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July 30, 2021

BY ELECTRONIC DELIVERY

Ms. Lora W. Johnson
Clerk of Council
Council of the City of New Orleans
City Hall, Room IE09
1300 Perdido Street
New Orleans, LA 70112

Re: 2021 Triennial Integrated Resource Plan of Entergy New Orleans, LLC; Docket UD-20-02

Dear Ms. Johnson:

Enclosed please find the *Demand Side Management Market Potential Study* prepared by GDS Associates, Inc. with MSMM Engineering, LLC, The Villavaso Group, LLC and Casey DeMoss on behalf of the New Orleans City Council in the above referenced proceeding which is being submitted for filing into the record along with this letter. As a result of the remote operations of the Clerk of Council's office related to COVID-19, the Advisors submit this filing electronically and will submit the original and hard copies once the Council resumes its normal operations or as otherwise directed.

Sincerely,

Jay Beatmann
Counsel

JAB/dpm
Attachment

cc: Service List UD-20-02

CITY COUNCIL OF NEW ORLEANS

2021 DSM Market Potential Study

FINAL REPORT

July 2021

prepared by

GDS Associates, Inc. *with*

MSMM Engineering, LLC

The Villavaso Group, LLC

Casey DeMoss

Executive Summary

BACKGROUND & STUDY SCOPE

This study provides an estimate of energy efficiency and demand response potential for the Entergy New Orleans (Entergy) service territory. This study was commissioned by the Council of the City of New Orleans (Council) as part of their retail regulatory oversite of electric utility services in Orleans Parish. Energy efficiency and demand response can often provide a cost-effective means of meeting customer energy or demand needs compared to traditional supply-side investments. These resources can benefit both participants and non-participants by providing lower electric bills, improving building stock, and reducing environmental emissions from power plants, such as carbon dioxide.

This study is meant to help inform Entergy's future Energy Smart programs and to provide input into Entergy's Integrated Resource Plan (IRP) efforts. The outcome of this study forecasts the 20-year potential for Energy Smart programs to deliver energy and demand savings under several achievable cases, in addition to estimating the total technical and economic (cost-effective) potential.

To develop these estimates of potential, the GDS Team builds off of the two prior 2018 estimates of potential, provided by Entergy's consultant, Navigant (now Guidehouse), and Optimal Energy, the Council's prior consultant. Since that time, Entergy's Energy Smart programs have made efforts at energy efficiency and demand response, technologies and market acceptance have changed, and Entergy has developed new forecasts for energy consumption and associated supply costs. The GDS Team's modeling takes all these factors into account in developing new estimates for achievable program potential cases for the 2021-2040 timeframe.

TYPES OF POTENTIAL ANALYZED

This potential study provides a roadmap for the Council, Entergy, and other stakeholders as they engage on the Entergy IRP. In addition to technical and economic potential estimates, the development of achievable and program potential estimates for a range of feasible measures and program conditions is useful for program planning and modification purposes. Unlike achievable and program potential estimates, technical and economic potential estimates do not include customer acceptance considerations for measures, which are often among the most important factors when estimating the likely customer response to new programs. For this study, the GDS Team produced the following estimates of demand side management potential:

- Technical potential
- Economic potential
- Achievable potential
  - High Case Achievable Potential
  - 2% Council Policy Case
  - Reference Achievable Potential

For each level of potential, this detailed report presents the energy savings, peak demand savings, benefits and costs for the Entergy New Orleans service area for the period of 2021-2040, a 20-year time frame.

APPROACH SUMMARY

The purpose of this DSM potential study is to provide a foundation for the continuation of utility-administered energy efficiency and demand response programs in the Entergy New Orleans service territory, to determine the remaining opportunities for cost-effective energy and demand in the service territory. This study has examined a full array of technologies, programs, and energy efficient practices that are technically achievable, as a starting point for examining the economic opportunities, along with achievable program opportunities.

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

Section 2.1 includes a wide-ranging discussion of numerous methodological considerations addressed in the energy efficiency potential analysis. Section 3.1 includes a similar discussion of the analysis approach specifically related to demand response.

