleaner - RPP	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	Time of Sale	4.01	#N/A	Yes	94%	36%	98%	IL TRM
26	All	Gas Heating	Appliances	ENERGY STAR Air Purifier/Cleaner	ENERGY STAR Air Purifier/Cleaner CADR 101-150	Conventional unit	New Construction	4.01	#N/A	Yes	94%	36%	98%	IL TRM
27	All	Electric DHW w/Electric 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 Construction	2.23	Yes	Yes	11%	80%	68%	IL TRM
28	All	Electric DHW w/Electric 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)	Time of Sale	2.23	Yes	Yes	11%	80%	68%	IL TRM

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Measure ID	Sub-Sector	Building 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	All	Electric DHW w/Non-Electric 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 Construction	2.23	Yes	Yes	2%	80%	68%	IL TRM
30	All	Electric DHW w/Non-Electric 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)	Time of Sale	2.23	Yes	Yes	2%	80%	68%	IL TRM
31	All	Gas Water Heater	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 Construction	1.33	Yes	Yes	86%	80%	68%	IL TRM
32	All	Gas Water Heater	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 Construction	1.33	Yes	Yes	86%	80%	68%	IL TRM
33	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	Time of Sale	1.33	Yes	Yes	86%	80%	68%	IL TRM
34	All	Gas Water Heater	Appliances	ENERGY STAR and CEE Tier 2 and 3 Clothes Washers	ENERGY STAR Clothes Washer (Electric dryer)	minimum federal standard Clothes Washer (Electric dryer)	Time of Sale	1.33	Yes	Yes	86%	80%	68%	IL TRM

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Measure ID	Sub-Sector	Building 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
35	All	Electric DHW w/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 Construction	1.53	Yes	Yes	11%	80%	68%	IL TRM
36	All	Electric DHW w/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	1.53	Yes	Yes	11%	80%	68%	IL TRM
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 Construction	1.53	No	Yes	2%	80%	68%	IL TRM
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	1.53	No	Yes	2%	80%	68%	IL TRM
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 dryer)	New Construction	0.63	No	No	86%	80%	68%	IL TRM
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 Construction	0.63	No	No	86%	80%	68%	IL TRM
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	0.63	Yes	No	86%	80%	68%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Construction	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 Construction	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 Construction	0.53	No	No	86%	80%	68%	IL TRM

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Measure ID	Sub-Sector	Building 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
48	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 Construction	0.53	No	No	86%	80%	68%	IL TRM
49	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)	Time of Sale	0.53	No	No	86%	80%	68%	IL TRM
50	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)	Time of Sale	0.53	No	No	86%	80%	68%	IL TRM
51	All	Electric DHW w/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 Construction	0.71	No	No	11%	80%	68%	IL TRM
52	All	Electric DHW w/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	0.71	No	No	11%	80%	68%	IL TRM
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 Construction	0.71	No	No	2%	80%	68%	IL TRM
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	0.71	No	No	2%	80%	68%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Construction	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 Construction	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 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/automatic defrost/bottom mounted freezer without through the door ice service	New Construction	0.72	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	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
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 the door ice service	federal standard refrigerator-freezer/automatic defrost/bottom mounted freezer/without 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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator-freezer/automatic defrost/bottom mounted freezer/without the door ice service	federal standard refrigerator-freezer/automatic defrost/bottom mounted freezer/without the door ice service	Time of Sale	0.72	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	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
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/automatic defrost/bottom mounted freezer without through the door ice service	New Construction	0.72	No	Yes	94%	99%	69%	IL TRM
63	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/automatic defrost/bottom mounted freezer without through the door ice service	Retrofit	0.18	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	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
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 the door ice service	federal standard refrigerator-freezer/automatic defrost/bottom mounted freezer without 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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	New Construction	0.86	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	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
66	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with 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 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with 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 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	New Construction	0.86	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
69	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with 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 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	Time of Sale	0.86	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
71	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/wire through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/wire through the door ice service	New Construction	0.68	No	Yes	6%	99%	69%	IL TRM
72	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/wire through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/wire through the door ice service	Retrofit	0.17	No	Yes	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
73	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/through the door ice service	New Construction	0.68	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
75	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without 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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Time of Sale	0.68	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
77	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	New Construction	0.79	No	Yes	6%	99%	69%	IL TRM
78	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through 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 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Time of Sale	0.79	No	Yes	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
80	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	New Construction	0.79	No	Yes	94%	99%	69%	IL TRM
81	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through 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 Refrigerator	CEE Tier 2 ($\geq 25\%$ better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Time of Sale	0.79	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	New Construction	0.58	No	Yes	6%	99%	69%	IL TRM
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/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	Retrofit	0.15	No	Yes	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
85	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/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator 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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	New Construction	0.58	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/w/through the door ice service & refrigerator w/automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/w/through the door ice service & refrigerator w/automatic defrost	Retrofit	0.15	No	Yes	94%	99%	69%	IL TRM
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/w/through the door ice service & refrigerator w/automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/w/through the door ice service & refrigerator w/automatic defrost	Time of Sale	0.58	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/partial automatic defrost	New Construction	0.57	No	Yes	6%	99%	69%	IL TRM
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/partial automatic defrost	Retrofit	0.14	No	Yes	6%	99%	69%	IL TRM
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/partial 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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/partial automatic defrost	federal standard Refrigerator-freezer/partial automatic defrost	New Construction	0.57	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/partial automatic defrost	Retrofit	0.14	No	Yes	94%	99%	69%	IL TRM
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/partial 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 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	New Construction	0.49	No	Yes	6%	99%	69%	IL TRM
96	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	Retrofit	0.12	No	Yes	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
97	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerator-freezer/manual defrost	Time of Sale	0.49	No	Yes	6%	99%	69%	IL TRM
98	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerator-freezer/manual defrost	New Construction	0.49	No	Yes	94%	99%	69%	IL TRM
99	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerator-freezer/manual defrost	Retrofit	0.12	No	Yes	94%	99%	69%	IL TRM
100	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	CEE Tier 2 (≥ 25% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerator-freezer/manual defrost	Time of Sale	0.49	No	Yes	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
101	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ 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 Replacement	0.30	No	No	6%	99%	69%	IL TRM
102	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ 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 Replacement	0.30	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/side-mounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.48	No	No	6%	99%	69%	IL TRM
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/side-mounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.48	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
105	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ better than federal standard) Refrigerator-freezer/automatic defrost/side-mounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.50	No	No	6%	99%	69%	IL TRM
106	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ better than federal standard) Refrigerator-freezer/automatic defrost/side-mounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.50	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
107	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/through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.30	No	No	6%	99%	69%	IL TRM
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 Replacement	0.30	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/wire through the door ice service & refrigerators w/ automatic defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.31	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
110	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ 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 Replacement	0.31	No	No	94%	99%	69%	IL TRM
111	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ better than federal standard) Refrigerator-freezer/partial automatic defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.41	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
112	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ better than federal standard) Refrigerator-freezer/partial automatic defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.41	No	No	94%	99%	69%	IL TRM
113	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ better than federal standard) Refrigerators&Refrigerator-freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.42	No	No	6%	99%	69%	IL TRM
114	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: CEE Tier 2 ($\geq 25\%$ better than federal standard) Refrigerators&Refrigerator-freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.42	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
115	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% 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 Replacement	0.20	No	No	6%	99%	69%	IL TRM
116	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/through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.20	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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	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 Replacement	0.24	No	No	6%	99%	69%	IL TRM
118	All	Gas 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 Replacement	0.24	No	No	94%	99%	69%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
119	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.41	No	No	6%	99%	69%	IL TRM
120	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.41	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
121	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side-mounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.48	No	No	6%	99%	69%	IL TRM
122	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side-mounted freezer/without through the door ice service	average existing refrigerator with average remaining useful life	Early Replacement	0.48	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
123	All	Electric 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 Replacement	0.28	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 Replacement	0.28	No	No	94%	99%	69%	IL TRM
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 Replacement	0.40	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 Replacement	0.40	No	No	94%	99%	69%	IL TRM
127	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerators&Refrigerator-freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.42	No	No	6%	99%	69%	IL TRM
128	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Early Replacement: Estar (≥ 20% better than federal standard) Refrigerators&Refrigerator-freezer/manual defrost	average existing refrigerator with average remaining useful life	Early Replacement	0.42	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
129	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	New Construction	0.96	No	No	6%	99%	69%	IL TRM
130	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through 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 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Time of Sale	0.96	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
132	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	New Construction	0.96	No	No	94%	99%	69%	IL TRM
133	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through 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 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	federal standard refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Time of Sale	0.96	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/automatic defrost/bottom mounted freezer without through the door ice service	New Construction	1.01	Yes	No	6%	99%	69%	IL TRM
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/automatic defrost/bottom mounted freezer without through the door ice service	Retrofit	0.09	Yes	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/automatic defrost/bottom mounted freezer without 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 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/bottom mounted freezer without through the door ice service	federal standard refrigerator-freezer/automatic defrost/bottom mounted freezer without through the door ice service	New Construction	1.01	Yes	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 the door ice service	federal standard refrigerator-freezer/automatic defrost/bottom mounted freezer/without 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 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/bottom mounted freezer/without the door ice service	federal standard refrigerator-freezer/automatic defrost/bottom mounted freezer/without the door ice service	Time of Sale	1.01	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	New Construction	1.05	Yes	No	6%	99%	69%	IL TRM
142	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with 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 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side-mounted freezer/with through the door ice service	Time of Sale	1.05	No	No	6%	99%	69%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
144	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	New Construction	1.05	Yes	No	94%	99%	69%	IL TRM
145	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side mounted freezer with 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 Refrigerator	Estar (≥ 20% better than federal standard) refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	federal standard refrigerator-freezer/automatic defrost/side mounted freezer with through the door ice service	Time of Sale	1.05	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
147	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	New Construction	0.96	No	No	6%	99%	69%	IL TRM
148	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Retrofit	0.08	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
149	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without 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 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	New Construction	0.96	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
151	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without 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 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/side mounted freezer/automatic defrost/side mounted freezer/without through the door ice service	federal standard Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Time of Sale	0.96	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerator w/ automatic defrost	New Construction	0.82	No	No	6%	99%	69%	IL TRM
154	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 & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerator w/ automatic defrost	Retrofit	0.07	No	No	6%	99%	69%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
155	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerator 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 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/without through the door ice service & refrigerator w/ automatic defrost	New Construction	0.82	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	Retrofit	0.07	No	No	94%	99%	69%	IL TRM
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/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	federal standard Refrigerator-freezer/automatic defrost/top mounted freezer/automatic defrost/top mounted freezer/through the door ice service & refrigerator w/ automatic defrost	Time of Sale	0.82	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/partial automatic defrost	New Construction	0.80	No	No	6%	99%	69%	IL TRM
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/partial automatic defrost	Retrofit	0.07	No	No	6%	99%	69%	IL TRM
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/partial 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 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/partial automatic defrost	federal standard Refrigerator-freezer/partial automatic defrost	New Construction	0.80	No	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/partial automatic defrost	Retrofit	0.07	No	No	94%	99%	69%	IL TRM
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/partial 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 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	New Construction	0.68	No	No	6%	99%	69%	IL TRM
166	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	Retrofit	0.06	No	No	6%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
167	All	Electric Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	Time of Sale	0.68	No	No	6%	99%	69%	IL TRM
168	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	New Construction	0.68	No	No	94%	99%	69%	IL TRM
169	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	Retrofit	0.06	#N/A	No	94%	99%	69%	IL TRM
170	All	Gas Heating	Appliances	ENERGY STAR and CEE Tier 2 Refrigerator	Estar (≥ 20% better than federal standard) Refrigerator-freezer/manual defrost	federal standard Refrigerators&Refrigerator-freezer/manual defrost	Time of Sale	0.68	#N/A	No	94%	99%	69%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
171	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	New Construction	0.94	No	No	6%	20%	100%	IL TRM
172	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer - RPP	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	Time of Sale	0.94	#N/A	Yes	6%	20%	100%	IL TRM
173	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	New Construction	0.94	No	No	94%	60%	100%	IL TRM
174	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer - RPP	ENERGY STAR Clothes Dryer (Electric)	minimum federal Clothes Dryer (Electric)	Time of Sale	0.94	#N/A	Yes	94%	60%	100%	IL TRM
175	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	New Construction	0.29	No	No	6%	20%	100%	IL TRM
176	All	Electric Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	Time of Sale	0.29	No	No	6%	20%	100%	IL TRM
177	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	New Construction	0.29	#N/A	No	94%	60%	100%	IL TRM
178	All	Gas Heating	Appliances	ENERGY STAR Clothes Dryer	ENERGY STAR Clothes Dryer (Gas)	minimum federal Clothes Dryer (Gas)	Time of Sale	0.29	#N/A	No	94%	60%	100%	IL TRM

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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	1.50	Yes	Yes	6%	23%	1%	IL TRM
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 Construction	1.50	Yes	Yes	6%	23%	1%	IL TRM
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	1.50	Yes	Yes	94%	23%	1%	IL TRM
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 Construction	1.50	Yes	Yes	94%	23%	1%	IL TRM
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	2.70	Yes	Yes	6%	23%	1%	IL TRM
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 Construction	2.70	Yes	Yes	6%	23%	1%	IL TRM
185	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	Time of Sale	2.70	#N/A	Yes	94%	23%	1%	IL TRM
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 Construction	2.70	#N/A	No	94%	23%	1%	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	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
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	0.19	No	No	6%	67%	81%	IL TRM
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 Construction	0.19	No	No	6%	67%	81%	IL TRM
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	0.19	#N/A	No	94%	67%	81%	IL TRM
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 Construction	0.19	#N/A	No	94%	67%	81%	IL TRM
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 Construction	0.11	No	No	6%	67%	81%	IL TRM
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 Construction	0.11	No	No	6%	67%	81%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Construction	0.11	#N/A	No	94%	67%	81%	IL TRM
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 Construction	0.11	#N/A	No	94%	67%	81%	IL TRM
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	0.68	No	No	6%	31%	80%	IL TRM
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	0.68	No	No	94%	31%	80%	IL TRM
197	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	New Construction	0.68	No	No	6%	31%	80%	IL TRM
198	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - chest and all others	NAECA - chest and all others	New Construction	0.68	No	No	94%	31%	80%	IL TRM
199	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/m annual defrost	NAECA - Upright/m annual defrost	Time of Sale	0.77	No	No	6%	31%	80%	IL TRM

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Measure ID	Sub-Sector	Building 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
200	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/m anual defrost	NAECA - Upright/m anual defrost	Time of Sale	0.77	No	No	94%	31%	80%	IL TRM
201	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/m anual defrost	NAECA - Upright/m anual defrost	New Construction	0.77	Yes	No	6%	31%	80%	IL TRM
202	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - Upright/m anual defrost	NAECA - Upright/m anual defrost	New Construction	0.77	Yes	No	94%	31%	80%	IL TRM
203	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/automatic defrost	Time of Sale	1.03	Yes	No	6%	31%	80%	IL TRM
204	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/automatic defrost	Time of Sale	1.03	Yes	No	94%	31%	80%	IL TRM
205	All	Electric Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/automatic defrost	New Construction	1.03	No	No	6%	31%	80%	IL TRM

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Measure ID	Sub-Sector	Building 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
206	All	Gas Heating	Appliances	ENERGY STAR Freezer	10% more efficient than NAECA - upright/automatic defrost	NAECA - upright/automatic defrost	New Construction	1.03	No	No	94%	31%	80%	IL TRM
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 Construction	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 Construction	0.51	Yes	No	94%	31%	80%	IL TRM
211	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/automatic defrost	Time of Sale	1.01	Yes	No	6%	31%	80%	IL TRM

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Measure ID	Sub-Sector	Building 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
212	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/automatic 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/automatic defrost	NAECA - compact upright/automatic 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/automatic defrost	NAECA - compact upright/automatic 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/automatic defrost	NAECA - compact upright/automatic defrost	New Construction	1.01	No	No	6%	31%	80%	IL TRM
216	All	Gas Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/automatic defrost	NAECA - compact upright/automatic defrost	New Construction	1.01	No	No	94%	31%	80%	IL TRM

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Measure ID	Sub-Sector	Building 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
217	All	Electric Heating	Appliances	ENERGY STAR Freezer	20% more efficient than NAECA - compact upright/manual defrost	NAECA - compact upright/manual 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/manual defrost	NAECA - compact upright/manual 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/manual defrost	NAECA - compact upright/manual defrost	New Construction	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/manual defrost	NAECA - compact upright/manual defrost	New Construction	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

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Measure ID	Sub-Sector	Building 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
223	All	Electric Heating	Appliances	Freezer Recycling	Recycling post-1990 upright/automatic defrost freezer	Keeping post-1990 upright/automatic defrost freezer	Early Retirement	3.44	Yes	Yes	6%	31%	12%	IL TRM
224	All	Gas Heating	Appliances	Freezer Recycling	Recycling post-1990 upright/automatic defrost freezer	Keeping post-1990 upright/automatic defrost freezer	Early Retirement	3.44	Yes	Yes	94%	31%	12%	IL TRM
225	All	Electric Heating	Appliances	Freezer Recycling	Recycling post-1990 Upright/manual defrost freezer	Keeping post-1990 Upright/manual defrost freezer	Early Retirement	3.44	Yes	Yes	6%	31%	12%	IL TRM
226	All	Gas Heating	Appliances	Freezer Recycling	Recycling post-1990 Upright/manual defrost freezer	Keeping post-1990 Upright/manual defrost freezer	Early Retirement	3.44	Yes	Yes	94%	31%	12%	IL TRM
227	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 chest and all others freezers	Keeping pre-1990 chest and all others freezers	Early Retirement	4.83	Yes	Yes	6%	31%	88%	IL TRM
228	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 chest and all others freezers	Keeping pre-1990 chest and all others freezers	Early Retirement	4.83	Yes	Yes	94%	31%	88%	IL TRM
229	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 upright/automatic defrost freezer	Keeping pre-1990 upright/automatic defrost freezer	Early Retirement	4.91	#N/A	Yes	6%	31%	88%	IL TRM

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Measure ID	Sub-Sector	Building 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
230	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 upright/automatic defrost freezer	Keeping pre-1990 upright/automatic defrost freezer	Early Retirement	4.91	#N/A	Yes	94%	31%	88%	IL TRM
231	All	Electric Heating	Appliances	Freezer Recycling	Recycling pre-1990 Upright/manual defrost freezer	Keeping pre-1990 Upright/manual defrost freezer	Early Retirement	4.91	#N/A	Yes	6%	31%	88%	IL TRM
232	All	Gas Heating	Appliances	Freezer Recycling	Recycling pre-1990 Upright/manual defrost freezer	Keeping pre-1990 Upright/manual defrost freezer	Early Retirement	4.91	#N/A	Yes	94%	31%	88%	IL TRM
233	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping post-1990 refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
234	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping post-1990 refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM

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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/automatic defrost/bottom mounted freezer without through the door ice service	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
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/automatic defrost/bottom mounted freezer without through the door ice service	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
237	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator-freezer/automatic defrost/side mounted freezer without through the door ice service	Keeping post-1990 refrigerator-freezer/automatic defrost/side mounted freezer without through the door ice service	Early Retirement	4.05	Yes	Yes	6%	99%	15%	IL TRM

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238	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Keeping post-1990 refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Early Retirement	4.05	Yes	Yes	94%	99%	15%	IL TRM
239	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Keeping post-1990 Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Early Retirement	4.05	Yes	Yes	6%	99%	15%	IL TRM
240	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Keeping post-1990 Refrigerator-freezer/automatic defrost/side mounted freezer/without through the door ice service	Early Retirement	4.05	Yes	Yes	94%	99%	15%	IL TRM

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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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
243	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator-freezer/partial automatic defrost	Keeping post-1990 Refrigerator-freezer/partial automatic defrost	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM

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244	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerator-freezer/partial automatic defrost	Keeping post-1990 Refrigerator-freezer/partial automatic defrost	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
245	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping post-1990 Refrigerators&Refrigerator-freezer/manual defrost	Early Retirement	2.52	Yes	Yes	6%	99%	15%	IL TRM
246	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling post-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping post-1990 Refrigerators&Refrigerator-freezer/manual defrost	Early Retirement	2.52	Yes	Yes	94%	99%	15%	IL TRM
247	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping pre-1990 refrigerator-freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	4.35	Yes	Yes	6%	99%	85%	IL TRM