STUDY LIMITATIONS AND CAVEATS

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

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

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

POTENTIAL SAVINGS RESULTS SUMMARIES

Below we provide summary results for the study, presenting results for energy efficiency and demand response for each of the residential and C&I sectors. For energy efficiency, the three achievable cases reflect the following:

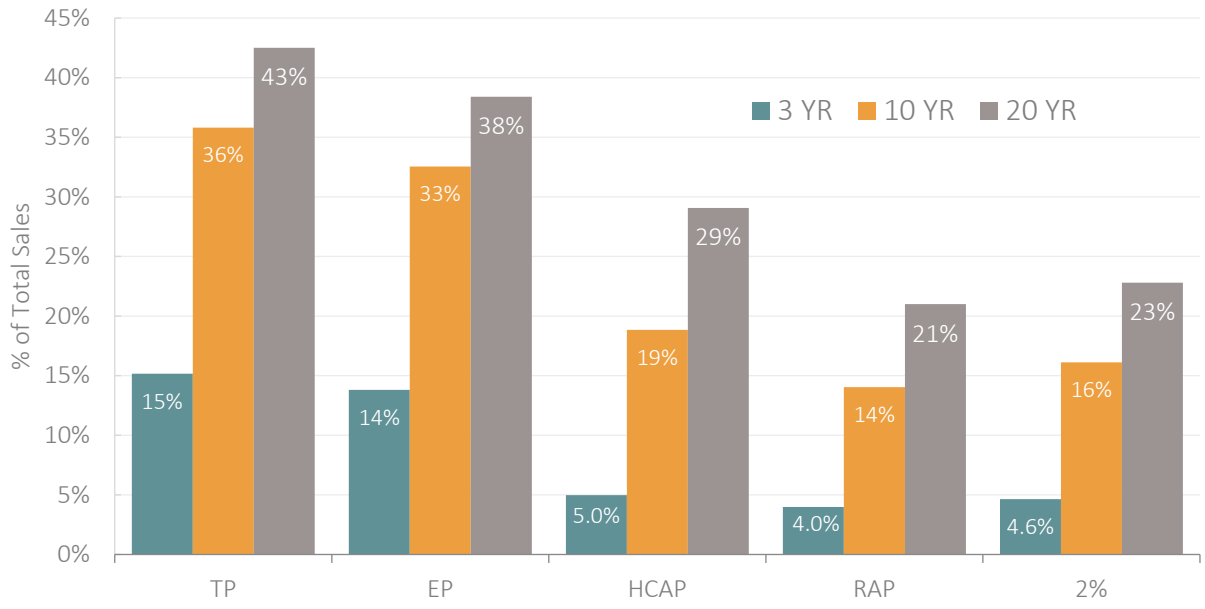
- ***High Case Achievable Potential* (HCAP)** estimates achievable potential from aggressive adoption rates based on paying incentives equal to 100% of measure incremental costs and increased program awareness.
- ***2% Council Policy Case* (2% Case)** estimates achievable potential in-line with Council policy, reflecting a 0.2% increase in savings as a percent of sales until savings as a percent of sales achieves 2%.
- ***Reference Achievable Potential* (RAP)** estimates achievable potential with Entergy paying incentive levels (as a percent of incremental measure costs) and program awareness closely calibrated to historical levels but is not constrained by any previously determined spending levels.

Demand response program potential was framed with two cases – a high case achievable case and a reference achievable case.

Energy Efficiency Potential Summary

Figure ES-1 provides the cumulative annual technical, economic, HCAP, RAP, and 2% policy case results for the 3-year, 10-year, and 20-year timeframes[1]. Over the duration of the study timeframe the technical and economic potential reach 43% and 38% of forecasted sales, respectively. This relatively close alignment of technical and economic potential suggests that a large portion of the technical potential is cost-effective. The HCAP case reaches 29% of forecasted ENO 2041 sales (or 76% of the economic potential). The RAP and 2% policy case achieve respectively to 21% and 23% of forecasted sales over the study timeframe. The gap between economic potential and the achievable policy cases represents market barriers to prospective program participants, both financial and non-financial, to achieving the full amount of economic potential. Figure ES-2 shows the cumulative annual achievable potential by case over the entire 20-year timeframe.

FIGURE ES-1. OVERVIEW OF ENERGY EFFICIENCY POTENTIAL BY CASE



[1] Cumulative annual refers to savings in Year X that represent both the incremental annual (new) savings achieved in that year, as well as any sustained savings from measures installed in prior years that have not yet reached the end of their effective useful life (EUL).