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248	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Keeping pre-1990 refrigerator - freezer/automatic defrost/top mounted freezer/through the door ice service	Early Retirement	4.35	Yes	Yes	94%	99%	85%	IL TRM
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/automatic defrost/bottom mounted freezer/without through the door ice service	Early Retirement	4.35	Yes	Yes	6%	99%	85%	IL TRM
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/automatic defrost/bottom mounted freezer/without through the door ice service	Early Retirement	4.35	Yes	Yes	94%	99%	85%	IL TRM

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251	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Keeping pre-1990 refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Early Retirement	5.88	Yes	Yes	6%	99%	85%	IL TRM
252	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Keeping pre-1990 refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Early Retirement	5.88	Yes	Yes	94%	99%	85%	IL TRM
253	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Keeping pre-1990 Refrigerator-freezer/automatic defrost/side mounted freezer/with through the door ice service	Early Retirement	5.88	Yes	Yes	6%	99%	85%	IL TRM

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254	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator-freezer/automatic defrost/side mounted freezer without through the door ice service	Keeping pre-1990 Refrigerator-freezer/automatic defrost/side mounted freezer without through the door ice service	Early Retirement	5.88	Yes	Yes	94%	99%	85%	IL TRM
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/automatic defrost/top mounted freezer without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	4.35	Yes	Yes	6%	99%	85%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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/automatic defrost/top mounted freezer/without through the door ice service & refrigerators w/ automatic defrost	Early Retirement	4.35	Yes	Yes	94%	99%	85%	IL TRM
257	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator-freezer/partial automatic defrost	Keeping pre-1990 Refrigerator-freezer/partial automatic defrost	Early Retirement	4.35	#N/A	Yes	6%	99%	85%	IL TRM
258	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerator-freezer/partial automatic defrost	Keeping pre-1990 Refrigerator-freezer/partial automatic defrost	Early Retirement	4.35	#N/A	Yes	94%	99%	85%	IL TRM
259	All	Electric Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerators & Refrigerator-freezer/manual defrost	Keeping pre-1990 Refrigerators & Refrigerator-freezer/manual defrost	Early Retirement	4.35	#N/A	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	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
260	All	Gas Heating	Appliances	Refrigerator Recycling	Recycling pre-1990 Refrigerators&Refrigerator-freezer/manual defrost	Keeping pre-1990 Refrigerators&Refrigerator-freezer/manual defrost	Early Retirement	4.35	#N/A	Yes	94%	99%	85%	IL TRM
261	All	Gas Heating	Appliances	Room Air Conditioner Recycling	Recycling old unit	existing inefficient room air conditioner, EER 7.7	Early Retirement	2.05	#N/A	Yes	94%	30%	100%	IL TRM
262	All	Electric Heating	Appliances	Room Air Conditioner Recycling	Recycling old unit	existing inefficient room air conditioner, EER 7.7	Early Retirement	2.05	#N/A	Yes	6%	30%	100%	IL TRM
263	All	Electric Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Time of Sale	0.74	No	No	6%	100%	98%	IL TRM
264	SingleFamily & Duplex	Electric Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	0.74	No	No	2%	100%	98%	IL TRM
265	Multifamily	Electric Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	0.75	No	No	13%	62%	98%	IL TRM
266	All	Gas Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Time of Sale	0.74	No	No	94%	62%	98%	IL TRM
267	SingleFamily & Duplex	Gas Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	0.74	No	No	98%	100%	98%	IL TRM

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268	Multifamily	Gas Heating	Consumer Electronics	Smart Strip	5 plug smart strip	standard power strip	Direct Install	0.75	No	No	87%	100%	98%	IL TRM
269	All	Electric Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Time of Sale	0.83	No	Yes	6%	100%	98%	IL TRM
270	SingleFamily & Duplex	Electric Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	0.83	No	Yes	2%	100%	98%	IL TRM
271	Multifamily	Electric Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	0.84	#N/A	Yes	13%	100%	98%	IL TRM
272	All	Gas Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Time of Sale	0.83	#N/A	Yes	94%	100%	98%	IL TRM
273	SingleFamily & Duplex	Gas Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	0.83	#N/A	Yes	98%	100%	98%	IL TRM
274	Multifamily	Gas Heating	Consumer Electronics	Smart Strip	7 plug smart strip	standard power strip	Direct Install	0.84	#N/A	Yes	87%	100%	98%	IL TRM
275	SingleFamily & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Bathroom Low Flow Aerators	1.5 GPM or less	2.25 GPM or more	Retrofit	2.79	Yes	Yes	8%	62%	99%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Showerheads	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 Construction	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 Construction	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 Construction	4.31	#N/A	Yes	20%	62%	93%	IL TRM

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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 Construction	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 Showerheads	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 Construction	8.01	#N/A	Yes	8%	62%	99%	IL TRM

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292	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	New Construction	8.01	#N/A	Yes	1%	62%	99%	IL TRM
293	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Construction	6.56	#N/A	Yes	20%	62%	93%	IL TRM
294	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Kitchen Low Flow Aerators	2.2 GPM or less	2.75 GPM or more	New Construction	6.56	#N/A	Yes	4%	62%	93%	IL TRM
295	SingleFamily & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	10.37	Yes	Yes	8%	100%	60%	IL TRM
296	SingleFamily & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	7.54	Yes	No	8%	100%	60%	IL TRM
297	SingleFamily & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Retrofit	10.67	Yes	No	8%	100%	60%	IL TRM
298	SingleFamily & Duplex	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Time of Sale	11.32	Yes	No	8%	100%	60%	IL TRM
299	Multifamily	Electric DHW w/Electric Heating Rate	Hot Water	Low flow shower head	1.5 GPM	2.5 GPM	Direct Install	8.23	Yes	Yes	20%	100%	60%	IL TRM

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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

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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 Construction	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 Construction	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 Construction	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 Construction	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

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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

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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

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331	SingleFamily & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Low flow shower head	2 GPM	2.5 GPM	Direct Install	5.94	#N/A	No	1%	100%	60%	IL TRM
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

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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

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346	All	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R-18	50 gal No wrap (R-8)	Retrofit	2.64	Yes	No	2%	20%	76%	IL TRM
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

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
354	All	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Tank Wrap	50 gal: R-20	50 gal No wrap (R-10)	Retrofit	1.87	#N/A	No	2%	20%	76%	IL TRM
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

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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 Construction	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 Construction	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

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Measure ID	Sub-Sector	Building 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
369	SingleFamily & Duplex	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	1.69	#N/A	No	1%	100%	78%	IL TRM
370	Multifamily	Electric DHW w/Non-Electric Heating Rate	Hot Water	Water Heater Temp Setback	120 degrees	≥ 130 degrees	Direct Install	1.69	#N/A	No	4%	100%	78%	IL TRM
371	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Existing air source heat pump	Early Replacement	1.14	No	No	5%	100%	100%	IL TRM
372	SingleFamily & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 15	Existing air source heat pump	Early Replacement	1.16	No	Yes	0%	100%	100%	IL TRM
373	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Existing air source heat pump	Early Replacement	1.08	No	No	5%	100%	100%	IL TRM
374	SingleFamily & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 16	Existing air source heat pump	Early Replacement	1.10	No	Yes	0%	100%	100%	IL TRM
375	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Existing air source heat pump	Early Replacement	1.03	No	No	5%	100%	100%	IL TRM
376	SingleFamily & Duplex	Heat Pump	HVAC	Air Source Heat Pump	SEER 17	Existing air source heat pump	Early Replacement	1.05	No	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	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
377	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Existing air source heat pump	Early Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	0.61	Yes	No	4%	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	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
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 Replacement	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 Replacement	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 Replacement	0.59	Yes	Yes	0%	100%	100%	IL TRM
387	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	1.22	No	Yes	1%	100%	93%	IL TRM

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392	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	1.15	No	Yes	4%	100%	93%	IL TRM
393	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	1.22	No	Yes	86%	100%	93%	IL TRM
394	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Federal minimum SEER13 equipment	New Construction	1.15	No	Yes	40%	100%	93%	IL TRM
395	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.20	No	Yes	1%	100%	93%	IL TRM
396	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 14.5	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.19	No	No	4%	100%	93%	IL TRM
397	SingleFamily & Duplex	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 Replacement	0.20	No	Yes	86%	100%	93%	IL TRM

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398	Multifamily	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 Replacement	0.19	No	No	40%	100%	93%	IL TRM
399	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	0.78	No	No	1%	100%	93%	IL TRM
400	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	0.74	No	No	4%	100%	93%	IL TRM
401	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	0.78	No	No	86%	100%	93%	IL TRM
402	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	Time of Sale	0.74	No	No	40%	100%	93%	IL TRM
403	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Construction	0.78	No	Yes	1%	100%	93%	IL TRM
404	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Construction	0.74	No	Yes	4%	100%	93%	IL TRM

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405	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Construction	0.78	No	Yes	86%	100%	93%	IL TRM
406	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Federal minimum SEER13 equipment	New Construction	0.74	No	Yes	40%	100%	93%	IL TRM
407	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.20	No	No	1%	100%	93%	IL TRM
408	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.19	No	No	4%	100%	93%	IL TRM
409	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.20	No	No	86%	100%	93%	IL TRM

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410	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 15	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.19	No	No	40%	100%	93%	IL TRM
411	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	0.73	No	Yes	1%	100%	93%	IL TRM
412	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	0.69	No	No	4%	100%	93%	IL TRM
413	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	0.73	No	Yes	86%	100%	93%	IL TRM
414	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	Time of Sale	0.69	No	No	40%	100%	93%	IL TRM
415	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Construction	0.73	No	Yes	1%	100%	93%	IL TRM
416	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Construction	0.69	No	Yes	4%	100%	93%	IL TRM

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417	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Construction	0.73	No	Yes	86%	100%	93%	IL TRM
418	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Federal minimum SEER13 equipment	New Construction	0.69	No	Yes	40%	100%	93%	IL TRM
419	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.22	No	Yes	1%	100%	93%	IL TRM
420	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.21	No	No	4%	100%	93%	IL TRM
421	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.22	No	Yes	86%	100%	93%	IL TRM

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422	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 16	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.21	No	No	40%	100%	93%	IL TRM
423	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	0.69	No	No	1%	100%	93%	IL TRM
428	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	0.65	No	No	4%	100%	93%	IL TRM

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429	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	0.69	No	No	86%	100%	93%	IL TRM
430	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Federal minimum SEER13 equipment	New Construction	0.65	No	No	40%	100%	93%	IL TRM
431	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.23	No	No	1%	100%	93%	IL TRM
432	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.22	No	No	4%	100%	93%	IL TRM
433	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.23	No	No	86%	100%	93%	IL TRM

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434	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 17	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.22	No	No	40%	100%	93%	IL TRM
435	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Construction	0.64	No	No	1%	100%	93%	IL TRM
440	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Construction	0.61	No	No	4%	100%	93%	IL TRM

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441	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Construction	0.64	No	No	86%	100%	93%	IL TRM
442	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Federal minimum SEER13 equipment	New Construction	0.61	No	No	40%	100%	93%	IL TRM
443	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.24	No	No	1%	100%	93%	IL TRM
444	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.23	No	No	4%	100%	93%	IL TRM
445	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.24	No	No	86%	100%	93%	IL TRM

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446	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 18	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.23	No	No	40%	100%	93%	IL TRM
447	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Construction	0.60	No	No	1%	100%	93%	IL TRM
452	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Construction	0.57	No	No	4%	100%	93%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
453	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Construction	0.60	No	No	86%	100%	93%	IL TRM
454	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Federal minimum SEER13 equipment	New Construction	0.57	No	No	40%	100%	93%	IL TRM
455	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.25	No	No	1%	100%	93%	IL TRM
456	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.24	No	No	4%	100%	93%	IL TRM
457	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.25	No	No	86%	100%	93%	IL TRM

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Measure ID	Sub-Sector	Building 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	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 19	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.24	No	No	40%	100%	93%	IL TRM
459	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 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 Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	0.57	No	No	1%	100%	93%	IL TRM
464	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	0.54	No	No	4%	100%	93%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
465	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	0.57	No	No	86%	100%	93%	IL TRM
466	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Federal minimum SEER13 equipment	New Construction	0.54	No	No	40%	100%	93%	IL TRM
467	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.27	No	No	1%	100%	93%	IL TRM
468	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.25	No	No	4%	100%	93%	IL TRM
469	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.27	No	No	86%	100%	93%	IL TRM

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Measure ID	Sub-Sector	Building 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
470	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 20	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.25	No	No	40%	100%	93%	IL TRM
471	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	0.56	No	No	1%	100%	93%	IL TRM
472	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	0.53	No	No	4%	100%	93%	IL TRM
473	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	0.56	#N/A	No	86%	100%	93%	IL TRM
474	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	Time of Sale	0.53	#N/A	No	40%	100%	93%	IL TRM
475	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	0.56	#N/A	No	1%	100%	93%	IL TRM
476	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	0.53	#N/A	No	4%	100%	93%	IL TRM

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Measure ID	Sub-Sector	Building 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
477	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	0.56	#N/A	No	86%	100%	93%	IL TRM
478	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Federal minimum SEER13 equipment	New Construction	0.53	#N/A	No	40%	100%	93%	IL TRM
479	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.28	#N/A	No	1%	100%	93%	IL TRM
480	Multifamily	AC/Electric Resistance Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.26	#N/A	No	4%	100%	93%	IL TRM
481	SingleFamily & Duplex	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	0.28	#N/A	No	86%	100%	93%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
482	Multifamily	AC/Gas Heat	HVAC	Central Air Conditioning > 14.5 SEER	SEER 21	Shifting baseline from existing AC equipment to Federal minimum SEER13 equipment	Early Replacement	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 Connections 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 Connections 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	2.68	#N/A	Yes	13%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
485	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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 Connections 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 Connections 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	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	SingleFamily &Duplex	AC/Gas Heat	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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 Construction	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 Connections 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 Construction	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 Connections 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 Construction	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	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	SingleFamily & Duplex	Electric Resistance Heat/No CAC	HVAC	Duct Insulation and Sealing	50% or more ducts inside envelope Connections 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 Construction	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 Connections 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 Construction	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 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	5.08	#N/A	No	40%	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	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
494	Multifamily	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	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 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	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 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	5.97	#N/A	No	4%	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	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
497	Multifamily	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	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 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 Construction	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 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 Construction	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	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	Multifamily	AC/Electric Resistance 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 Construction	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 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 Construction	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 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 Construction	2.06	#N/A	No	5%	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	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
503	All	AC/Gas Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	10.82	#N/A	Yes	69%	100%	100%	IL TRM
504	All	AC/Gas Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	10.82	#N/A	Yes	69%	100%	100%	IL TRM
505	All	AC/Electric Resistance Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	11.80	#N/A	Yes	3%	100%	100%	IL TRM
506	All	AC/Electric Resistance Heat	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	11.80	#N/A	Yes	3%	100%	100%	IL TRM
507	All	Electric Resistance Heat/No CAC	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	8.93	#N/A	Yes	1%	100%	100%	IL TRM
508	All	Electric Resistance Heat/No CAC	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	8.93	#N/A	Yes	1%	100%	100%	IL TRM
509	All	Heat Pump	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	11.80	#N/A	Yes	2%	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	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
510	All	Heat Pump	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	11.80	#N/A	Yes	2%	100%	100%	IL TRM
511	All	Gas Heat (No AC)	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	Time of Sale	7.95	#N/A	Yes	25%	100%	100%	IL TRM
512	All	Gas Heat (No AC)	HVAC	Furnace Blower Motor	Brushless permanent magnet (BPM) blower motor	non-BPM blower motor	New Construction	7.95	#N/A	Yes	25%	100%	100%	IL TRM
513	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.57	No	No	5%	100%	64%	IL TRM
514	SingleFamily & Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	Time of Sale	0.58	No	Yes	0%	100%	64%	IL TRM
515	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Construction	0.53	No	Yes	5%	100%	64%	IL TRM
516	SingleFamily & Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	SEER 14, HSPF 8.2, 11.8 EER ASHP	New Construction	0.54	No	Yes	0%	100%	64%	IL TRM
517	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR DGX	Federal standard central AC, electric resistance heating	Time of Sale	3.51	No	No	4%	100%	64%	IL TRM

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Measure ID	Sub-Sector	Building 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	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 Construction	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 Construction	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 Replacement	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 Replacement	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 Replacement	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 Replacement	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

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Measure ID	Sub-Sector	Building 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
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 Construction	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 Construction	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 Construction	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 Construction	3.62	No	Yes	1%	100%	64%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	1.82	#N/A	Yes	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 Construction	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

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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	SingleFamily & Duplex	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	Retrofit	1.82	#N/A	No	98%	82%	100%	IL TRM
539	Multifamily	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	Retrofit	1.82	#N/A	No	87%	59%	100%	IL TRM
540	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	New Construction	1.82	#N/A	Yes	94%	74%	100%	IL TRM
541	SingleFamily & Duplex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	5.17	Yes	No	2%	100%	47%	IL TRM
542	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	3.33	Yes	Yes	13%	100%	35%	IL TRM
543	SingleFamily & Duplex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	5.17	Yes	No	2%	100%	47%	IL TRM
544	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	3.33	Yes	No	13%	100%	35%	IL TRM

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Measure ID	Sub-Sector	Building 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
545	SingleFamily & Duplex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	2.44	#N/A	No	98%	100%	47%	IL TRM
546	Multifamily	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	1.59	#N/A	No	87%	100%	35%	IL TRM
547	SingleFamily & Duplex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	2.44	#N/A	No	98%	100%	47%	IL TRM
548	Multifamily	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	1.59	#N/A	No	87%	100%	35%	IL TRM
549	SingleFamily & Duplex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	5.17	#N/A	No	2%	100%	47%	IL TRM
550	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	3.33	#N/A	Yes	13%	100%	35%	IL TRM
551	SingleFamily & Duplex	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	9.24	#N/A	No	2%	100%	47%	IL TRM
552	Multifamily	Electric Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	5.95	#N/A	Yes	13%	100%	35%	IL TRM

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Measure ID	Sub-Sector	Building 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	SingleFamily & Duplex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	3.04	#N/A	No	0%	100%	47%	IL TRM
554	Multifamily	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	New Construction	1.96	#N/A	No	5%	100%	35%	IL TRM
555	SingleFamily & Duplex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	3.04	#N/A	No	0%	100%	47%	IL TRM
556	Multifamily	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Retrofit	1.96	#N/A	No	5%	100%	35%	IL TRM
557	SingleFamily & Duplex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	2.63	#N/A	Yes	98%	100%	47%	IL TRM
558	Multifamily	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	1.70	#N/A	Yes	87%	100%	35%	IL TRM
559	SingleFamily & Duplex	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	2.44	#N/A	No	98%	100%	47%	IL TRM
560	Multifamily	Gas Heating	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	1.59	#N/A	Yes	87%	100%	35%	IL TRM

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Measure ID	Sub-Sector	Building 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
561	SingleFamily & Duplex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	5.43	#N/A	No	0%	100%	47%	IL TRM
562	Multifamily	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Direct Install	3.50	#N/A	Yes	5%	100%	35%	IL TRM
563	SingleFamily & Duplex	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	3.04	#N/A	No	0%	100%	47%	IL TRM
564	Multifamily	Heat Pump	HVAC	Programmable Thermostats	Programmable Thermostats	Non-Programmable Thermostat	Time of Sale	1.96	#N/A	No	5%	100%	35%	IL TRM
565	SingleFamily & Duplex	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	1.44	Yes	Yes	2%	100%	99%	IL TRM
566	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	0.93	No	No	13%	100%	99%	IL TRM
567	SingleFamily & Duplex	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	1.44	No	Yes	2%	100%	99%	IL TRM
568	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	0.93	No	Yes	13%	100%	99%	IL TRM

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Measure ID	Sub-Sector	Building 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
569	SingleFamily & Duplex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	0.68	#N/A	Yes	98%	100%	99%	IL TRM
570	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	0.44	#N/A	No	87%	100%	99%	IL TRM
571	SingleFamily & Duplex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	0.68	#N/A	Yes	98%	100%	99%	IL TRM
572	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	0.44	#N/A	Yes	87%	100%	99%	IL TRM
573	SingleFamily & Duplex	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	1.44	#N/A	Yes	2%	100%	99%	IL TRM
574	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	0.93	#N/A	Yes	13%	100%	99%	IL TRM
575	SingleFamily & Duplex	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	2.57	#N/A	Yes	2%	100%	99%	IL TRM
576	Multifamily	Electric Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	1.66	#N/A	Yes	13%	100%	99%	IL TRM