FIGURE ES-2. CUMULATIVE ANNUAL ACHIEVABLE ELECTRIC ENERGY SAVINGS POTENTIAL BY CASE

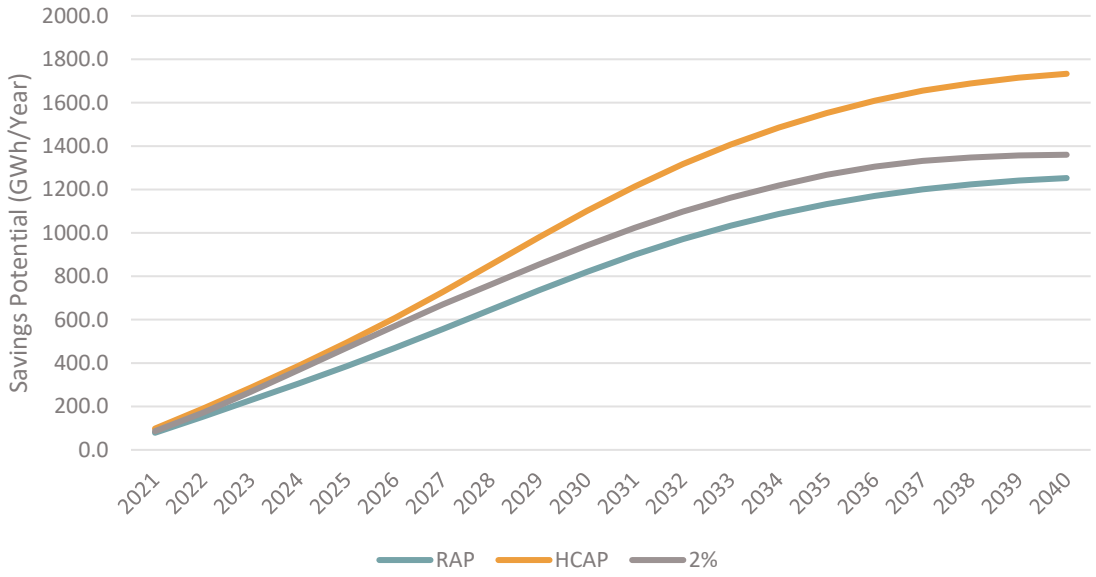


Table ES-1 provides incremental energy and demand savings for the RAP, HCAP, and 2% achievable cases in 5-year increments. The cumulative annual energy and demand savings in 2041 for the 2% policy case is 1360 GWh and 422 MW respectively.

TABLE ES-1. ANNUAL INCREMENTAL ACHIEVABLE ENERGY EFFICIENCY SAVINGS BY CASE

Year	Energy (GWh/Year)			Peak Demand (MW)		
	RAP	HCAP	2%	RAP	HCAP	2%
2021	79	98	86	17	19	19
2025	94	121	116	24	27	30
2030	105	143	109	36	38	35
2035	71	96	76	23	24	23
2040	53	71	58	11	13	12
Cum. Ann. (2041)	1253	1733	1360	403	480	422

Table ES-2 provides incremental energy potential savings as a percentage of ENO's total sales in 5-year increments. For the 2% case, savings increase by 0.2% a year in 2021-2023, and 2% savings per year from 2024-2027. Savings decrease over time as energy efficiency potential becomes more limited in the second decade on an incremental annual basis. The 2% policy case is slightly higher than the RAP case because of higher incentives and increased marketing awareness. The HCAP, which assumes incentives that are equal to the incremental measure cost, can sustain 2% savings over a longer period, though again, savings decrease during the second decade as remaining efficiency potential from measures included in this analysis are depleted.

TABLE ES-2. INCREMENTAL ACHIEVABLE ENERGY EFFICIENCY SAVINGS POTENTIAL BY CASE (AS A % OF SALES)

Year	RAP	HCAP	2%
2021	1.4%	1.7%	1.5%
2025	1.6%	2.1%	2.0%
2030	1.8%	2.4%	1.9%
2035	1.2%	1.6%	1.3%
2040	0.9%	1.2%	1.0%

Total costs by each associated with each achievable potential case are shown in Figure ES-2. Total costs are comparable between the RAP and 2% policy case, with differences aligned with the savings achieved in both cases. However, the HCAP case demonstrates significantly higher costs because of the corresponding modeling assumption that incentives are equivalent to 100% of the modeled incremental measure cost. Overall, incentives average between 50%-55% in the RAP and 2% policy cases. In the HCAP case, incentives are roughly 70% of the overall costs.