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Measure ID	Sub-Sector	Building 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
577	SingleFamily & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	0.85	#N/A	Yes	0%	100%	99%	IL TRM
578	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	New Construction	0.55	#N/A	Yes	5%	100%	99%	IL TRM
579	SingleFamily & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	0.85	#N/A	Yes	0%	100%	99%	IL TRM
580	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Retrofit	0.55	#N/A	No	5%	100%	99%	IL TRM
581	SingleFamily & Duplex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	1.22	#N/A	Yes	98%	100%	99%	IL TRM
582	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	0.44	#N/A	No	87%	100%	99%	IL TRM
583	SingleFamily & Duplex	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	0.68	#N/A	Yes	98%	100%	99%	IL TRM
584	Multifamily	Gas Heating	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	0.44	#N/A	Yes	87%	100%	99%	IL TRM

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Measure ID	Sub-Sector	Building 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
585	SingleFamily & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	1.51	#N/A	Yes	0%	100%	99%	IL TRM
586	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Direct Install	0.98	#N/A	Yes	5%	100%	99%	IL TRM
587	SingleFamily & Duplex	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	0.85	#N/A	Yes	0%	100%	99%	IL TRM
588	Multifamily	Heat Pump	HVAC	Smart Wifi Thermostats	Smart Wifi Thermostats	Non-Programmable Thermostat	Time of Sale	0.55	#N/A	Yes	5%	100%	99%	IL TRM
589	SingleFamily & Duplex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing 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	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post-2020 EISA compliant lamp	Direct Install	7.26	No	Yes	2%	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	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
591	Multifamily	Gas Heating	Lighting	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing 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	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing 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	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing 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	Omnidirectional A-type LED lamps	12.32 W LED installed in year 2020 representing 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 representing bulbs less than 1050 lumens	15W Post-2020 EISA compliant lamp	Time of Sale	7.85	#N/A	Yes	94%	100%	88%	IL TRM

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Measure ID	Sub-Sector	Building 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
596	All	Electric Heating	Lighting	Efficient light bulbs	12.32 W LED installed in year 2020 representing bulbs less than 1050 lumens	15W Post-2020 EISA compliant lamp	Time of Sale	7.39	#N/A	Yes	6%	100%	88%	IL TRM
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	7.85	#N/A	Yes	94%	100%	88%	IL TRM
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	7.39	#N/A	Yes	6%	100%	88%	IL TRM
599	SingleFamily & Duplex	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	6.17	No	Yes	98%	100%	100%	IL TRM
600	SingleFamily & Duplex	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	5.82	No	Yes	2%	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	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
601	Multifamily	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	6.19	No	Yes	87%	100%	100%	IL TRM
602	Multifamily	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	5.80	No	Yes	13%	100%	100%	IL TRM
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	6.29	No	No	94%	100%	88%	IL TRM
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	5.92	No	No	6%	100%	88%	IL TRM
605	SingleFamily & Duplex	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	5.15	No	Yes	98%	100%	100%	IL TRM

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606	SingleFamily & Duplex	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	4.85	No	Yes	2%	100%	100%	IL TRM
607	Multifamily	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	5.16	No	Yes	87%	100%	100%	IL TRM
608	Multifamily	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	4.84	No	Yes	13%	100%	100%	IL TRM
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	5.25	No	No	94%	100%	88%	IL TRM
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	4.94	No	No	6%	100%	88%	IL TRM

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Measure ID	Sub-Sector	Building 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
611	SingleFamily & Duplex	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	11.52	No	Yes	98%	100%	100%	IL TRM
612	SingleFamily & Duplex	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	10.86	No	Yes	2%	100%	100%	IL TRM
613	Multifamily	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	11.54	No	Yes	87%	100%	100%	IL TRM
614	Multifamily	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	10.83	No	Yes	13%	100%	100%	IL TRM
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	11.75	No	Yes	94%	100%	88%	IL TRM
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	11.06	No	Yes	6%	100%	88%	IL TRM
617	SingleFamily & Duplex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post-2020 EISA compliant lamp	Direct Install	9.23	No	Yes	98%	100%	100%	IL TRM
618	SingleFamily & Duplex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post-2020 EISA compliant lamp	Direct Install	8.70	No	Yes	2%	100%	100%	IL TRM

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619	Multifamily	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post-2020 EISA compliant lamp	Direct Install	9.25	No	Yes	87%	100%	100%	IL TRM
620	Multifamily	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post-2020 EISA compliant lamp	Direct Install	8.67	No	Yes	13%	100%	100%	IL TRM
621	All	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post-2020 EISA compliant lamp	Time of Sale	9.41	No	No	94%	100%	88%	IL TRM
622	All	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2021	28.2W Post-2020 EISA compliant lamp	Time of Sale	8.86	No	No	6%	100%	88%	IL TRM
623	SingleFamily & Duplex	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Direct Install	7.70	No	Yes	98%	100%	100%	IL TRM
624	SingleFamily & Duplex	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Direct Install	7.26	No	Yes	2%	100%	100%	IL TRM
625	Multifamily	Gas Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Direct Install	7.71	No	Yes	87%	100%	100%	IL TRM
626	Multifamily	Electric Heating	Lighting	Omnidirectional A-type LED lamps	23.1 W LED installed in year 2022	28.2W Post-2020 EISA compliant lamp	Direct Install	7.24	No	Yes	13%	100%	100%	IL TRM

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627	All	Gas Heating	Lighting	Omnidirectional 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	Omnidirectional 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 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	1.32	#N/A	No	87%	62%	100%	IL TRM
632	Multifamily	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	1.19	#N/A	No	13%	62%	100%	IL TRM
633	All	Gas Heating	Lighting	LED Downlights	14 W LED	35W Incandescent/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 Incandescent/Halogen MR16/PAR 16 pin-based lamps	New Construction	130.76	Yes	Yes	94%	2%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
635	All	Electric Heating	Lighting	LED Downlights	14 W LED	35W Incandescent/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 Incandescent/Halogen MR16/PAR 16 pin-based lamps	New Construction	123.13	Yes	Yes	6%	2%	100%	IL TRM
637	SingleFamily & Duplex	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	1.12	No	Yes	98%	100%	100%	IL TRM
638	SingleFamily & Duplex	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	1.05	No	Yes	2%	100%	100%	IL TRM
639	Multifamily	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	1.12	No	Yes	87%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
640	Multifamily	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	1.05	No	Yes	13%	43%	100%	IL TRM
641	All	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	Time of Sale	43.80	No	No	94%	100%	90%	IL TRM
642	All	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	Time of Sale	41.26	No	No	6%	100%	53%	IL TRM
643	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing 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 Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.62	Yes	Yes	2%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
645	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.66	Yes	Yes	87%	100%	100%	IL TRM
646	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.62	Yes	Yes	13%	100%	100%	IL TRM
647	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	32.42	Yes	Yes	94%	100%	81%	IL TRM
648	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2017 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	30.81	Yes	Yes	6%	100%	48%	IL TRM
649	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.36	Yes	No	98%	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	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
650	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.35	Yes	No	2%	100%	100%	IL TRM
651	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.36	Yes	No	87%	43%	100%	IL TRM
652	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Direct Install	0.35	Yes	No	13%	43%	100%	IL TRM
653	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	6.22	Yes	No	94%	100%	73%	IL TRM
654	All	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	13.9 W CFL installed in year 2018 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp	Time of Sale	5.94	Yes	No	6%	100%	43%	IL TRM

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Measure ID	Sub-Sector	Building 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
655	SingleFamily & Duplex	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	Direct Install	0.16	Yes	No	98%	100%	100%	IL TRM
656	SingleFamily & Duplex	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	Direct Install	0.15	Yes	No	2%	100%	100%	IL TRM
657	Multifamily	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	Direct Install	0.16	Yes	No	87%	43%	100%	IL TRM
658	Multifamily	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	Direct Install	0.15	Yes	No	13%	43%	100%	IL TRM
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	1.02	Yes	No	94%	100%	66%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	0.96	Yes	No	6%	100%	39%	IL TRM
661	SingleFamily & Duplex	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	0.14	Yes	No	98%	100%	100%	IL TRM
662	SingleFamily & Duplex	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	0.14	Yes	No	2%	100%	100%	IL TRM
663	Multifamily	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	0.14	Yes	No	87%	43%	100%	IL TRM
664	Multifamily	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	0.14	Yes	No	13%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	0.68	Yes	No	94%	100%	59%	IL TRM
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	0.64	Yes	No	6%	100%	35%	IL TRM
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 Construction	0.71	No	No	6%	100%	100%	IL TRM
668	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 - Exterior Hardwired	Time of Sale	0.71	No	No	6%	100%	63%	IL TRM
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 Construction	0.71	No	No	94%	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	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
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	0.71	No	No	94%	100%	63%	IL TRM
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 Construction	0.45	No	No	6%	100%	100%	IL TRM
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	0.45	No	No	6%	100%	63%	IL TRM
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 Construction	0.45	No	No	94%	100%	100%	IL TRM
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	0.45	No	No	94%	100%	63%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Construction	0.26	No	No	6%	100%	100%	IL TRM
676	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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Construction	0.26	#N/A	Yes	94%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Exterior Hardwired	New Construction	0.11	#N/A	Yes	6%	25%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	0.11	No	No	6%	100%	63%	IL TRM
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 Construction	0.11	#N/A	Yes	94%	25%	100%	IL TRM
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	0.11	No	No	94%	100%	63%	IL TRM
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 Construction	0.11	#N/A	Yes	6%	25%	100%	IL TRM
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	0.11	No	No	6%	100%	63%	IL TRM

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Measure ID	Sub-Sector	Building 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
685	All	Gas 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 Construction	0.11	#N/A	Yes	94%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Construction	0.26	#N/A	Yes	94%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Construction	0.24	#N/A	Yes	6%	25%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	0.24	No	No	6%	100%	63%	IL TRM
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 Construction	0.19	#N/A	Yes	94%	25%	100%	IL TRM
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	0.19	No	No	94%	100%	63%	IL TRM
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 Construction	0.18	#N/A	Yes	6%	25%	100%	IL TRM
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	0.18	No	No	6%	100%	63%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Construction	0.12	#N/A	Yes	94%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Construction	0.12	#N/A	Yes	6%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Construction	0.06	#N/A	Yes	94%	25%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Construction	0.05	#N/A	Yes	6%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	42.4W EISA compliant lamp - Interior Hardwired	New Construction	0.06	#N/A	Yes	94%	25%	100%	IL TRM
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	0.06	No	No	94%	100%	63%	IL TRM

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Measure ID	Sub-Sector	Building 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
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 Construction	0.05	#N/A	Yes	6%	25%	100%	IL TRM
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	0.05	No	No	6%	100%	63%	IL TRM
707	Multifamily	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	2.39	No	No	87%	100%	63%	IL TRM
708	Multifamily	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 Construction	2.39	No	No	87%	43%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
709	Multifamily	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	2.39	No	Yes	87%	43%	63%	IL TRM
710	Multifamily	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	2.16	No	No	13%	100%	63%	IL TRM
711	Multifamily	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	New Construction	2.16	No	No	13%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
712	Multifamily	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	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 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Construction	0.26	#N/A	Yes	94%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Construction	0.25	#N/A	Yes	6%	25%	100%	IL TRM
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	0.25	No	No	6%	100%	63%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 Construction	0.19	#N/A	Yes	94%	25%	100%	IL TRM
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	0.19	No	No	94%	100%	63%	IL TRM
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 Construction	0.18	#N/A	Yes	6%	25%	100%	IL TRM
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	0.18	No	No	6%	100%	63%	IL TRM
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 Construction	0.12	#N/A	Yes	94%	25%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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	0.12	No	No	94%	100%	63%	IL TRM
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 Construction	0.12	#N/A	Yes	6%	25%	100%	IL TRM
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	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 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Construction	0.06	#N/A	Yes	94%	25%	100%	IL TRM
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	0.06	No	No	94%	100%	63%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 Construction	0.05	#N/A	Yes	6%	25%	100%	IL TRM
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	0.05	No	No	6%	100%	63%	IL TRM
729	All	Gas Heating	Lighting	Interior Hardwired Lighting Fixtures	14 W CFL installed in year 2020 representing bulbs less than 1050 lumens	43W EISA compliant lamp	New Construction	0.06	#N/A	Yes	94%	25%	100%	IL TRM
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	0.06	No	No	94%	100%	63%	IL TRM
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 Construction	0.05	#N/A	Yes	6%	25%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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	0.05	No	No	6%	100%	63%	IL TRM
733	SingleFamily & Duplex	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	13.40	No	Yes	98%	100%	100%	IL TRM
734	SingleFamily & Duplex	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	12.64	No	Yes	2%	100%	100%	IL TRM
735	Multifamily	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	13.43	No	Yes	87%	100%	100%	IL TRM
736	Multifamily	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	12.60	No	Yes	13%	100%	100%	IL TRM
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	13.67	No	Yes	94%	100%	100%	IL TRM
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	12.88	No	Yes	6%	100%	100%	IL TRM
739	SingleFamily & Duplex	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	10.74	No	Yes	98%	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	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
740	SingleFamily & Duplex	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	10.13	No	Yes	2%	100%	100%	IL TRM
741	Multifamily	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	10.76	No	Yes	87%	100%	100%	IL TRM
742	Multifamily	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	10.09	No	Yes	13%	100%	100%	IL TRM
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	10.96	No	No	94%	100%	100%	IL TRM
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	10.32	No	No	6%	100%	100%	IL TRM
745	SingleFamily & Duplex	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	8.96	No	Yes	98%	100%	100%	IL TRM
746	SingleFamily & Duplex	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	8.45	No	Yes	2%	100%	100%	IL TRM
747	Multifamily	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	8.97	No	Yes	87%	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	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
748	Multifamily	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	8.42	No	Yes	13%	100%	100%	IL TRM
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	9.14	No	No	94%	100%	100%	IL TRM
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	8.61	No	No	6%	100%	100%	IL TRM
751	All	Gas Heating	Lighting	LED Downlights	13 W LED	45W Incandescent/Halogen Tracklight	Time of Sale	156.04	Yes	Yes	94%	6%	88%	IL TRM
752	All	Gas Heating	Lighting	LED Downlights	13 W LED	45W Incandescent/Halogen Tracklight	New Construction	156.04	Yes	Yes	94%	2%	100%	IL TRM
753	All	Electric Heating	Lighting	LED Downlights	13 W LED	45W Incandescent/Halogen Tracklight	Time of Sale	147.48	Yes	Yes	6%	6%	88%	IL TRM
754	All	Electric Heating	Lighting	LED Downlights	13 W LED	45W Incandescent/Halogen Tracklight	New Construction	147.48	Yes	Yes	6%	2%	100%	IL TRM
755	All	Gas Heating	Lighting	LED Downlights	14 W LED	50W Incandescent/Halogen Recessed Downlight	Time of Sale	190.38	Yes	Yes	94%	6%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
756	All	Gas Heating	Lighting	LED Downlights - OM	14 W LED	50W Incandescent/Halogen Recessed Downlight	Time of Sale	190.38	#N/A	Yes	94%	6%	100%	IL TRM
757	All	Gas Heating	Lighting	LED Downlights	14 W LED	50W Incandescent/Halogen Recessed Downlight	New Construction	190.38	Yes	Yes	94%	2%	100%	IL TRM
758	All	Electric Heating	Lighting	LED Downlights	14 W LED	50W Incandescent/Halogen Recessed Downlight	Time of Sale	179.96	Yes	Yes	6%	6%	100%	IL TRM
759	All	Electric Heating	Lighting	LED Downlights - OM	14 W LED	50W Incandescent/Halogen Recessed Downlight	Time of Sale	179.96	#N/A	Yes	6%	6%	100%	IL TRM
760	All	Electric Heating	Lighting	LED Downlights	14 W LED	50W Incandescent/Halogen Recessed Downlight	New Construction	179.96	Yes	Yes	6%	2%	100%	IL TRM
761	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	1.01	No	Yes	98%	100%	100%	IL TRM
762	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	0.95	No	No	2%	100%	100%	IL TRM
763	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	1.02	No	Yes	87%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
764	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2016	53W EISA compliant lamp	Direct Install	0.95	No	No	13%	43%	100%	IL TRM
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	50.76	No	No	94%	100%	90%	IL TRM
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	47.82	No	No	6%	100%	53%	IL TRM
767	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	0.62	No	No	98%	100%	100%	IL TRM
768	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	0.59	No	No	2%	100%	100%	IL TRM
769	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	0.62	No	No	87%	100%	100%	IL TRM
770	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Direct Install	0.59	No	No	13%	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	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
771	All	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2017	53W EISA compliant lamp	Time of Sale	37.56	No	Yes	94%	100%	81%	IL TRM
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	35.70	No	Yes	6%	100%	48%	IL TRM
773	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	0.35	No	No	98%	100%	100%	IL TRM
774	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	0.34	No	No	2%	100%	100%	IL TRM
775	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	0.36	No	No	87%	43%	100%	IL TRM
776	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2018	53W EISA compliant lamp	Direct Install	0.34	No	No	13%	43%	100%	IL TRM
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	4.54	No	No	94%	100%	73%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	4.34	No	No	6%	100%	43%	IL TRM
779	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	0.15	No	No	98%	100%	100%	IL TRM
780	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	0.15	No	No	2%	100%	100%	IL TRM
781	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	0.16	No	No	87%	43%	100%	IL TRM
782	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	20 W CFL installed in year 2019	53W EISA compliant lamp	Direct Install	0.15	No	No	13%	43%	100%	IL TRM
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	0.98	No	No	94%	100%	66%	IL TRM
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	0.92	No	No	6%	100%	39%	IL TRM

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Measure ID	Sub-Sector	Building 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
785	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Construction	0.82	#N/A	Yes	6%	25%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	0.82	No	No	6%	100%	63%	IL TRM
793	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2016	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.82	#N/A	Yes	94%	25%	100%	IL TRM
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	0.82	No	No	94%	100%	63%	IL TRM
795	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2017	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.52	#N/A	Yes	6%	25%	100%	IL TRM
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	0.52	No	No	6%	100%	63%	IL TRM
797	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2017	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.52	#N/A	Yes	94%	25%	100%	IL TRM
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	0.52	No	No	94%	100%	63%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
799	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2018	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.30	#N/A	Yes	6%	25%	100%	IL TRM
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	0.30	No	No	6%	100%	63%	IL TRM
801	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2018	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.30	#N/A	Yes	94%	25%	100%	IL TRM
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	0.30	No	No	94%	100%	63%	IL TRM
803	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.13	#N/A	Yes	6%	25%	100%	IL TRM
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	0.13	No	No	6%	100%	63%	IL TRM
805	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	20 W CFL installed in year 2019	53W EISA compliant lamp - Exterior Hardwired	New Construction	0.13	#N/A	Yes	94%	25%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	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 Construction	0.13	#N/A	Yes	6%	25%	100%	IL TRM
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	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 Construction	0.13	#N/A	Yes	94%	25%	100%	IL TRM
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	0.13	No	No	94%	100%	63%	IL TRM
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 Construction	0.30	No	No	94%	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	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
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	0.30	No	No	94%	100%	63%	IL TRM
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 Construction	0.28	No	No	6%	100%	100%	IL TRM
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	0.28	No	No	6%	100%	63%	IL TRM
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 Construction	0.22	No	No	94%	100%	100%	IL TRM
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	0.22	No	No	94%	100%	63%	IL TRM
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 Construction	0.21	No	No	6%	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	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
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	0.21	No	No	6%	100%	63%	IL TRM
819	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	New Construction	0.14	No	No	94%	100%	100%	IL TRM
820	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	Time of Sale	0.14	No	No	94%	100%	63%	IL TRM
821	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	New Construction	0.13	No	No	6%	100%	100%	IL TRM
822	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2018	53W EISA compliant lamp - Interior Hardwired	Time of Sale	0.13	No	No	6%	100%	63%	IL TRM
823	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	New Construction	0.07	No	No	94%	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	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
824	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	Time of Sale	0.07	No	No	94%	100%	63%	IL TRM
825	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2019	53W EISA compliant lamp - Interior Hardwired	New Construction	0.06	No	No	6%	100%	100%	IL TRM
826	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent 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 Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	New Construction	0.07	No	No	94%	100%	100%	IL TRM
828	All	Gas Heating	Lighting	Interior Hardwired Compact Fluorescent 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 Fluorescent Lamp (CFL) Fixture	20 W CFL installed in year 2020	53W EISA compliant lamp - Interior Hardwired	New Construction	0.06	No	No	6%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
830	All	Electric Heating	Lighting	Interior Hardwired Compact Fluorescent 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 Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent 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 Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Direct Install	114.95	#N/A	Yes	98%	100%	100%	IL TRM
833	Multifamily	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Direct Install	115.11	#N/A	Yes	87%	62%	100%	IL TRM
834	All	Gas Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	New Construction	117.30	#N/A	No	94%	100%	100%	IL TRM
835	All	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Time of Sale	110.22	#N/A	No	6%	100%	70%	IL TRM