Table ES-3 shows the portfolio TRC to be cost-effective for all cases.

FIGURE ES-3. BUDGETS BY ACHIEVABLE POTENTIAL CASE ($ MILLIONS/YEAR)

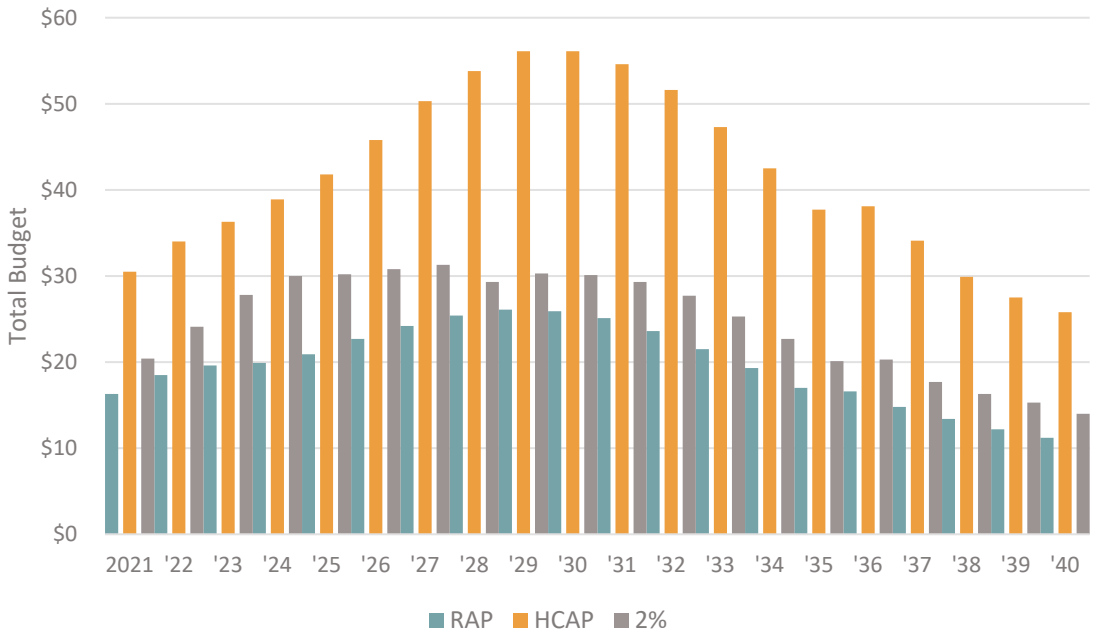


TABLE ES-3. PORTFOLIO TRC BENEFT-COST RATIOS BY ACHIEVABLE POTENTIAL CASE

Year	RAP	HCAP	2%
2021-2040	2.6	1.8	2.5

Demand Response Potential for All Customers

Figure ES-3 provides the cumulative opportunity for demand response, illustrating the residential and C&I (Non-Residential) reference achievable potential (RAP). We estimate that a total of 130 MW of avoided summer capacity could be met across the two sectors by 2040. This represents a growth of 108 MW over time.