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Measure ID	Sub-Sector	Building 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
836	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Direct Install	108.18	#N/A	Yes	2%	100%	100%	IL TRM
837	Multifamily	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	Direct Install	107.79	#N/A	Yes	13%	62%	100%	IL TRM
838	All	Electric Heating	Lighting	ENERGY STAR Specialty Compact Fluorescent Lamp (CFL)	15W CFL Generic Specialty Lamp	60W Incandescent Generic Specialty Lamp	New Construction	110.22	#N/A	No	6%	100%	100%	IL TRM
839	All	Gas Heating	Lighting	LED Downlights	21 W LED	67W Incandescent/Halogen PAR30 screw-in lamps	Time of Sale	159.78	#N/A	Yes	94%	6%	88%	IL TRM
840	All	Gas Heating	Lighting	LED Downlights	21 W LED	67W Incandescent/Halogen PAR30 screw-in lamps	New Construction	159.78	#N/A	Yes	94%	2%	100%	IL TRM
841	All	Electric Heating	Lighting	LED Downlights	21 W LED	67W Incandescent/Halogen PAR30 screw-in lamps	Time of Sale	150.48	#N/A	Yes	6%	6%	88%	IL TRM
842	All	Electric Heating	Lighting	LED Downlights	21 W LED	67W Incandescent/Halogen PAR30 screw-in lamps	New Construction	150.48	#N/A	Yes	6%	2%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
843	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	1.44	No	Yes	98%	100%	100%	IL TRM
844	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	1.36	No	Yes	2%	100%	100%	IL TRM
845	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	1.44	No	Yes	87%	43%	100%	IL TRM
846	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2016	72W EISA compliant lamp	Direct Install	1.36	No	Yes	13%	43%	100%	IL TRM
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	72.26	#N/A	No	94%	100%	64%	IL TRM
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	68.09	#N/A	No	6%	100%	64%	IL TRM
849	SingleFamily & Duplex	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent Lamp (CFL)	25 W CFL installed in year 2017	72W EISA compliant lamp	Direct Install	0.89	#N/A	No	98%	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	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
850	SingleFamily & Duplex	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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

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857	Multifamily	Gas Heating	Lighting	ENERGY STAR Compact Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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

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864	Multifamily	Electric Heating	Lighting	ENERGY STAR Compact Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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 Fluorescent 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

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Measure ID	Sub-Sector	Building 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
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	0.99	#N/A	No	94%	100%	42%	IL TRM
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	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 Construction	1.16	#N/A	Yes	6%	25%	100%	IL TRM
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	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 Construction	1.16	#N/A	Yes	94%	25%	100%	IL TRM
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	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 Construction	0.73	#N/A	Yes	6%	25%	100%	IL TRM

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878	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2017	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.73	#N/A	No	6%	100%	63%	IL TRM
879	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2017	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.73	#N/A	Yes	94%	25%	100%	IL TRM
880	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2017	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.73	#N/A	No	94%	100%	63%	IL TRM
881	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2018	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.42	#N/A	Yes	6%	25%	100%	IL TRM
882	All	Electric Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2018	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.42	#N/A	No	6%	100%	63%	IL TRM
883	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2018	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.42	#N/A	Yes	94%	25%	100%	IL TRM
884	All	Gas Heating	Lighting	Exterior Hardwired Compact Fluorescent Lamp (CFL) Fixture	25 W CFL installed in year 2018	72W EISA compliant lamp - Exterior Hardwired	Time of Sale	0.42	#N/A	No	94%	100%	63%	IL TRM

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Measure ID	Sub-Sector	Building 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
885	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2019	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.18	#N/A	Yes	6%	25%	100%	IL TRM
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	0.18	#N/A	No	6%	100%	63%	IL TRM
887	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2019	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.18	#N/A	Yes	94%	25%	100%	IL TRM
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	0.18	#N/A	No	94%	100%	63%	IL TRM
889	All	Electric Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2020	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.18	#N/A	Yes	6%	25%	100%	IL TRM
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	0.18	#N/A	No	6%	100%	63%	IL TRM
891	All	Gas Heating	Lighting	Exterior Hardwired Lighting Fixtures	25 W CFL installed in year 2020	72W EISA compliant lamp - Exterior Hardwired	New Construction	0.18	#N/A	Yes	94%	25%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	0.18	#N/A	No	94%	100%	63%	IL TRM
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 Construction	0.43	#N/A	No	94%	100%	100%	IL TRM
894	All	Gas 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	0.43	#N/A	No	94%	100%	63%	IL TRM
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 Construction	0.40	#N/A	No	6%	100%	100%	IL TRM
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	0.40	#N/A	No	6%	100%	63%	IL TRM
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 Construction	0.31	#N/A	No	94%	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	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
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	0.31	#N/A	No	94%	100%	63%	IL TRM
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 Construction	0.29	#N/A	No	6%	100%	100%	IL TRM
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	0.29	#N/A	No	6%	100%	63%	IL TRM
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 Construction	0.20	#N/A	No	94%	100%	100%	IL TRM
902	All	Gas 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	0.20	#N/A	No	94%	100%	63%	IL TRM
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 Construction	0.19	#N/A	No	6%	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	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
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	0.19	#N/A	No	6%	100%	63%	IL TRM
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 Construction	0.09	#N/A	No	94%	100%	100%	IL TRM
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	0.09	#N/A	No	94%	100%	63%	IL TRM
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 Construction	0.09	#N/A	No	6%	100%	100%	IL TRM
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	0.09	#N/A	No	6%	100%	63%	IL TRM
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 Construction	0.09	#N/A	No	94%	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	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
910	All	Gas 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	0.09	#N/A	No	94%	100%	63%	IL TRM
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 Construction	0.09	#N/A	No	6%	100%	100%	IL TRM
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	0.09	#N/A	No	6%	100%	63%	IL TRM
913	Multifamily	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Time of Sale	484.87	#N/A	Yes	87%	100%	51%	IL TRM
914	Multifamily	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Retrofit	484.87	#N/A	Yes	87%	43%	51%	IL TRM
915	Multifamily	Gas Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	New Construction	484.87	#N/A	No	87%	100%	51%	IL TRM
916	Multifamily	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Time of Sale	457.65	#N/A	Yes	13%	100%	51%	IL TRM

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Measure ID	Sub-Sector	Building 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
917	Multifamily	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	Retrofit	457.65	#N/A	Yes	13%	43%	51%	IL TRM
918	Multifamily	Electric Heating	Lighting	LED Exit Signs	LED exit sign	Fluorescent Exit Sign	New Construction	457.65	#N/A	No	13%	100%	51%	IL TRM
919	Multifamily	Gas Heating	Lighting	Home Energy Audit & Retrofit Multifamily: Common Area	0	Home Energy Audit & Retrofit Multifamily: Common Area	Direct Install	0.00	#N/A	No	87%	100%	100%	ICF
920	Multifamily	Electric Heating	Lighting	Home Energy Audit & Retrofit Multifamily: Common Area	0	Home Energy Audit & Retrofit Multifamily: Common Area	Direct Install	0.00	#N/A	No	13%	100%	100%	ICF
921	All	Gas Heating	Lighting	ENERGY STAR Torchieri - OM	Energy Star Torchieri	Incandescent/Halogen Torchieri	Time of Sale	384.85	#N/A	Yes	94%	100%	70%	IL TRM
922	All	Gas Heating	Lighting	ENERGY STAR Torchieri	Energy Star Torchieri	Incandescent/Halogen Torchieri	New Construction	384.85	#N/A	No	94%	1%	70%	IL TRM
923	All	Electric Heating	Lighting	ENERGY STAR Torchieri - OM	Energy Star Torchieri	Incandescent/Halogen Torchieri	Time of Sale	362.34	#N/A	Yes	6%	100%	70%	IL TRM

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Measure ID	Sub-Sector	Building 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
924	All	Electric Heating	Lighting	ENERGY STAR Torchiere	Energy Star Torchiere	Incandescent/Halogen Torchiere	New Construction	362.34	#N/A	No	6%	1%	70%	IL TRM
925	SingleFamily & Duplex	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	4.00	No	Yes	98%	100%	100%	IL TRM
926	SingleFamily & Duplex	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	3.77	No	Yes	2%	100%	100%	IL TRM
927	Multifamily	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	4.01	No	Yes	87%	43%	100%	IL TRM
928	Multifamily	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	3.76	No	Yes	13%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	4.08	Yes	No	94%	100%	64%	IL TRM
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	3.84	Yes	No	6%	100%	64%	IL TRM
931	SingleFamily & Duplex	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	3.44	Yes	Yes	98%	100%	100%	IL TRM
932	SingleFamily & Duplex	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	3.24	Yes	Yes	2%	100%	100%	IL TRM
933	Multifamily	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	3.44	Yes	Yes	87%	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	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
934	Multifamily	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	3.23	Yes	Yes	13%	100%	100%	IL TRM
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	3.50	No	Yes	94%	100%	58%	IL TRM
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	3.30	No	Yes	6%	100%	58%	IL TRM
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	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 representing 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

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Measure ID	Sub-Sector	Building 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
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	3.50	#N/A	Yes	94%	100%	88%	IL TRM
940	All	Electric 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	3.30	#N/A	Yes	6%	100%	88%	IL TRM
941	SingleFamily & Duplex	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	3.09	No	Yes	98%	100%	100%	IL TRM
942	SingleFamily & Duplex	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	2.92	No	Yes	2%	100%	100%	IL TRM
943	Multifamily	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	3.10	No	Yes	87%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
944	Multifamily	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	2.91	No	Yes	13%	43%	100%	IL TRM
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	3.15	No	No	94%	100%	52%	IL TRM
946	All	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	Time of Sale	2.97	No	No	6%	100%	52%	IL TRM
947	SingleFamily & Duplex	Gas 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	Direct Install	2.81	No	Yes	98%	100%	100%	IL TRM
948	SingleFamily & Duplex	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	Direct Install	2.65	No	Yes	2%	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	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
949	Multifamily	Gas 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	Direct Install	2.82	No	Yes	87%	43%	100%	IL TRM
950	Multifamily	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	Direct Install	2.64	No	Yes	13%	43%	100%	IL TRM
951	All	Gas 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	2.87	No	No	94%	100%	47%	IL TRM
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	2.70	No	No	6%	100%	47%	IL TRM
953	SingleFamily & Duplex	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	5.99	Yes	Yes	98%	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	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
954	SingleFamily & Duplex	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	5.65	Yes	Yes	2%	100%	100%	IL TRM
955	Multifamily	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	6.00	Yes	Yes	87%	43%	100%	IL TRM
956	Multifamily	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	5.63	Yes	Yes	13%	43%	100%	IL TRM
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	6.11	Yes	No	94%	100%	64%	IL TRM
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	5.75	Yes	No	6%	100%	64%	IL TRM

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959	SingleFamily & Duplex	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	5.14	No	Yes	98%	100%	100%	IL TRM
960	SingleFamily & Duplex	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	4.85	No	Yes	2%	100%	100%	IL TRM
961	Multifamily	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	5.15	No	Yes	87%	100%	100%	IL TRM
962	Multifamily	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	4.83	No	Yes	13%	100%	100%	IL TRM
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	5.24	No	Yes	94%	100%	58%	IL TRM

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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	4.94	No	Yes	6%	100%	58%	IL TRM
965	SingleFamily & Duplex	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	4.63	No	Yes	98%	100%	100%	IL TRM
966	SingleFamily & Duplex	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	4.36	No	Yes	2%	100%	100%	IL TRM
967	Multifamily	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	4.64	No	Yes	87%	43%	100%	IL TRM
968	Multifamily	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	4.35	No	Yes	13%	43%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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	4.72	No	No	94%	100%	52%	IL TRM
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	4.44	No	No	6%	100%	52%	IL TRM
971	SingleFamily & Duplex	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	4.21	No	Yes	98%	100%	100%	IL TRM
972	SingleFamily & Duplex	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	3.97	No	Yes	2%	100%	100%	IL TRM
973	Multifamily	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	4.22	No	Yes	87%	43%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
974	Multifamily	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	3.95	No	Yes	13%	43%	100%	IL TRM
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	4.29	No	No	94%	100%	47%	IL TRM
976	All	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	Time of Sale	4.04	No	No	6%	100%	47%	IL TRM
977	SingleFamily & Duplex	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	6.97	No	Yes	98%	100%	100%	IL TRM
978	SingleFamily & Duplex	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	6.57	No	Yes	2%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
979	Multifamily	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	6.98	No	Yes	87%	43%	100%	IL TRM
980	Multifamily	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	6.55	No	Yes	13%	43%	100%	IL TRM
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	7.11	No	No	94%	100%	64%	IL TRM
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	6.69	No	No	6%	100%	64%	IL TRM
983	SingleFamily & Duplex	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	121.50	No	Yes	98%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
984	SingleFamily & Duplex	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	114.59	No	Yes	2%	100%	100%	IL TRM
985	Multifamily	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	121.71	No	Yes	87%	43%	100%	IL TRM
986	Multifamily	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	114.19	No	Yes	13%	43%	100%	IL TRM
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	123.96	No	Yes	94%	100%	58%	IL TRM
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	116.73	No	Yes	6%	100%	58%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
989	SingleFamily & Duplex	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	121.50	No	Yes	98%	100%	100%	IL TRM
990	SingleFamily & Duplex	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	114.59	No	Yes	2%	100%	100%	IL TRM
991	Multifamily	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	121.71	No	Yes	87%	43%	100%	IL TRM
992	Multifamily	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	114.19	No	Yes	13%	43%	100%	IL TRM
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	123.96	No	No	94%	100%	52%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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	116.73	No	No	6%	100%	52%	IL TRM
995	SingleFamily & Duplex	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	66.91	No	Yes	98%	100%	100%	IL TRM
996	SingleFamily & Duplex	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	63.11	No	Yes	2%	100%	100%	IL TRM
997	Multifamily	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	67.03	No	Yes	87%	43%	100%	IL TRM
998	Multifamily	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	62.89	No	Yes	13%	43%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
999	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Construction	4.26	#N/A	No	1%	100%	100%	IL TRM
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 Construction	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 Construction	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 Construction	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 Construction	1.00	#N/A	No	13%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
1004	Multifamily	AC/Electric Resistance Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Construction	4.15	#N/A	No	4%	100%	100%	IL TRM
1005	Multifamily	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 Construction	1.19	#N/A	No	4%	100%	100%	IL TRM
1006	Multifamily	Heat Pump	Shell	Air Sealing	Sealed Envelope with Normal Exposure - 4 ACH50	IECC 2009 Code Level Envelope Tightness with Normal Exposure - 7 ACH50	New Construction	4.02	#N/A	No	5%	100%	100%	IL TRM
1007	Multifamily	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 Construction	2.91	#N/A	No	40%	100%	100%	IL TRM
1008	Multifamily	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 Construction	1.04	#N/A	No	47%	100%	100%	IL TRM
1009	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	5.38	#N/A	Yes	1%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
1018	Multifamily	Gas Heat (No AC)	Shell	Air Sealing	Sealed Envelope with Normal Exposure	Leaky Envelope with Normal Exposure	Retrofit	1.24	#N/A	Yes	47%	100%	100%	IL TRM
1019	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.87	#N/A	Yes	1%	42%	100%	IL TRM
1020	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.60	#N/A	Yes	0%	42%	100%	IL TRM
1021	SingleFamily & Duplex	Heat Pump	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.16	#N/A	Yes	0%	42%	100%	IL TRM
1022	SingleFamily & Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.10	#N/A	Yes	86%	42%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
1023	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	0.83	#N/A	Yes	13%	42%	100%	IL TRM
1024	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned 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	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.59	#N/A	No	4%	5%	100%	IL TRM
1026	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.18	#N/A	No	5%	5%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
1027	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned Space No Insulation	Retrofit	1.12	#N/A	No	40%	5%	100%	IL TRM
1028	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	Conditioned basement with code level - R13 Cavity Insulation above and below grade	Conditioned 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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Measure ID	Sub-Sector	Building 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
1032	SingleFamily & Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	2.02	#N/A	Yes	86%	11%	100%	IL TRM
1033	SingleFamily & Duplex	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	Yes	13%	11%	100%	IL TRM
1034	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	3.59	#N/A	No	4%	11%	100%	IL TRM
1035	Multifamily	Electric Resistance Heat/No CAC	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	3.20	#N/A	No	4%	11%	100%	IL TRM
1036	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	Crawlspace with code level - R13 Cavity Insulation above and below grade	Crawlspace No Insulation	Retrofit	2.18	#N/A	No	5%	11%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
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	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	0.63	#N/A	Yes	0%	36%	100%	IL TRM
1040	SingleFamily & Duplex	AC/Gas Heat	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned 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	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
1041	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	0.50	#N/A	Yes	13%	36%	100%	IL TRM
1042	Multifamily	AC/Electric Resistance Heat	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned 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	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	0.96	#N/A	No	4%	36%	100%	IL TRM
1044	Multifamily	Heat Pump	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	0.63	#N/A	No	5%	6%	100%	IL TRM

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Measure ID	Sub-Sector	Building 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
1045	Multifamily	AC/Gas Heat	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned Space No Insulation	Retrofit	0.60	#N/A	No	40%	6%	100%	IL TRM
1046	Multifamily	Gas Heat (No AC)	Shell	Basement Sidewall Insulation	UnConditioned basement with code level - R13 Cavity Insulation above and below grade	Unconditioned 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	UnConditioned space with code level - R13 Cavity Insulation above and below grade	Unconditioned 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	UnConditioned space with code level - R13 Cavity Insulation above and below grade	Unconditioned 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

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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

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1058	Multifamily	Gas Heat (No AC)	Shell	Floor insulation above crawlspace	R30 Floor Insulation	no insulation	Retrofit	0.97	#N/A	No	47%	11%	100%	IL TRM
1059	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.18	Yes	No	0%	94%	100%	IL TRM
1060	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.27	Yes	No	1%	94%	100%	IL TRM
1061	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.21	Yes	No	0%	94%	100%	IL TRM
1062	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.16	Yes	No	86%	94%	100%	IL TRM
1063	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.11	Yes	No	13%	94%	100%	IL TRM
1064	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.18	Yes	No	5%	83%	100%	IL TRM
1065	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.27	Yes	No	4%	83%	100%	IL TRM

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1066	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.21	Yes	No	4%	83%	100%	IL TRM
1067	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.16	Yes	No	40%	83%	100%	IL TRM
1068	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Cavity Insulation + R5 Sheathing	R19 Wall Cavity Insulation	New Construction	0.11	Yes	No	47%	83%	100%	IL TRM
1069	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	0.87	Yes	Yes	0%	6%	100%	IL TRM
1070	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	1.32	Yes	Yes	1%	6%	100%	IL TRM
1071	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	1.03	Yes	Yes	0%	6%	100%	IL TRM
1072	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	0.78	Yes	Yes	86%	6%	100%	IL TRM
1073	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	0.53	Yes	Yes	13%	6%	100%	IL TRM

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1074	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	6.09	No	No	5%	17%	100%	IL TRM
1075	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	6.54	No	No	4%	17%	100%	IL TRM
1076	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	6.48	No	No	4%	17%	100%	IL TRM
1077	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	6.00	No	No	40%	17%	100%	IL TRM
1078	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R19 Wall Insulation	Uninsulated external wall	Retrofit	5.99	No	No	47%	17%	100%	IL TRM
1079	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.77	No	Yes	0%	100%	100%	IL TRM
1080	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	2.76	No	Yes	1%	100%	100%	IL TRM
1081	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	2.22	No	Yes	0%	100%	100%	IL TRM

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1082	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.58	No	Yes	86%	100%	100%	IL TRM
1083	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.15	No	Yes	13%	100%	100%	IL TRM
1084	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.49	No	Yes	0%	100%	100%	IL TRM
1085	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.76	No	Yes	1%	100%	100%	IL TRM
1086	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.61	No	Yes	0%	100%	100%	IL TRM
1087	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.44	No	Yes	86%	100%	100%	IL TRM
1088	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.32	No	Yes	13%	100%	100%	IL TRM
1089	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.19	Yes	No	0%	100%	100%	IL TRM

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1090	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.30	Yes	No	1%	100%	100%	IL TRM
1091	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.24	Yes	No	0%	100%	100%	IL TRM
1092	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.17	Yes	No	86%	100%	100%	IL TRM
1093	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.12	Yes	No	13%	100%	100%	IL TRM
1094	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.38	Yes	No	5%	100%	100%	IL TRM
1095	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.90	Yes	No	4%	100%	100%	IL TRM
1096	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.90	Yes	No	4%	100%	100%	IL TRM
1097	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.20	Yes	No	40%	100%	100%	IL TRM

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1098	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.19	Yes	No	47%	100%	100%	IL TRM
1099	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	4.10	Yes	No	5%	100%	100%	IL TRM
1100	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	4.37	Yes	No	4%	100%	100%	IL TRM
1101	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	4.34	Yes	No	4%	100%	100%	IL TRM
1102	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	4.05	Yes	No	40%	100%	100%	IL TRM
1103	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	4.05	Yes	No	47%	100%	100%	IL TRM
1104	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.46	Yes	No	5%	100%	100%	IL TRM
1105	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.56	Yes	No	4%	100%	100%	IL TRM

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1106	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.55	Yes	No	4%	100%	100%	IL TRM
1107	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.44	Yes	No	40%	100%	100%	IL TRM
1108	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R38 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.43	Yes	No	47%	100%	100%	IL TRM
1109	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.55	No	Yes	0%	100%	100%	IL TRM
1110	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	2.41	No	Yes	1%	100%	100%	IL TRM
1111	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.94	No	Yes	0%	100%	100%	IL TRM
1112	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.38	No	Yes	86%	100%	100%	IL TRM
1113	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	1.00	No	Yes	13%	100%	100%	IL TRM

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1114	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.46	Yes	Yes	0%	100%	100%	IL TRM
1115	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.71	Yes	Yes	1%	100%	100%	IL TRM
1116	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.58	Yes	Yes	0%	100%	100%	IL TRM
1117	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.41	Yes	Yes	86%	100%	100%	IL TRM
1118	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	0.30	Yes	Yes	13%	100%	100%	IL TRM
1119	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.24	#N/A	No	0%	100%	100%	IL TRM
1120	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.37	#N/A	No	1%	100%	100%	IL TRM
1121	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.30	#N/A	No	0%	100%	100%	IL TRM

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1122	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.21	#N/A	No	86%	100%	100%	IL TRM
1123	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	0.15	#N/A	No	13%	100%	100%	IL TRM
1124	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	0.12	#N/A	No	0%	100%	100%	IL TRM
1125	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	0.19	#N/A	No	1%	100%	100%	IL TRM
1126	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	0.15	#N/A	No	0%	100%	100%	IL TRM
1127	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	0.11	#N/A	No	86%	100%	100%	IL TRM
1128	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	0.08	#N/A	No	13%	100%	100%	IL TRM
1129	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	3.74	#N/A	No	5%	100%	100%	IL TRM

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1130	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.14	#N/A	No	4%	100%	100%	IL TRM
1131	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	4.14	#N/A	No	4%	100%	100%	IL TRM
1132	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	3.58	#N/A	No	40%	100%	100%	IL TRM
1133	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	0 to 3 inches of ceiling/attic insulation	Retrofit	3.57	#N/A	No	47%	100%	100%	IL TRM
1134	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	3.40	#N/A	No	5%	100%	100%	IL TRM
1135	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	3.65	#N/A	No	4%	100%	100%	IL TRM
1136	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	3.62	#N/A	No	4%	100%	100%	IL TRM
1137	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	3.35	#N/A	No	40%	100%	100%	IL TRM

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1138	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	4 to 6 inches of ceiling/attic insulation	Retrofit	3.35	#N/A	No	47%	100%	100%	IL TRM
1139	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	3.91	#N/A	No	5%	100%	100%	IL TRM
1140	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.04	#N/A	No	4%	100%	100%	IL TRM
1141	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	4.03	#N/A	No	4%	100%	100%	IL TRM
1142	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	3.88	#N/A	No	40%	100%	100%	IL TRM
1143	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	7 to 10 inches of ceiling/attic insulation	Retrofit	3.88	#N/A	No	47%	100%	100%	IL TRM
1144	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	6.44	#N/A	No	5%	100%	100%	IL TRM
1145	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	6.51	#N/A	No	4%	100%	100%	IL TRM

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Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
1146	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	6.50	#N/A	No	4%	100%	100%	IL TRM
1147	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	6.43	#N/A	No	40%	100%	100%	IL TRM
1148	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	10+ inches of ceiling/attic insulation	Retrofit	6.43	#N/A	No	47%	100%	100%	IL TRM
1149	SingleFamily & Duplex	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	0.08	#N/A	No	0%	100%	100%	IL TRM
1150	SingleFamily & Duplex	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	0.12	#N/A	No	1%	100%	100%	IL TRM
1151	SingleFamily & Duplex	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	0.10	#N/A	No	0%	100%	100%	IL TRM
1152	SingleFamily & Duplex	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	0.07	#N/A	No	86%	100%	100%	IL TRM
1153	SingleFamily & Duplex	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	0.05	#N/A	No	13%	100%	100%	IL TRM

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1154	Multifamily	Heat Pump	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	6.41	#N/A	Yes	5%	100%	100%	IL TRM
1155	Multifamily	AC/Electric Resistance Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	6.45	#N/A	Yes	4%	100%	100%	IL TRM
1156	Multifamily	Electric Resistance Heat/No CAC	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	6.45	#N/A	Yes	4%	100%	100%	IL TRM
1157	Multifamily	AC/Gas Heat	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	6.40	#N/A	Yes	40%	100%	100%	IL TRM
1158	Multifamily	Gas Heat (No AC)	Shell	Wall and Ceiling/Attic Insulation	R60 Ceiling/Attic Insulation	R49 Ceiling/Attic Insulation	New Construction	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 Conditioner	CEE Tier 1 and ENERGY STAR V3.0 without louvers sides and reverse cycle < 14000 Btu/h	ENERGY STAR V 2.0 without louvers sides and reverse cycle < 14000 Btu/h	Time of Sale	0.67	#N/A	No	6%	30%	100%	IL TRM

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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 Construction	0.67	#N/A	Yes	6%	30%	100%	IL TRM
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	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 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 Construction	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 Replacement	2.20	#N/A	No	4%	100%	100%	IL TRM

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1164	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 15	Existing electric resistance with AC/dual baseline = heat pump	Early Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	1.82	#N/A	No	4%	100%	100%	IL TRM

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1170	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Air Source Heat Pump	SEER 18	Existing electric resistance with AC/dual baseline = heat pump	Early Replacement	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	2.57	#N/A	Yes	0%	100%	100%	IL TRM

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1177	Multifamily	Heat Pump	HVAC	Air Source Heat Pump	SEER 18	Federal minimum SEER14 and HSPF 8.2 equipment	New Construction	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 Construction	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

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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 Replacement	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 Replacement	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 Replacement	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 Replacement	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

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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 Construction	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 Construction	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 Construction	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 Construction	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 Replacement	0.72	#N/A	No	5%	100%	64%	IL TRM

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1200	SingleFamily & Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to air - Open Loop	Existing air source heat pump	Early Replacement	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 Replacement	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 Replacement	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 Construction	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 Construction	0.53	#N/A	Yes	0%	100%	64%	IL TRM

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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 Construction	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 Construction	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 Replacement	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 Replacement	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 Replacement	1.19	#N/A	No	4%	100%	64%	IL TRM

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1214	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Closed Loop	Existing AC, electric heating	Early Replacement	1.33	#N/A	No	1%	100%	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 Construction	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 Construction	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 Construction	3.39	#N/A	Yes	4%	100%	64%	IL TRM

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1222	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	New Construction	3.42	#N/A	Yes	1%	100%	64%	IL TRM
1223	Multifamily	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing air source heat pump	Early Replacement	0.64	#N/A	No	5%	100%	64%	IL TRM
1224	SingleFamily & Duplex	Heat Pump	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing air source heat pump	Early Replacement	0.66	#N/A	No	0%	100%	64%	IL TRM
1225	Multifamily	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing AC, electric heating	Early Replacement	1.14	#N/A	No	4%	100%	64%	IL TRM
1226	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ground Source Heat Pump	ENERGY STAR Water to water - Open Loop	Existing AC, electric heating	Early Replacement	1.17	#N/A	No	1%	100%	64%	IL TRM
1227	SingleFamily & Duplex	Heat Pump	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	0.38	#N/A	No	0%	100%	98%	IL TRM
1228	Multifamily	Heat Pump	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	0.24	#N/A	No	5%	100%	98%	IL TRM
1229	SingleFamily & Duplex	Electric Resistance Heat/No CAC	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	0.77	#N/A	No	0%	100%	98%	IL TRM

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1230	Multifamily	Electric Resistance Heat/No CAC	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating (no AC)	Retrofit	0.50	#N/A	No	4%	100%	98%	IL TRM
1231	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	1.10	#N/A	Yes	1%	100%	98%	IL TRM
1232	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with PTAC/PTHP	Retrofit	0.71	#N/A	No	4%	100%	98%	IL TRM
1233	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	1.14	#N/A	Yes	1%	100%	98%	IL TRM
1234	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	0.74	#N/A	No	4%	100%	98%	IL TRM
1235	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Retrofit	0.94	#N/A	Yes	1%	100%	98%	IL TRM

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Measure ID	Sub-Sector	Building 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
1236	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1.5-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Retrofit	0.61	#N/A	No	4%	100%	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

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Measure ID	Sub-Sector	Building 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
1243	Multifamily	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	0.60	#N/A	No	4%	100%	98%	IL TRM
1244	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	0.96	#N/A	Yes	1%	100%	98%	IL TRM
1245	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with room AC	Retrofit	0.62	#N/A	No	4%	100%	98%	IL TRM
1246	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Retrofit	0.79	#N/A	Yes	1%	100%	98%	IL TRM
1247	Multifamily	AC/Electric Resistance Heat	HVAC	Ductless Heat Pump	1-Ton Ductless Heat Pump (first installed in home)	Existing electric resistance heating with SPVAC/SPV HP < 65kBtu/hr	Retrofit	0.51	#N/A	No	4%	100%	98%	IL TRM
1248	SingleFamily & Duplex	Heat Pump	HVAC	Ductless Heat Pump	2-Ton Ductless Heat Pump (first installed in home)	Existing ducted ASHP	Retrofit	0.34	#N/A	No	0%	100%	98%	IL TRM

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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

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1256	SingleFamily & Duplex	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	0.85	#N/A	Yes	1%	100%	98%	IL TRM
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 Construction	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 Construction	0.89	#N/A	Yes	20%	100%	100%	IL TRM

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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 Construction	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 Construction	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

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1270	SingleFamily &Duplex	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	1.32	#N/A	Yes	8%	100%	100%	IL TRM
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 Construction	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 Construction	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 Construction	1.45	#N/A	Yes	1%	100%	100%	IL TRM

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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 Construction	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 Participants - 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 Participants - 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 Participants - currently receiving HER	Retrofit	16.15	#N/A	Yes	2%	100%	100%	ICF

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1285	Multifamily	Electric Heating	Other	Residential Mailed Home Energy Report (HER)	1.93% Energy-Use Reduction	Legacy Program Participants - currently receiving HER	Retrofit	7.50	#N/A	Yes	13%	100%	100%	ICF
1286	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 - first year	Retrofit	5.32	#N/A	Yes	98%	100%	100%	ICF
1287	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 - first year	Retrofit	2.43	#N/A	Yes	87%	100%	100%	ICF
1288	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 - first year	Retrofit	12.33	#N/A	Yes	2%	100%	100%	ICF

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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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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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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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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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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

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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 Participants - 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 Participants - 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 Participants - 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 Participants - 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	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
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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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 Thermostat	Smart WiFi Thermostat	Non-programmable Thermostat	Retrofit	0.86	#N/A	Yes	94%	100%	100%	ICF
1323	All	Gas Heating	Other	Connected homes - Old Remove	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.00	#N/A	No	94%	100%	100%	ICF

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1324	SingleFamily & Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.86	#N/A	Yes	2%	100%	100%	ICF
1325	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.12	#N/A	Yes	13%	100%	100%	ICF
1326	SingleFamily & Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.86	#N/A	Yes	2%	100%	100%	ICF
1327	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.12	#N/A	Yes	13%	100%	100%	ICF
1328	SingleFamily & Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.86	#N/A	Yes	98%	100%	100%	ICF

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1329	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.52	#N/A	Yes	87%	100%	100%	ICF
1330	SingleFamily & Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.86	#N/A	Yes	98%	100%	100%	ICF
1331	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.52	#N/A	Yes	87%	100%	100%	ICF
1332	SingleFamily & Duplex	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.86	#N/A	Yes	2%	100%	100%	ICF
1333	Multifamily	Electric Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.12	#N/A	Yes	13%	100%	100%	ICF

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1334	SingleFamily & Duplex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.27	#N/A	Yes	0%	100%	100%	ICF
1335	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.74	#N/A	Yes	5%	100%	100%	ICF
1336	SingleFamily & Duplex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.27	#N/A	Yes	0%	100%	100%	ICF
1337	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.74	#N/A	Yes	5%	100%	100%	ICF
1338	SingleFamily & Duplex	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.68	#N/A	Yes	98%	100%	100%	ICF

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1339	Multifamily	Gas Heating	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	0.44	#N/A	Yes	87%	100%	100%	ICF
1340	SingleFamily & Duplex	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	Retrofit	1.27	#N/A	Yes	0%	100%	100%	ICF
1341	Multifamily	Heat Pump	Other	Connected homes	Connected homes = Smart WiFi Thermostat + Web-based platform with eHER	Home w/no web-based platform and non-programmable Thermostat	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 Multifamily: Tier 1	0	Home Energy Audit & Retrofit Multifamily: Tier 1	Direct Install	0.00	#N/A	Yes	87%	100%	100%	ICF

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1344	SingleFamily & Duplex	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	0.00	#N/A	Yes	2%	100%	100%	ICF
1345	Multifamily	Electric Heating	Other	Home Energy Audit & Retrofit Multifamily: Tier 1	0	Home Energy Audit & Retrofit Multifamily: Tier 1	Direct Install	0.00	#N/A	Yes	13%	100%	100%	ICF
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	0.00	#N/A	Yes	94%	100%	100%	ICF
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	0.00	#N/A	Yes	6%	100%	100%	ICF
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	0.03	#N/A	Yes	94%	100%	100%	ICF
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	0.03	#N/A	Yes	6%	100%	100%	ICF

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1350	All	Gas Heating	Other	EE Affordable Housing Construction - EEAHC Post2015 savings	Program Level Average Upgrades	EE Affordable Housing Construction - EEAHC Post2015 savings	New Construction	0.04	#N/A	Yes	94%	100%	100%	ICF
1351	All	Electric Heating	Other	EE Affordable Housing Construction - EEAHC Post2015 savings	Program Level Average Upgrades	EE Affordable Housing Construction - EEAHC Post2015 savings	New Construction	0.04	#N/A	Yes	6%	100%	100%	ICF
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	7.05	#N/A	No	94%	100%	47%	IL TRM
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	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

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1356	All	Gas Heating	Other	Pool Pumps	Two Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	3.01	#N/A	Yes	94%	6%	87%	ICF
1357	All	Electric Heating	Other	Pool Pumps	Two Speed High Efficiency Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	3.01	#N/A	Yes	6%	6%	87%	ICF
1358	All	Gas Heating	Other	Pool Pumps	VFD on Swimming Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	3.49	#N/A	Yes	94%	6%	87%	ICF
1359	All	Electric Heating	Other	Pool Pumps	VFD on Swimming Pool Pump	Baseline Pool Pump as specified in Ameren MO	Retrofit	3.49	#N/A	Yes	6%	6%	87%	ICF
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	14.82	#N/A	No	6%	100%	100%	ICF
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	22.16	#N/A	No	6%	100%	100%	ICF
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	33.01	#N/A	No	6%	100%	100%	ICF
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	50.21	#N/A	No	6%	100%	100%	ICF

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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	79.10	#N/A	No	6%	100%	100%	ICF
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	15.15	#N/A	No	6%	100%	100%	ICF
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	22.47	#N/A	No	6%	100%	100%	ICF
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	33.35	#N/A	No	6%	100%	100%	ICF
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	50.55	#N/A	No	6%	100%	100%	ICF
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	79.44	#N/A	No	6%	100%	100%	ICF
1370	All	Electric Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	Time of Sale	5.06	#N/A	No	6%	100%	100%	ICF
1371	All	Electric Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	Time of Sale	7.77	#N/A	No	6%	100%	100%	ICF

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1372	All	Electric Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	Time of Sale	10.48	#N/A	No	6%	100%	100%	ICF
1373	All	Electric Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional 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

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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	Conventional PC	Time of Sale	16.22	#N/A	No	94%	100%	54%	ICF

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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 Construction	14.82	#N/A	No	6%	100%	100%	ICF
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 Construction	22.16	#N/A	No	6%	100%	100%	ICF
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 Construction	33.01	#N/A	No	6%	100%	100%	ICF
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 Construction	50.21	#N/A	No	6%	100%	100%	ICF
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 Construction	79.10	#N/A	No	6%	100%	100%	ICF
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 Construction	15.15	#N/A	No	6%	100%	100%	ICF
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 Construction	22.47	#N/A	No	6%	100%	100%	ICF
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 Construction	33.35	#N/A	No	6%	100%	100%	ICF

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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 Construction	50.55	#N/A	No	6%	100%	100%	ICF
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 Construction	79.44	#N/A	No	6%	100%	100%	ICF
1398	All	Electric Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	New Construction	5.06	#N/A	No	6%	100%	100%	ICF
1399	All	Electric Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	New Construction	7.77	#N/A	No	6%	100%	100%	ICF
1400	All	Electric Heating	Consumer Electronics	ENERGY STAR + 50% Display	ENERGY STAR + 50% Display	ENERGY STAR Display	New Construction	10.48	#N/A	No	6%	100%	100%	ICF
1401	All	Electric Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional PC	New Construction	16.22	#N/A	No	6%	100%	54%	ICF
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 Construction	14.82	#N/A	No	94%	100%	100%	ICF
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 Construction	22.16	#N/A	No	94%	100%	100%	ICF

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
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 Construction	33.01	#N/A	No	94%	100%	100%	ICF
1405	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")	New Construction	50.21	#N/A	No	94%	100%	100%	ICF
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 Construction	79.10	#N/A	No	94%	100%	100%	ICF
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 Construction	15.15	#N/A	No	94%	100%	100%	ICF
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 Construction	22.47	#N/A	No	94%	100%	100%	ICF
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 Construction	33.35	#N/A	No	94%	100%	100%	ICF
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 Construction	50.55	#N/A	No	94%	100%	100%	ICF
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 Construction	79.44	#N/A	No	94%	100%	100%	ICF

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

Appendix D: Residential Measure Assumptions

Measure ID	Sub-Sector	Building 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
1412	All	Gas Heating	Electronics	ENERGY STAR + 10% Display	ENERGY STAR + 10% Display	ENERGY STAR Display	New Construction	5.06	#N/A	No	94%	100%	100%	ICF
1413	All	Gas Heating	Electronics	ENERGY STAR + 30% Display	ENERGY STAR + 30% Display	ENERGY STAR Display	New Construction	7.77	#N/A	No	94%	100%	100%	ICF
1414	All	Gas Heating	Consumer Electronics	ENERGY STAR + 50 % Display	ENERGY STAR + 50 % Display	ENERGY STAR Display	New Construction	10.48	#N/A	No	94%	100%	100%	ICF
1415	All	Gas Heating	Consumer Electronics	ENERGY STAR PC	ENERGY STAR PC	Conventional PC	New Construction	16.22	#N/A	No	94%	100%	54%	ICF
1416	SingleFamily & Duplex	AC/Electric Resistance Heat	HVAC	AC Tune-up w/iManifold device	SEER 10	Central Air Conditioning Unit	Retrofit	0.21	#N/A	No	1%	100%	100%	IL TRM
1417	SingleFamily & Duplex	AC/Gas Heat	HVAC	AC Tune-up w/iManifold device	SEER 10	Central Air Conditioning Unit	Retrofit	0.21	#N/A	No	86%	100%	100%	IL TRM
1418	Multifamily	AC/Electric Resistance Heat	HVAC	AC Tune-up w/iManifold device	SEER 10	Central Air Conditioning Unit	Retrofit	0.10	#N/A	No	4%	100%	100%	IL TRM
1419	Multifamily	AC/Gas Heat	HVAC	AC Tune-up w/iManifold device	SEER 10	Central Air Conditioning Unit	Retrofit	0.10	#N/A	No	40%	100%	100%	IL TRM

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

Appendix E: Commercial Measure Assumptions

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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	per unit	8	\$156.8	943	0.137	0.0
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	per unit	8	\$156.8	2307	0.309	0.0
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	per unit	5	\$180.0	1613	0.000	0.0
4	All/All	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	All/All	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	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	per unit	12	\$300.0	2555	0.000	0.0
7	All/All	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	All/All	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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	per unit	12	\$200.0	3252	0.000	0.0
10	All/All	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	All/All	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	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	per unit	14	\$500.0	1310	0.000	0.0
15	All/All	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

Appendix E: Commercial Measure 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 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 Construction	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 Construction	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	All/All	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	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	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

Appendix E: Commercial Measure 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 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 (0F - 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 (0F - 30F)	Retrofit	per unit	5	\$126.0	741	0.000	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
31	All/All	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	per unit	14	\$500.0	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 Construction	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 Construction	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

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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)
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 Construction	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 Construction	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 Construction	per ft2	20	\$1.4	0	0.000	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
50	All/All	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	All/All	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

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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)
59	All/All	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	All/All	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	All/All	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	All/All	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	All/All	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

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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)
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	All/All	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	All/All	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	All/All	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	All/All	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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	All/All	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	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Retrofit	per signal	2	\$114.2	272	0.034	0.0
97	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Flashing Signal	Incandescent	Retrofit	per signal	2	\$150.2	631	0.079	0.0
98	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Round Signal	Incandescent	Retrofit	per signal	2	\$114.2	258	0.001	0.0
99	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Round Signal	Incandescent	Retrofit	per signal	2	\$150.2	600	0.003	0.0
100	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Retrofit	per signal	2	\$114.2	10	0.030	0.0
101	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Flashing Signal	Incandescent	Retrofit	per signal	2	\$150.2	24	0.069	0.0
102	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Round Signal	Incandescent	Retrofit	per signal	2	\$114.2	226	0.026	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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

Appendix E: Commercial Measure 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 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 Replacement	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 Replacement	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 Replacement	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 Replacement	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
145	All/All	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	All/All	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	All/All	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	All/All	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 Replacement	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 Replacement	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 Replacement	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 Replacement	per unit	11	\$802.0	710	0.103	51.3
153	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacement	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 Replacement	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 Replacement	per unit	11	\$1,511.0	710	0.103	128.3

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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)
156	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacement	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

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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)
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 Construction	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 EPart 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	EPart 2005-Compliant Freezer	New Construction	per unit	12	\$166.0	1272	0.136	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)
179	Restaurant/Small Load (<=100 kW)	Food Service Equipment	Commercial Freezers - Glass Door - 30 to 50 ft3	ENERGY STAR Glass Door Freezer	Existing EPA 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	EPA 2005-Compliant Freezer	New Construction	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 EPA 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	EPA 2005-Compliant Freezer	New Construction	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 EPA 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	EPA 2005-Compliant Freezer	New Construction	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 EPA 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	EPA 2005-Compliant Freezer	New Construction	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 EPA 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	EPA 2005-Compliant Freezer	New Construction	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 EPA 2005-Compliant Freezer	Time of Sale	per unit	12	\$407.0	3494	0.374	0.0

Appendix E: Commercial Measure 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 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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	12	\$143.0	721	0.077	0.0

Appendix E: Commercial Measure 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 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 EPA 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	EPA 2005-Compliant Refrigerator	New Construction	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 EPA 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	EPA 2005-Compliant Refrigerator	New Construction	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 EPA 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	EPA 2005-Compliant Refrigerator	New Construction	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 EPA 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	EPA 2005-Compliant Refrigerator	New Construction	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

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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)
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

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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)
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	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

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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)
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

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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)
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

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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)
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

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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)
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 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	\$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 lbs 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

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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)
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 Construction	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 Construction	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 Construction	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 Construction	per unit	10	\$1,821.0	1437	0.269	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)
246	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 Construction	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 Construction	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 lbs made per day	Self Contained Unit <175 lbs made per day meeting min. federal equipment standards	New Construction	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 Construction	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

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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)
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 Construction	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

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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)
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

Appendix E: Commercial Measure 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 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	All/All	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	All/All	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 Construction	per unit	20	\$127.0	428	0.049	0.0
278	All/All	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	New Construction	per unit	20	\$127.0	137	0.049	0.0

Appendix E: Commercial Measure 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 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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	20	\$128.0	85	0.049	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	20	\$48.0	266	0.049	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
290	All/All	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 Construction	per unit	20	\$48.0	85	0.049	0.0
291	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	New Construction	per unit	20	\$48.0	79	0.049	0.0
292	All/All	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	per unit	20	\$127.0	428	0.049	0.0
293	All/All	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	per unit	20	\$127.0	137	0.049	0.0
294	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	Time of Sale	per unit	20	\$127.0	126	0.049	0.0
295	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	Time of Sale	per unit	20	\$22.0	266	0.049	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
296	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	Time of Sale	per unit	20	\$22.0	85	0.049	0.0
297	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	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
301	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	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	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	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	All/All	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

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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)
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 conditioning unit meeting minimum federal efficiency standards - < 8000 Btu/H	Time of Sale	per unit	9	\$40.0	15	0.028	0.0
308	All/All	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 conditioning 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 conditioning 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 conditioning unit meeting minimum federal efficiency standards - >= 20000 Btu/H	Time of Sale	per unit	9	\$40.0	69	0.129	0.0

Appendix E: Commercial Measure 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 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

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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)
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	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	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-source Heat Pump - < 17,000 Btu/h	Time of Sale	per unit	15	\$100.0	163	0.095	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)
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	per unit	15	\$100.0	104	0.061	0.0
325	All/All	HVAC	Heat Pump Systems	Groundwater-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwater-source Heat Pump - < 135,000 Btu/h	Time of Sale	per unit	15	\$100.0	78	0.046	0.0
326	All/All	HVAC	Heat Pump Systems	Ground-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Ground-source Heat 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 Construction	per unit	15	\$100.0	270	0.112	0.0
328	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	New Construction	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 Construction	per unit	15	\$290.1	188	0.210	0.0
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 Construction	per unit	15	\$362.4	278	0.310	0.0
331	All/All	HVAC	Heat Pump Systems	Water-source Heat Pump - < 17,000 Btu/h exceeding IECC 2012	IECC 2012 Water-source Heat Pump - < 17,000 Btu/h	New Construction	per unit	15	\$100.0	163	0.095	0.0
332	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	New Construction	per unit	15	\$100.0	104	0.061	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)
333	All/All	HVAC	Heat Pump Systems	Groundwater-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwater-source Heat Pump - < 135,000 Btu/h	New Construction	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-source Heat Pump - < 135,000 Btu/h	New Construction	per unit	15	\$100.0	238	0.139	0.0
335	All/All	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	All/All	HVAC	High Efficiency Furnace	AFUE 92% Furnace	AFUE 80% Furnace	Time of Sale	per unit	17	\$802.0	710	0.103	346.3
338	All/All	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	All/All	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	All/All	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

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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)
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

Appendix E: Commercial Measure 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 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 Construction	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 Construction	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 Construction	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 Construction	per unit	15	\$84.0	3685	0.057	0.0

Appendix E: Commercial Measure 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 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 Construction	per unit	15	\$84.0	152	0.057	0.0
365	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	New Construction	per unit	15	\$84.0	147	0.057	0.0
366	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	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	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	per unit	15	\$100.0	74	0.029	0.0
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	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	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	per unit	15	\$100.0	174	0.068	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)
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	All/All	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
378	All/All	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	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 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	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)	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

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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)
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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per unit	15	\$100.0	164	0.064	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)
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 Construction	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 Construction	per unit	15	\$100.0	170	0.066	0.0
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 Construction	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 Construction	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 Construction	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 Construction	per unit	15	\$100.0	139	0.055	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)
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 Construction	per unit	15	\$100.0	159	0.062	0.0
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 Construction	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 Construction	per unit	15	\$100.0	164	0.064	0.0
407	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)	New Construction	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 Construction	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 Construction	per unit	15	\$100.0	159	0.062	0.0

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410	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	New Construction	per unit	15	\$100.0	180	0.070	0.0
411	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 Evaporatively-cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construction	per unit	15	\$100.0	170	0.066	0.0
412	All/All	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 Construction	per unit	15	\$100.0	139	0.055	0.0
413	All/All	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 Construction	per unit	15	\$100.0	191	0.075	0.0
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 Evaporatively-cooled AC - >= 760,000 , all other heating type	New Construction	per unit	15	\$100.0	212	0.083	0.0
415	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	New Construction	per unit	15	\$100.0	334	0.131	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)
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 Construction	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 Construction	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

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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)
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 Construction	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 Construction	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 Construction	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 Construction	per unit	15	\$100.0	139	0.053	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)
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 Construction	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 Construction	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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 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

Appendix E: Commercial Measure 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 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

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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)
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

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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)
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

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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)
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	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	per unit	2	\$35.0	77	0.000	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)
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

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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)
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	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	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

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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)
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	per motor	10	\$1,622.0	6600	1.170	0.0
518	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/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	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	Time of Sale	per motor	10	\$1,622.0	2875	0.532	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)
520	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	Time of Sale	per motor	10	\$1,622.0	1477	0.114	0.0
521	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	Time of Sale	per motor	10	\$1,898.0	9072	0.000	0.0
522	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	New Construction	per motor	10	\$1,330.0	4527	0.000	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)
523	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	New Construction	per motor	10	\$1,330.0	4388	0.778	0.0
524	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	New Construction	per motor	10	\$1,330.0	2424	0.338	0.0
525	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	New Construction	per motor	10	\$1,330.0	1911	0.354	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)
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 Construction	per motor	10	\$1,330.0	982	0.075	0.0
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 Construction	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 Construction	per motor	10	\$1,622.0	6600	1.170	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)
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/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construction	per motor	10	\$1,622.0	3645	0.509	0.0
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 Construction	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 Construction	per motor	10	\$1,622.0	1477	0.114	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
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 Construction	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
537	All/All	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	All/All	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	All/All	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 Construction	per unit	15	\$100.0	176	0.034	0.0
540	All/All	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 Construction	per unit	15	\$100.0	180	0.043	0.0
541	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)	New Construction	per unit	15	\$100.0	170	0.043	0.0
542	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	New Construction	per unit	15	\$100.0	174	0.053	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
543	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)	New Construction	per unit	15	\$100.0	194	0.045	0.0
544	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	New Construction	per unit	15	\$100.0	200	0.057	0.0
545	All/All	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 Construction	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 Construction	per unit	15	\$100.0	246	0.096	0.0
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 Construction	per unit	15	\$100.0	198	0.078	0.0
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 Construction	per unit	15	\$100.0	205	0.080	0.0

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
549	All/All	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 Construction	per unit	15	\$100.0	274	0.107	0.0
550	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	New Construction	per unit	15	\$100.0	284	0.111	0.0
551	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 - 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	All/All	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

Appendix E: Commercial Measure 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 Incremental Cost (\$)	Annual Energy Savings (kWh)	Annual PJM Capacity Savings (kW)	Annual Gas Savings (therms)
555	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 - Current	Time of Sale	per unit	15	\$100.0	246	0.096	0.0
556	All/All	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	All/All	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	All/All	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	All/All	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

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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)
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-Lighting 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 Construction	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 Construction	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

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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)
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

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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)
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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	per building	12	\$22,222.2	657000	75.000	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)
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 Construction	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 Construction	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 Construction	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 Construction	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

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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)
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	\$131,942,344	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 E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	All/All	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

*Commercial 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	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 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	2.57	Yes	Yes	100%	100%	33%	IL TRM
8	All/All	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	2.42	Yes	Yes	100%	100%	33%	IL TRM
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	All/All	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	All/All	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

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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/Freezers	Baseline - Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	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/Freezers	Baseline - Electronically Commutated Motors (ECM) for Walk-in and Reach-in Coolers/Freezers	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	All/All	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 Construction	2.12	Yes	No	92%	4%	64%	IL TRM

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Measure ID	Sub-Sector/Building 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 Construction	2.98	Yes	No	92%	4%	64%	IL TRM
18	All/All	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	All/All	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

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Measure ID	Sub-Sector/Building 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
23	All/Small Load (<=100 kW)	Refrigeration	Refrigeration Economizers	Economizer installed on a walk in refrigeration system	Walk-in refrigeration system without an economizer, discuss 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

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Measure ID	Sub-Sector/Building 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 (0F - 30F)	Retrofit	1.84	Yes	Yes	100%	45%	100%	IL TRM
31	All/All	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 Construction	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 Construction	2.98	Yes	No	92%	4%	64%	IL TRM
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	0.55	No	Yes	10%	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	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	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	1.09	Yes	Yes	10%	100%	100%	IL TRM
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	1.64	Yes	Yes	10%	100%	100%	IL TRM
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	2.30	Yes	Yes	10%	100%	100%	IL TRM
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	0.03	No	No	92%	100%	100%	IL TRM
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	0.05	No	No	92%	100%	100%	IL TRM
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	0.08	No	No	92%	100%	100%	IL TRM
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	0.11	No	No	92%	100%	100%	IL TRM
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	1.95	Yes	Yes	8%	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	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)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, gas heating	Roof insulation equal to code requirements	Retrofit	0.12	No	No	92%	100%	100%	IL TRM
45	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, electric resistance heating	Roof insulation equal to code requirements	Retrofit	0.56	No	No	92%	100%	100%	IL TRM
46	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, heat pump heating	Roof insulation equal to code requirements	Retrofit	0.34	No	No	92%	100%	100%	IL TRM
47	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, gas heating	Roof insulation equal to code requirements	New Construction	0.05	No	No	92%	100%	100%	IL TRM
48	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, electric resistance heating	Roof insulation equal to code requirements	New Construction	0.23	No	No	92%	100%	100%	IL TRM
49	All/Small Load (<=100 kW)	Miscellaneous	Roof Insulation	Roof insulation above code requirements, heat pump heating	Roof insulation equal to code requirements	New Construction	0.12	No	No	92%	100%	100%	IL TRM

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50	All/All	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	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	All/All	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	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

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Measure ID	Sub-Sector/Building 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	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Indirect	Proportionally Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	2.29	Yes	Yes	100%	10%	59%	IL TRM
60	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Indirect	Proportionally Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Retrofit	0.39	No	Yes	100%	10%	59%	IL TRM
61	All/All	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	2.26	Yes	Yes	100%	10%	59%	IL TRM
64	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Industrial/Strip	1-Lamp F40T12 w/ EEMag Ballast	Retrofit	1.22	Yes	Yes	100%	10%	59%	IL TRM

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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	0.98	No	Yes	100%	10%	59%	IL TRM
66	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Troffer/Wrapper	Proportionally Adjusted according to 2-Lamp T5 Equivalent to 3-Lamp T8	Time of Sale	1.70	Yes	Yes	100%	10%	59%	IL TRM
67	All/All	Lighting	T5 Fixtures and Lamps	1-Lamp T5 Troffer/Wrapper	Proportionally 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/Strip	3-Lamp Standard 32W T8 w/ Elec Ballast	Time of Sale	4.57	Yes	Yes	100%	10%	59%	IL TRM

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72	All/All	Lighting	T5 Fixtures and Lamps	2-Lamp T5 Industrial/Strip	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/Strip	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	All/All	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	All/All	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	All/All	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	6.88	Yes	Yes	100%	10%	59%	IL TRM
83	All/All	Lighting	T5 Fixtures and Lamps	3-Lamp T5 Industrial/Strip	3-Lamp F40T12 w/ EEMag Ballast	Retrofit	1.86	Yes	Yes	100%	10%	59%	IL TRM

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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	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	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	9.57	Yes	Yes	100%	10%	59%	IL TRM
88	All/All	Lighting	T5 Fixtures and Lamps	4-Lamp T5 Industrial/Strip	4-Lamp F40T12 w/ EEMag Ballast	Retrofit	4.05	Yes	Yes	100%	10%	59%	IL TRM
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	4.11	Yes	Yes	100%	10%	59%	IL TRM
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	6.67	Yes	Yes	100%	10%	59%	IL TRM

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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	2.67	Yes	Yes	100%	10%	59%	IL TRM
94	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Round Signal	Incandescent	Retrofit	0.77	No	Yes	100%	55%	100%	IL TRM
95	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Round Signal	Incandescent	Retrofit	1.36	Yes	Yes	100%	55%	100%	IL TRM
96	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Retrofit	0.70	No	Yes	100%	55%	100%	IL TRM
97	All/All	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	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Retrofit	0.03	No	Yes	100%	55%	100%	IL TRM

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101	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Flashing Signal	Incandescent	Retrofit	0.05	No	Yes	100%	55%	100%	IL TRM
102	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Round Signal	Incandescent	Retrofit	0.58	No	Yes	100%	55%	100%	IL TRM
103	All/All	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	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Hand/Man Pedestrian Signal	Incandescent	Retrofit	3.19	Yes	Yes	100%	55%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Round Signal	Incandescent	Time of Sale	2.34	Yes	Yes	100%	55%	100%	IL TRM
111	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Red Flashing Signal	Incandescent	Time of Sale	1.56	Yes	Yes	100%	55%	100%	IL TRM
112	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Red Flashing Signal	Incandescent	Time of Sale	2.13	Yes	Yes	100%	55%	100%	IL TRM
113	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Round Signal	Incandescent	Time of Sale	1.49	Yes	Yes	100%	55%	100%	IL TRM
114	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Round Signal	Incandescent	Time of Sale	2.03	Yes	Yes	100%	55%	100%	IL TRM
115	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Flashing Signal	Incandescent	Time of Sale	0.06	No	Yes	100%	55%	100%	IL TRM
116	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Flashing Signal	Incandescent	Time of Sale	0.08	No	Yes	100%	55%	100%	IL TRM

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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	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Round Signal	Incandescent	Time of Sale	1.76	Yes	Yes	100%	55%	100%	IL TRM
119	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Yellow Turn Arrow	Incandescent	Time of Sale	0.44	No	Yes	100%	55%	100%	IL TRM
120	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Yellow Turn Arrow	Incandescent	Time of Sale	0.25	No	Yes	100%	55%	100%	IL TRM
121	All/All	Lighting	LED Traffic and Pedestrian Signals	8" Green Turn Arrow	Incandescent	Time of Sale	0.44	No	Yes	100%	55%	100%	IL TRM
122	All/All	Lighting	LED Traffic and Pedestrian Signals	12" Green Turn Arrow	Incandescent	Time of Sale	0.26	No	Yes	100%	55%	100%	IL TRM
123	All/All	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	All/All	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

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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	1.63	Yes	Yes	100%	100%	59%	IL TRM
126	All/All	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	All/All	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	All/All	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	All/All	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	All/All	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	All/All	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	All/All	Lighting	LED Exit Signs	LED exit sign	non-LED light-source	Retrofit	3.56	Yes	Yes	100%	85%	59%	ICF

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133	All/Total >100 kW	Lighting	Commercial Standard CFL	15 W CFL	43W EISA compliant lamp	Time of Sale	21.71	Yes	No	8%	45%	52%	IL TRM
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	All/All	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 Replacement	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 Replacement	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 Replacement	2.11	No	No	100%	94%	100%	IL TRM
140	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacement	1.77	No	No	100%	94%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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	All/All	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	All/All	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	All/All	Lighting	Delamping	4' T8 Lamp Removal with Reflector	4' T8 Lamp	Time of Sale	5.18	Yes	Yes	100%	100%	59%	IL TRM
146	All/All	Lighting	Delamping	8' T8 Lamp Removal with Reflector	8' T8 Lamp	Time of Sale	8.63	Yes	Yes	100%	100%	59%	IL TRM
147	All/All	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

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149	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacement	1.54	No	No	100%	94%	100%	IL TRM
150	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Early Replacement	AFUE 90% Furnace	Early Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	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 Replacement	0.32	No	No	100%	94%	100%	IL TRM
156	All/All	HVAC	High Efficiency Furnace	AFUE 91% Furnace - Remaining Measure Life	AFUE 90% Furnace	Early Replacement	0.30	No	No	100%	94%	100%	IL TRM

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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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Measure ID	Sub-Sector/Building 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
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 Construction	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 EPAAct 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	EPAAct 2005-Compliant Freezer	New Construction	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 EPAAct 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	EPAAct 2005-Compliant Freezer	New Construction	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 EPAAct 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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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 Construction	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/ 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 Construction	3.16	Yes	No	93%	97%	65%	IL TRM
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 Construction	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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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	2.16	Yes	No	93%	9%	82%	IL TRM
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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Measure ID	Sub-Sector/Building 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
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

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Measure ID	Sub-Sector/Building 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
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 heating	Time of Sale	10.43	Yes	Yes	93%	9%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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
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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Measure ID	Sub-Sector/Building 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
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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Measure ID	Sub-Sector/Building 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
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	41,400.80	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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Measure ID	Sub-Sector/Building 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
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	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 lbs made per day	Ice Making Head >=450 lbs 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	No	No	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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Measure ID	Sub-Sector/Building 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
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 lbs made per day meeting min. federal equipment standards	Time of Sale	0.73	No	No	93%	63%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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
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 Construction	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 lbs made per day	Ice Making Head >=450 lbs made per day meeting min. federal equipment standards	New Construction	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 Construction	0.42	No	No	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 Construction	0.48	No	No	93%	63%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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
246	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 Construction	0.40	No	No	93%	63%	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 Construction	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 Construction	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 lbs made per day meeting min. federal equipment standards	New Construction	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

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Measure ID	Sub-Sector/Building 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

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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 Construction	43.73	Yes	No	93%	9%	100%	IL TRM
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	6.34	Yes	Yes	0%	100%	100%	IL TRM
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	1.10	Yes	Yes	8%	100%	100%	IL TRM
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	1.41	Yes	No	2%	100%	100%	IL TRM
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	1.64	Yes	Yes	90%	100%	100%	IL TRM
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	1.23	Yes	Yes	90%	100%	100%	IL TRM

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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	2.07	Yes	Yes	90%	100%	100%	IL TRM
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	3.71	Yes	Yes	90%	100%	100%	IL TRM
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	1.23	Yes	Yes	90%	100%	100%	IL TRM
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	2.07	Yes	Yes	90%	100%	100%	IL TRM
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	3.71	Yes	Yes	90%	100%	100%	IL TRM
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	1.23	Yes	Yes	90%	100%	100%	IL TRM
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	2.07	Yes	Yes	90%	100%	100%	IL TRM
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	3.71	Yes	Yes	90%	100%	100%	IL TRM

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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	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	All/All	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	All/All	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 Construction	3.51	Yes	No	100%	2%	100%	IL TRM
278	All/All	HVAC	Electric Chillers	Air-cooled Chiller exceeding IECC 2009 Standards - CV Reheat, Economizer	Air-cooled Chiller meeting IECC 2009 Standards - CV Reheat, Economizer	New Construction	1.92	Yes	No	100%	2%	100%	IL TRM

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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 Construction	1.87	Yes	No	100%	2%	100%	IL TRM
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 Construction	15.18	Yes	No	100%	1%	100%	IL TRM
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 Construction	9.49	Yes	No	100%	1%	100%	IL TRM
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 Construction	9.29	Yes	No	100%	1%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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 Construction	2.61	Yes	No	100%	1%	100%	IL TRM
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 Construction	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 Construction	1.60	Yes	No	100%	1%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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	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 Construction	4.77	Yes	No	100%	1%	100%	IL TRM
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 Construction	2.98	Yes	No	100%	1%	100%	IL TRM
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 Construction	2.92	Yes	No	100%	1%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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 Construction	6.96	Yes	No	100%	1%	100%	IL TRM
290	All/All	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 Construction	4.35	Yes	No	100%	1%	100%	IL TRM
291	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	New Construction	4.26	Yes	No	100%	1%	100%	IL TRM
292	All/All	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

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Measure ID	Sub-Sector/Building 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	All/All	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	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	Time of Sale	1.87	Yes	Yes	100%	2%	100%	IL TRM
295	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	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 Reciprocating 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 Reciprocating Chiller meeting IECC 2009 Standards - VAV, Economizer	Time of Sale	9.29	Yes	Yes	100%	1%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	2.61	Yes	Yes	100%	1%	100%	IL TRM
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	1.63	Yes	Yes	100%	1%	100%	IL TRM
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	1.60	Yes	Yes	100%	1%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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
301	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	Time of Sale	4.77	Yes	Yes	100%	1%	100%	IL TRM
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	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

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Measure ID	Sub-Sector/Building 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	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	6.96	Yes	Yes	100%	1%	100%	IL TRM
305	All/All	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	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	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 conditioning unit meeting minimum federal efficiency standards - < 8000 Btu/H	Time of Sale	1.22	Yes	No	100%	100%	76%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	All/All	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 conditioning unit meeting minimum federal efficiency standards - 8000 to 13999 Btu/H	Time of Sale	2.40	Yes	No	100%	100%	76%	IL TRM
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 conditioning 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 conditioning unit meeting minimum federal efficiency standards - >= 20000 Btu/H	Time of Sale	5.71	Yes	Yes	100%	100%	76%	IL TRM
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	2.66	Yes	Yes	100%	64%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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/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	1.69	Yes	Yes	100%	64%	100%	IL TRM
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	1.70	Yes	Yes	100%	64%	100%	IL TRM
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	1.27	Yes	No	100%	64%	100%	IL TRM
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	1.15	Yes	No	100%	64%	100%	IL TRM

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Measure ID	Sub-Sector/Building 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
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	1.15	Yes	No	100%	64%	100%	IL TRM
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	0.96	No	No	100%	64%	100%	IL TRM
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	0.84	No	No	100%	64%	100%	IL TRM
319	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	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

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Measure ID	Sub-Sector/Building 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	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	2.11	Yes	Yes	100%	6%	33%	IL TRM
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	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-source Heat 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	All/All	HVAC	Heat Pump Systems	Groundwater-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwater-source Heat 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-source Heat 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 Construction	4.24	Yes	No	100%	6%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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	New Construction	2.31	Yes	No	100%	6%	33%	IL TRM
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 Construction	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 Construction	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-source Heat Pump - < 17,000 Btu/h	New Construction	3.21	Yes	No	100%	6%	33%	IL TRM
332	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	New Construction	2.06	Yes	No	100%	6%	33%	IL TRM
333	All/All	HVAC	Heat Pump Systems	Groundwater-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Groundwater-source Heat Pump - < 135,000 Btu/h	New Construction	1.55	Yes	No	100%	6%	33%	IL TRM
334	All/All	HVAC	Heat Pump Systems	Ground-source Heat Pump - < 135,000 Btu/h exceeding IECC 2012	IECC 2012 Ground-source Heat Pump - < 135,000 Btu/h	New Construction	4.69	Yes	No	100%	6%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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
335	All/All	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	All/All	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

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Measure ID	Sub-Sector/Building 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	All/All	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

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Measure ID	Sub-Sector/Building 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	All/All	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/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	5.76	Yes	Yes	100%	96%	76%	IL TRM
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	5.81	Yes	Yes	100%	96%	76%	IL TRM
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	40.05	Yes	Yes	100%	96%	76%	IL TRM
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	36.26	Yes	Yes	100%	4%	76%	IL TRM
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	5.36	Yes	Yes	100%	4%	76%	IL TRM

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Measure ID	Sub-Sector/Building 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/Motel/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	New Construction	5.76	Yes	No	100%	96%	76%	IL TRM
361	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTAC exceeding IECC 2012	PTAC meeting IECC 2012	New Construction	5.81	Yes	No	100%	96%	76%	IL TRM
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 Construction	40.05	Yes	No	100%	96%	76%	IL TRM
363	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTAC meeting IECC 2012	New Construction	36.26	Yes	No	100%	4%	76%	IL TRM
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 Construction	3.09	Yes	No	100%	4%	76%	IL TRM

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

Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	All/All	HVAC	Package Terminal Air Conditioner (PTAC) and Package Terminal Heat Pump (PTHP)	PTHP exceeding IECC 2012	PTHP meeting IECC 2012	New Construction	3.03	Yes	No	100%	4%	76%	IL TRM
366	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	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

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Measure ID	Sub-Sector/Building 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	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	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 Evaporatively-cooled AC - < 65,000 Btu/h	Time of Sale	2.85	Yes	Yes	100%	96%	33%	IL TRM
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	3.69	Yes	Yes	100%	96%	33%	IL TRM
375	All/All	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	3.31	Yes	Yes	100%	96%	33%	IL TRM
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	3.12	Yes	Yes	100%	96%	33%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	2.76	Yes	Yes	100%	96%	33%	IL TRM
378	All/All	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	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 Evaporatively-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 Evaporatively-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

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Measure ID	Sub-Sector/Building 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	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	2.59	Yes	Yes	100%	96%	33%	IL TRM
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	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	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	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

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Measure ID	Sub-Sector/Building 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	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)	Time of Sale	1.92	Yes	Yes	100%	96%	33%	IL TRM
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	2.42	Yes	Yes	100%	96%	33%	IL TRM
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	2.08	Yes	Yes	100%	96%	33%	IL TRM
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	2.94	Yes	Yes	100%	96%	33%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	2.59	Yes	Yes	100%	96%	33%	IL TRM
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	0.41	No	No	100%	96%	33%	IL TRM
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 Construction	2.61	Yes	No	100%	96%	33%	IL TRM
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 Construction	3.03	Yes	No	100%	96%	33%	IL TRM
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 Construction	7.26	Yes	No	100%	96%	33%	IL TRM
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 Construction	1.28	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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 Construction	1.84	Yes	No	100%	96%	33%	IL TRM
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 Construction	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 Construction	2.59	Yes	No	100%	96%	33%	IL TRM
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 Construction	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 Construction	1.92	Yes	No	100%	96%	33%	IL TRM

*Commercial 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	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	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 Construction	2.25	Yes	No	100%	96%	33%	IL TRM
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 Construction	2.08	Yes	No	100%	96%	33%	IL TRM
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 Construction	2.42	Yes	No	100%	96%	33%	IL TRM
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 Construction	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 Construction	2.76	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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
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 Construction	2.85	Yes	No	100%	96%	33%	IL TRM
407	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)	New Construction	2.59	Yes	No	100%	96%	33%	IL TRM
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 Construction	2.94	Yes	No	100%	96%	33%	IL TRM
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 Construction	2.76	Yes	No	100%	96%	33%	IL TRM
410	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	New Construction	3.12	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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 Evaporatively-cooled AC - 240,000 - 760,000 , electric resistance heating (or none)	New Construction	2.94	Yes	No	100%	96%	33%	IL TRM
412	All/All	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 Construction	2.42	Yes	No	100%	96%	33%	IL TRM
413	All/All	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 Construction	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 Evaporatively-cooled AC - >= 760,000 , all other heating type	New Construction	3.69	Yes	No	100%	96%	33%	IL TRM
415	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	New Construction	5.79	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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 Construction	0.41	No	No	100%	96%	33%	IL TRM
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 Construction	0.41	No	No	100%	96%	33%	IL TRM
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	2.38	Yes	Yes	100%	96%	64%	IL TRM
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	2.12	Yes	Yes	100%	96%	64%	IL TRM
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	2.82	Yes	Yes	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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	2.49	Yes	Yes	100%	96%	54%	IL TRM
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	2.07	Yes	Yes	100%	3%	54%	IL TRM
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	1.81	Yes	Yes	100%	22%	64%	IL TRM
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 Construction	1.81	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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 Construction	2.07	Yes	No	100%	96%	33%	IL TRM
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 Construction	2.12	Yes	No	100%	96%	33%	IL TRM
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 Construction	2.38	Yes	No	100%	96%	33%	IL TRM
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 Construction	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 Construction	2.82	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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/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	1.31	Yes	Yes	85%	100%	58%	IL TRM
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	0.15	No	No	85%	100%	58%	IL TRM
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	2.80	Yes	Yes	95%	100%	45%	IL TRM
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	0.22	No	No	95%	100%	45%	IL TRM

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

Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	Programmable thermostat with Continuous fan model during operation	Non-programmable 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	Programmable thermostat with Intermittent fan model during operation	Non-programmable 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	Programmable thermostat with Continuous fan model during operation	Non-programmable 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	Programmable thermostat with Intermittent fan model during operation	Non-programmable thermostat requiring manual intervention to change temperature setpoint	Retrofit	0.07	No	No	7%	100%	44%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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/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	0.28	No	No	93%	100%	50%	IL TRM
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	0.05	No	No	93%	100%	50%	IL TRM
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	1.31	Yes	Yes	15%	100%	58%	IL TRM
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	0.15	No	No	85%	100%	58%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	Programmable thermostat with Continuous fan model during operation	Non-programmable thermostat requiring manual intervention to change temperature setpoint	DI	2.80	Yes	Yes	5%	100%	45%	IL TRM
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	0.22	No	No	95%	100%	45%	IL TRM
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	0.64	No	No	93%	100%	45%	IL TRM
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	0.04	No	No	93%	100%	45%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	0.25	No	No	93%	100%	44%	IL TRM
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	0.07	No	No	93%	100%	44%	IL TRM
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	0.72	No	No	7%	100%	44%	IL TRM
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	0.07	No	No	7%	100%	44%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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/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	0.28	No	No	93%	100%	50%	IL TRM
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	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/occupant 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/occupant 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/occupant of OA ventilation	Retrofit	0.12	No	No	100%	1%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	0.14	No	No	100%	1%	100%	IL TRM
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	0.14	No	No	100%	1%	100%	IL TRM
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	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/occupant 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/occupant of OA ventilation	Retrofit	0.09	No	No	100%	1%	100%	IL TRM
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	0.11	No	No	100%	1%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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/occupant of OA ventilation	Retrofit	0.10	No	No	100%	1%	100%	IL TRM
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	0.16	No	No	100%	1%	100%	IL TRM
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	0.13	No	No	100%	1%	100%	IL TRM
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	1.65	Yes	Yes	15%	42%	100%	IL TRM
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	3.52	Yes	Yes	5%	55%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	0.80	No	Yes	7%	55%	100%	IL TRM
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	0.31	No	Yes	7%	56%	100%	IL TRM
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	0.09	No	Yes	7%	56%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	0.90	No	Yes	7%	56%	100%	IL TRM
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	0.09	No	Yes	7%	56%	100%	IL TRM
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	0.35	No	Yes	7%	50%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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/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	0.06	No	Yes	7%	50%	100%	IL TRM
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	1.65	Yes	Yes	15%	42%	100%	IL TRM
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	3.52	Yes	Yes	5%	55%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	0.80	No	Yes	7%	55%	100%	IL TRM
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	0.31	No	Yes	7%	56%	100%	IL TRM
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	0.09	No	Yes	7%	56%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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
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	0.90	No	Yes	7%	56%	100%	IL TRM
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	0.09	No	Yes	7%	56%	100%	IL TRM
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	0.35	No	Yes	7%	50%	100%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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/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	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	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	1.39	Yes	Yes	100%	3%	54%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	2.31	Yes	Yes	100%	3%	54%	IL TRM
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	1.16	Yes	Yes	100%	22%	64%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	1.03	Yes	Yes	100%	22%	64%	IL TRM
515	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	Time of Sale	0.40	No	Yes	100%	22%	64%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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/backward 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	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	Time of Sale	1.27	Yes	Yes	100%	22%	64%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	Time of Sale	0.49	No	Yes	100%	22%	64%	IL TRM
521	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	Time of Sale	1.95	Yes	Yes	100%	22%	64%	IL TRM
522	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	New Construction	1.39	Yes	No	100%	3%	54%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	New Construction	2.31	Yes	No	100%	3%	54%	IL TRM
524	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	New Construction	1.16	Yes	No	100%	3%	54%	IL TRM

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Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	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	New Construction	1.03	Yes	No	100%	22%	64%	IL TRM
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 Construction	0.40	No	No	100%	22%	64%	IL TRM

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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 Construction	1.71	Yes	No	100%	22%	64%	IL TRM
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 Construction	2.85	Yes	No	100%	22%	64%	IL TRM

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Measure ID	Sub-Sector/Building 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/backward incline inlet guide vanes - new motor installed w/o vsd or other methods of control	New Construction	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 Construction	1.27	Yes	No	100%	22%	64%	IL TRM

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Measure ID	Sub-Sector/Building 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
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 Construction	0.49	No	No	100%	22%	64%	IL TRM
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 Construction	1.95	Yes	No	100%	22%	64%	IL TRM
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	2.66	Yes	Yes	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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	2.39	Yes	Yes	100%	96%	33%	IL TRM
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	2.95	Yes	Yes	100%	96%	33%	IL TRM
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	2.62	Yes	Yes	100%	96%	33%	IL TRM
537	All/All	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

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Measure ID	Sub-Sector/Building 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	All/All	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	All/All	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 Construction	2.21	Yes	No	100%	96%	33%	IL TRM
540	All/All	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 Construction	2.47	Yes	No	100%	96%	33%	IL TRM
541	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)	New Construction	2.39	Yes	No	100%	96%	33%	IL TRM
542	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	New Construction	2.66	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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)	New Construction	2.62	Yes	No	100%	96%	33%	IL TRM
544	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	New Construction	2.95	Yes	No	100%	96%	33%	IL TRM
545	All/All	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 Construction	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 Construction	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 Construction	3.44	Yes	No	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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
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 Construction	3.56	Yes	No	100%	96%	33%	IL TRM
549	All/All	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 Construction	4.75	Yes	No	100%	96%	33%	IL TRM
550	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	New Construction	4.93	Yes	No	100%	96%	33%	IL TRM
551	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 - Current	Time of Sale	3.56	Yes	Yes	100%	96%	33%	IL TRM
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	3.44	Yes	Yes	100%	96%	33%	IL TRM

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Measure ID	Sub-Sector/Building 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	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	4.93	Yes	Yes	100%	96%	33%	IL TRM
554	All/All	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	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 - Current	Time of Sale	4.28	Yes	Yes	100%	96%	33%	IL TRM
556	All/All	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

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557	All/All	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	All/All	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

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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	Miscellaneous	Commercial Custom Measure	Custom Non-Lighting 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)	Miscellaneous	Sm New Const <=100K sq ft	More Efficient than IECC2015 construction	IECC2015 Code construction - Sm New Const	New Construction	10.36	Yes	Yes	92%	100%	100%	ICF
567	All/Total >100 kW	Miscellaneous	Lrg New Const >100K sq ft	More Efficient than IECC2015 construction	IECC2015 Code construction - Lrg New Const	New Construction	5.56	Yes	Yes	8%	100%	100%	ICF
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	1.72	No	Yes	100%	0%	100%	ICF

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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	0.86	No	Yes	100%	0%	100%	ICF
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	11.86	No	Yes	100%	0%	100%	ICF
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	11.62	No	Yes	100%	0%	100%	ICF
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	2.68	No	Yes	100%	0%	100%	ICF
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	1.51	No	Yes	100%	0%	100%	ICF

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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	2.74	No	Yes	100%	0%	100%	ICF
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	2.74	No	Yes	100%	0%	100%	ICF
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	3.70	No	Yes	100%	0%	100%	ICF
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	3.62	No	Yes	100%	0%	100%	ICF
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 Construction	5.34	No	Yes	100%	0%	100%	ICF

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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 Construction	2.86	No	Yes	100%	0%	100%	ICF
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 Construction	93.08	No	Yes	100%	0%	100%	ICF
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 Construction	129.09	No	Yes	100%	0%	100%	ICF
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 Construction	5.76	No	Yes	100%	0%	100%	ICF
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 Construction	3.36	No	Yes	100%	0%	100%	ICF
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 Construction	20.42	No	Yes	100%	0%	100%	ICF

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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 Construction	20.38	No	Yes	100%	0%	100%	ICF
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 Construction	41.08	No	Yes	100%	0%	100%	ICF
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 Construction	40.24	No	Yes	100%	0%	100%	ICF
4246	All/Very Large Load, Extra Large Load, & High Voltage (Over 1,000 kW)	Other	RetroCommissioning	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	RetroCommissioning	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	RetroCommissioning	Hospital RCx	Hospital RCx - Baseline	Retrofit	4.46	Yes	Yes	1%	2%	99%	ICF

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Measure ID	Sub-Sector/Building 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	RetroCommissioning	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	RetroCommissioning	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	RetroCommissioning	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	RetroCommissioning	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	RetroCommissioning	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	RetroCommissioning	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	RetroCommissioning	Small Building - Lodging RCx	Small Building - Lodging RCx - Baseline	Retrofit	1.13	Yes	Yes	6%	27%	99%	ICF

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

Appendix E: Commercial Measure Assumptions

Measure ID	Sub-Sector/Building 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	RetroCommissioning	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	RetroCommissioning	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

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

Appendix F: Industrial Measure Assumptions

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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	HE Dry-Type 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	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
28	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.005	\$37.5	0.1	No	No	100%	80%	96%
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
55	Industrial	Destratification Fans	Per kWh	100%	10	0.10488777	\$245.0	0.3	No	No	15%	40%	94%
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
96	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.005	\$33.5	0.1	No	No	100%	80%	44%
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
245	Industrial	Ventilation Heat Recovery	Per kWh	#DIV/0!	15	0	\$1,562.5	0.0	No	No	100%	40%	94%
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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
286	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00445633	\$5.0	0.6	No	No	100%	40%	100%
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
380	Industrial	High Efficiency Light fixtures	Per kWh	100%	7	0.11057692	\$163.0	0.3	No	No	100%	100%	89%
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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
407	Industrial	High/Premium Efficiency Motors (Pumps)	Per kWh	100%	15	0.00521739	\$23.3	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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
434	Industrial	High efficiency non-packaged HVAC equipment	Per kWh	100%	9	0.01648352	\$2.0	6.2	Yes	Yes	3%	80%	70%
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 Pump	Per kWh	100%	20	0.09271978	\$589.0	0.2	No	No	100%	5%	89%
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
475	Industrial	Preventative Pump Maintenance	Per kWh	100%	3	0.008333333	\$0.0	19.8	Yes	Yes	100%	100%	31%
476	Industrial	High/Premium Efficiency Motors (Fans)	Per kWh	100%	15	0.003333333	\$25.0	0.2	No	No	100%	80%	95%
477	Industrial	Premium efficiency control, with ASD (Fans)	Per kWh	100%	10	0.033333333	\$39.8	0.7	No	No	100%	70%	81%
478	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.003333333	\$3.7	0.7	No	No	100%	40%	100%
479	Industrial	Preventative Fan Maintenance	Per kWh	100%	3	0.008333333	\$0.0	19.8	Yes	Yes	100%	100%	31%
480	Industrial	High/Premium Efficiency Motors	Per kWh	100%	15	0.003333333	\$22.4	0.2	No	No	100%	80%	95%
481	Industrial	Correctly sized motors	Per kWh	100%	15	0.003333333	\$14.1	0.3	No	No	100%	70%	98%
482	Industrial	Optimized motor control	Per kWh	100%	15	0.008333333	\$0.9	10.9	Yes	Yes	100%	70%	77%
483	Industrial	Preventative Motor Maintenance	Per kWh	100%	3	0.008333333	\$0.0	19.8	Yes	Yes	100%	100%	31%
484	Industrial	Premium efficiency ASD compressor	Per kWh	100%	10	0.020833333	\$107.7	0.2	No	No	100%	80%	66%
485	Industrial	Optimized Distribution System	Per kWh	100%	10	0.016666667	\$7.5	1.8	Yes	Yes	100%	80%	76%
486	Industrial	Minimize operating air pressure	Per kWh	100%	1	0.033333333	\$0.0	26.5	Yes	Yes	100%	80%	63%
487	Industrial	Optimized sizing of compressor system	Per kWh	100%	20	0.016666667	\$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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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	De-stratification 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
690	Industrial	High efficiency non-packaged HVAC equipment	Per kWh	100%	9	0.01342657	\$1.6	7.6	Yes	Yes	3%	80%	60%
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 Pump	Per kWh	100%	20	0.07552448	\$479.8	0.3	No	No	100%	5%	90%
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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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	Demand-Controlled Ventilation	Per kWh	100%	10	0.01666667	\$229.5	0.1	No	No	20%	80%	98%
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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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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%

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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%

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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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
798	Industrial	Synchronous Belts (Fans)	Per kWh	100%	10	0.00254647	\$2.8	1.0	No	No	100%	40%	100%
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%

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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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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
825	Industrial	Preventative Packaged HVAC Maintenance	Per kWh	100%	3	0.01144689	\$6.9	0.3	No	No	100%	100%	15%
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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

Appendix F: Industrial Measure Assumptions

Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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%

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Measure ID	Sub-Sector	Measure Name	Measure Unit	Measure Savings (% of Baseline)	Measure 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	0.027777778	\$8.8	2.7	Yes	Yes	100%	100%	95%
894	Industrial	Lighting controls	Per kWh	100%	8	0.027777778	\$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%

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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 Preheat Makeup Water	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.
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

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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

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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

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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

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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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
94	Industrial	Synchronous Belts (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
95	Industrial	Preventative Fan Maintenance	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
96	Industrial	High/Premium Efficiency Motors	ICF	NA
97	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
98	Industrial	Optimized motor 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
99	Industrial	Preventative Motor Maintenance	Marbek in-house info	RS Means Mechanical Cost Data
100	Industrial	Premium efficiency ASD compressor	ICF	NA
101	Industrial	Optimized Distribution 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
102	Industrial	Minimize operating air pressure	ICF	NA
103	Industrial	Optimized sizing of compressor system	ICF	NA
104	Industrial	Optimized sizes of air receiver tanks	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
105	Industrial	Premium Efficiency Air Dryer (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
106	Industrial	Sequencing Control	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
107	Industrial	Eliminate air leaks	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
108	Industrial	Synchronous Belts for Air 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
109	Industrial	Replace compressed air use with mechanical or electrical	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
110	Industrial	Premium efficiency ASD compressor	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
111	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
112	Industrial	High efficiency battery charger (for forklifts)	Personnal communication with IFA (International Fertilizer Association) experts.	NA

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
113	Industrial	Economizers for Packaged Air-Conditioning Units	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
114	Industrial	High efficiency non-packaged HVAC equipment	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)
115	Industrial	High Efficiency Unitary AC	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.
116	Industrial	Ground Source Heat Pump	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
117	Industrial	Ventilation Heat Recovery	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
118	Industrial	Automated Temperature Control	Information for Evaluating Geexchange 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.
119	Industrial	Destratification Fans	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
120	Industrial	Warehouse Loading Dock Seals	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
121	Industrial	Preventative Packaged HVAC Maintenance	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
122	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Rutgers, Industrial Assessment Centers Database, Accessed: October 26, 2015.	ICF
123	Industrial	High efficiency ballasts for lighting	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.
124	Industrial	High Efficiency Light fixtures	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
125	Industrial	Efficient Lighting Design	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
126	Industrial	Lighting controls	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
127	Industrial	Premium efficiency ventilation control with VSD	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
128	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
129	Industrial	HE Dry-Type Transformers	NRCAN Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
130	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
131	Industrial	Air Curtains (Oven)	NRCAN Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
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

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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

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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

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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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
207	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
208	Industrial	Smart Defrost Controls	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
209	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	ICF	NA
210	Industrial	Preventative refrigeration/cooling system maintenance	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
211	Industrial	Optimized condenser pressure	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
212	Industrial	VSD on chiller compressor	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
213	Industrial	Cooling Tower Optimization	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
214	Industrial	Improve insulation of refrigeration system	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
215	Industrial	High/Premium Efficiency Motors (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
216	Industrial	Impeller Trimming (Pump)	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
217	Industrial	Optimization of pumping 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
218	Industrial	Premium Efficiency Control with ASDs (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
219	Industrial	Preventative Pump 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
220	Industrial	High/Premium Efficiency Motors (Fans)	Vendor website - Date accessed: May 2010	NA
221	Industrial	Premium efficiency control, with ASD (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
222	Industrial	Synchronous Belts (Fans)	ICF	NA
223	Industrial	Preventative Fan 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
224	Industrial	High/Premium Efficiency 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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
225	Industrial	Correctly sized motors	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
226	Industrial	Optimized motor control	ICF	NA
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	NA
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	NA
240	Industrial	High efficiency battery charger (for forklifts)	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
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

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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 Geoechange 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

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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

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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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 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

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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

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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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
356	Industrial	Premium efficiency ASD compressor	ICF	NA
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	NA
363	Industrial	Eliminate air leaks	ICF	NA
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	NA
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	NA
370	Industrial	High efficiency non-packaged HVAC equipment	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
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	NA

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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 Geopexchange 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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 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.

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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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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
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.

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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

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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. Wisersules 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. Wisersules 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

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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 Dryer (compressors)	Marbek in-house info	RS Means Mechanical Cost Data
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.

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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

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527	Industrial	Premium efficiency refrigeration control 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
528	Industrial	Smart Defrost Controls	ICF	NA
529	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	ICF	NA
530	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
531	Industrial	Optimized condenser pressure	ICF	NA
532	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
533	Industrial	Cooling Tower Optimization	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
534	Industrial	Improve insulation of refrigeration system	ICF	NA
535	Industrial	High/Premium Efficiency Motors (Pumps)	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial 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 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
538	Industrial	Premium Efficiency Control with ASDs (Pumps)	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
539	Industrial	Preventative Pump Maintenance	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
540	Industrial	High/Premium Efficiency Motors (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
541	Industrial	Premium efficiency control, with ASD (Fans)	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
542	Industrial	Synchronous Belts (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
543	Industrial	Preventative Fan 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
544	Industrial	High/Premium Efficiency 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
545	Industrial	Correctly sized motors	Vendor website - Date accessed: May 2010	NA

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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	NA
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

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565	Industrial	Ventilation Heat Recovery	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
566	Industrial	Automated Temperature 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
567	Industrial	Destratification Fans	Personnal communication with IFA (International Fertilizer Association) experts.	NA
568	Industrial	Warehouse Loading Dock Seals	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
569	Industrial	Preventative Packaged HVAC Maintenance	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)
570	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	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.
571	Industrial	High efficiency ballasts for lighting	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
572	Industrial	High Efficiency Light fixtures	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
573	Industrial	Efficient Lighting Design	Information for Evaluating Geoechange 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.
574	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
575	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Opinion Dynamics Corporation, Delaware Technical Resource Manual, 2012
576	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	Ontario Independent Electricity System Operator, Prescriptive Measures and Assumptions List, 2015.
577	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
578	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
579	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
580	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
581	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
582	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
583	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
584	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
585	Industrial	Preventative Furnace Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
586	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
587	Industrial	Preventative Kiln 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.
588	Industrial	Insulation (Kiln)	Vendor website - date accessed: March 2010	NA
589	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
590	Industrial	Optimized Distribution System	ICF	NA
591	Industrial	Premium efficiency refrigeration control system	Vendor website - date accessed: May, 2010	NA
592	Industrial	Smart Defrost Controls	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
593	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	ICF	NA
594	Industrial	Preventative refrigeration/cooling system maintenance	ICF	NA
595	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
596	Industrial	VSD on chiller compressor	ICF	NA
597	Industrial	Cooling Tower Optimization	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
598	Industrial	Improve insulation of refrigeration 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
599	Industrial	High/Premium Efficiency Motors (Pumps)	ICF	NA
600	Industrial	Impeller Trimming (Pump)	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
601	Industrial	Optimization of pumping system	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
602	Industrial	Premium Efficiency Control with ASDs (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
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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
622	Industrial	Premium efficiency ASD compressor	ICF	NA
623	Industrial	Retrofit internal parts of existing centrifugal compressors	ICF	NA
624	Industrial	High efficiency battery charger (for forklifts)	1.Sustainability Victoria. 2006. Efficient Compressed Air Systems. Date accessed: March 2010	NA
625	Industrial	Economizers for Packaged Air-Conditioning Units	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
626	Industrial	High efficiency non-packaged HVAC equipment	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
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 Efficiency Reference Guide. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date 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 Control	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
631	Industrial	Destratification Fans	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
632	Industrial	Warehouse Loading Dock Seals	Personnal communication with IFA (International Fertilizer Association) experts.	NA
633	Industrial	Preventative Packaged HVAC Maintenance	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
634	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	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)
635	Industrial	High efficiency ballasts for lighting	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.
636	Industrial	High Efficiency Light fixtures	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
637	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
638	Industrial	Lighting controls	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.
639	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.

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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

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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

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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	NA
681	Industrial	Premium Efficiency Air Dryer (compressors)	ICF	NA
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	NA
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	NA
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	NA
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	NA
695	Industrial	Destratification Fans	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
697	Industrial	Preventative Packaged HVAC Maintenance	Personnal communication with IFA (International Fertilizer Association) experts.	NA
698	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
699	Industrial	High efficiency ballasts for lighting	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)
700	Industrial	High Efficiency Light fixtures	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.
701	Industrial	Efficient Lighting Design	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
702	Industrial	Lighting controls	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
703	Industrial	Premium efficiency ventilation control with VSD	Information for Evaluating Geoechange 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.
704	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	The Cadmus Group Inc, Wisconsin Focus on Energy Technical Reference Manual, 2014.
705	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
706	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
707	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
708	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
709	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
710	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
711	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
712	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
713	Industrial	Preventative Furnace Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
714	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
715	Industrial	Preventative Kiln Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
716	Industrial	Insulation (Kiln)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
717	Industrial	High Efficiency Chiller	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.

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
718	Industrial	Optimized Distribution System	Vendor website - date accessed: March 2010	NA
719	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
720	Industrial	Smart Defrost Controls	ICF	NA
721	Industrial	Optimized chilled water temperature and/or optimized condenser temperature	Vendor website - date accessed: May, 2010	NA
722	Industrial	Preventative refrigeration/cooling system 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
723	Industrial	Optimized condenser pressure	ICF	NA
724	Industrial	VSD on chiller compressor	ICF	NA
725	Industrial	Cooling Tower Optimization	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
726	Industrial	Improve insulation of refrigeration system	ICF	NA
727	Industrial	High/Premium Efficiency Motors (Pumps)	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
728	Industrial	Impeller Trimming (Pump)	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
729	Industrial	Optimization of pumping system	ICF	NA
730	Industrial	Premium Efficiency Control with ASDs (Pumps)	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
731	Industrial	Preventative Pump Maintenance	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
732	Industrial	High/Premium Efficiency Motors (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
733	Industrial	Premium efficiency control, with ASD (Fans)	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
734	Industrial	Synchronous Belts (Fans)	US Environmental Protection Agency. 1998. Wiserules for Industrial Efficiency. Date accessed: July, 2010	NA
735	Industrial	Preventative Fan 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
736	Industrial	High/Premium Efficiency Motors	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.

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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

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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

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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

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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. Wisersules 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. Wisersules 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

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
813	Industrial	Replace compressed air use with mechanical or electrical	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
814	Industrial	Premium efficiency ASD compressor	Marbek in-house info	RS Means Mechanical Cost Data
815	Industrial	Retrofit internal parts of existing centrifugal compressors	ICF	NA
816	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
817	Industrial	Economizers for Packaged Air-Conditioning Units	ICF	NA
818	Industrial	High efficiency non-packaged HVAC equipment	ICF	NA
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 System Performance, a Sourcebook for Industry. Date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
821	Industrial	Ventilation Heat Recovery	NRCan Office of Energy Efficiency. 2007. Compressed Air Energy Efficiency Reference Guide. Date accessed: July 2010	NA
822	Industrial	Automated Temperature Control	Vendor website - date accessed: May 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: May, 2010
823	Industrial	Destratification Fans	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
824	Industrial	Warehouse Loading Dock Seals	US Department of Energy. 2005. Replace V-Belts with Cogged or Synchronous Belt Drives. Date accessed: May 2010	NA
825	Industrial	Preventative Packaged HVAC Maintenance	Stanley Assembly Technologies. 200Energy Consumption of Pneumatic and DC Electric Assembly Tools. Date accessed: March 2010	NA
826	Industrial	Heat Recovery from Processes to Heat Ventilation Make-up Air	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
827	Industrial	High efficiency ballasts for lighting	Personnal communication with IFA (International Fertilizer Association) experts.	NA
828	Industrial	High Efficiency Light fixtures	Design & Engineering Services, Air Source Heat Pump for Preheating of Emergency Diesel Backup Generators, December, 2009	NA
829	Industrial	Efficient Lighting Design	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)
830	Industrial	Lighting controls	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.

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
831	Industrial	Premium efficiency ventilation control with VSD	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
832	Industrial	Demand-Controlled Ventilation	Illinois Statewide Technical Reference Manual for Energy Efficiency, 2015, Version 4.0	ICF
833	Industrial	HE Dry-Type Transformers	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
834	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
835	Industrial	Air Curtains (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
836	Industrial	Insulation (Oven)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
837	Industrial	Preventative Oven Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
838	Industrial	Air Curtains (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
839	Industrial	Insulation (Dryer)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
840	Industrial	Preventative Dryer Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
841	Industrial	Preventative Furnace Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
842	Industrial	Insulation (Furnace)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
843	Industrial	Preventative Kiln Maintenance	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
844	Industrial	Insulation (Kiln)	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
845	Industrial	High Efficiency Chiller	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
846	Industrial	Optimized Distribution System	NRCan Office of Energy Efficiency. 2009. Dry-Type Transformers - date accessed: July 2010	RSMeans Electrical Cost Data 2009, pp200
847	Industrial	Premium efficiency refrigeration control 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.
848	Industrial	Smart Defrost Controls	Vendor website - date accessed: March 2010	NA
849	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. Wisersules for Industrial Efficiency. Date accessed: April, 2010
850	Industrial	Preventative refrigeration/cooling system maintenance	ICF	NA

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Measure ID	Sub-Sector	Measure Name	Reference 1	Reference 2
851	Industrial	Optimized condenser pressure	Vendor website - date accessed: May, 2010	NA
852	Industrial	VSD on chiller compressor	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. Wisrules for Industrial Efficiency. Date accessed: April, 2010
853	Industrial	Cooling Tower Optimization	ICF	NA
854	Industrial	Improve insulation of refrigeration system	ICF	NA
855	Industrial	High/Premium Efficiency Motors (Pumps)	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wisrules for Industrial Efficiency. Date accessed: April, 2010
856	Industrial	Impeller Trimming (Pump)	ICF	NA
857	Industrial	Optimization of pumping system	US Department of Energy, 2004. Improving Process Heating System Performance: A Sourcebook for Industry- Date accessed: April 2010	US Environmental Protection Agency. 1998. Wisrules for Industrial Efficiency. Date accessed: April, 2010
858	Industrial	Premium Efficiency Control with ASDs (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
859	Industrial	Preventative Pump Maintenance	ICF	NA
860	Industrial	High/Premium Efficiency Motors (Fans)	ICF	Energy Design Resources. 2010. Energy Efficiency Practices in Industrial Refrigeration. Accessed October 2015.
861	Industrial	Premium efficiency control, with ASD (Fans)	Vendor website - date accessed: July 2010	BC Hydro. 2006. QA Standard, Technology: Effective Measure Life. Date accessed: July, 2010
862	Industrial	Synchronous Belts (Fans)	US Environmental Protection Agency. 1998. Wisrules for Industrial Efficiency. Date accessed: July, 2010	Progress Energy. Energy Savers: Chiller Optimization and Energy-Efficient Chillers. Date accessed: October 2015
863	Industrial	Preventative Fan Maintenance	Betterbricks. Operation and Maintenance of Chillers. Date accessed: July 2010	NA
864	Industrial	High/Premium Efficiency Motors	US Environmental Protection Agency. 1998. Wisrules for Industrial Efficiency. Date accessed: July, 2010	NA
865	Industrial	Correctly sized 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
866	Industrial	Optimized motor control	Energy Design Resources, Chiller Plant Efficiency Design Brief, 2010.	Frank Morrison, Saving Energy with Cooling Towers, ASHRAE Journal, February 2014.
867	Industrial	Preventative Motor 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
868	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
869	Industrial	Optimized Distribution 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
870	Industrial	Minimize operating air pressure	Vendor website - Date accessed: May 2010	NA

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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

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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