FIGURE ES-3. TOTAL ANNUAL SUMMER PEAK MW RAP POTENTIAL BY SECTOR

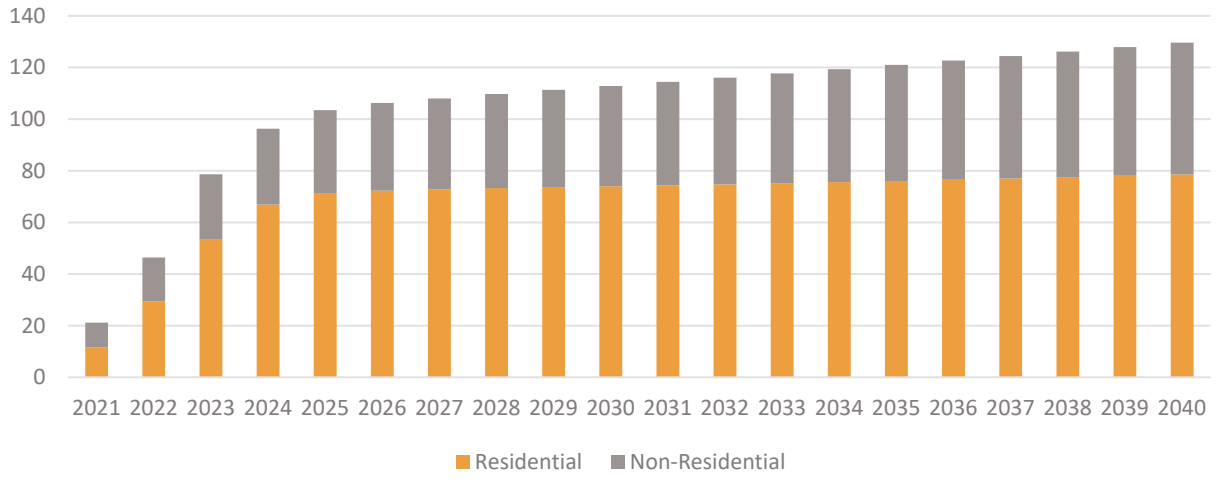
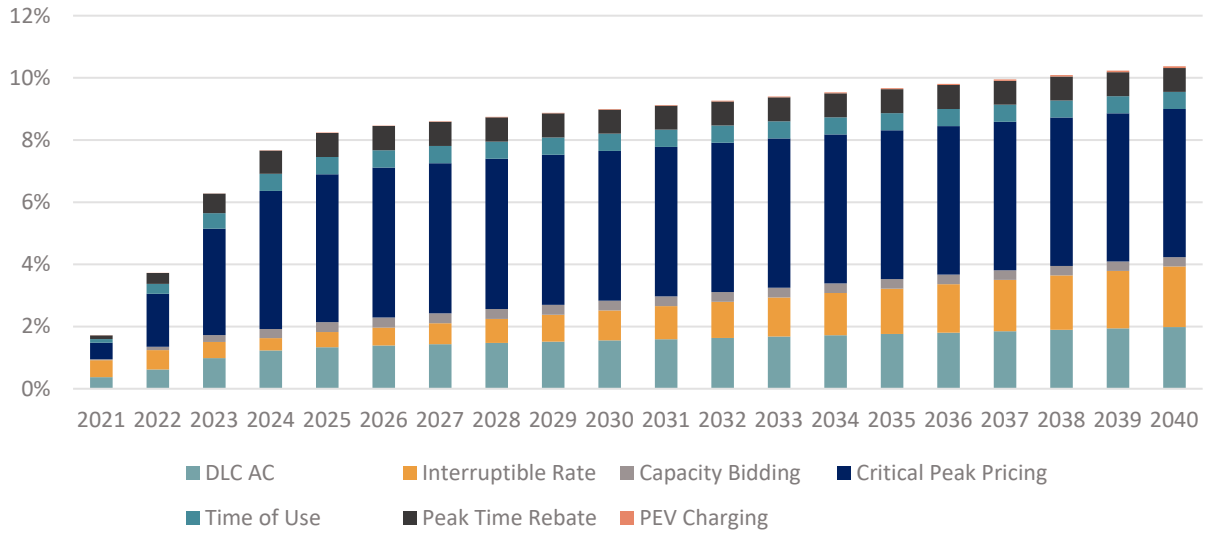


Figure ES-4 describes the nature of programs driving the demand response RAP and their contribution to meeting summer peak load over time. The share of summer peak load provided by demand response grows from just under two percent in 2021 to just over 10% in 2040. Major contributors to meeting summer peak load include critical peak pricing (5%), air conditioner direct load control (2%), and interruptible rates for large customers (2%).

FIGURE ES-4. TOTAL ANNUAL SUMMER PEAK RAP BY PROGRAM AS A PERCENTAGE OF PEAK LOAD



MOVING FORWARDS WITH PROGRAMS

Overall, GDS identified substantial cost-effective savings for energy efficiency and demand response exist and will continue to exist through 2040. Going forward, decisions regarding the level of effort will be based on the remaining potential for savings and the cost of developing those savings. Future technologies should continue to be researched and tested, which may identify still further savings. For example, battery storage systems (discussed in Section 3 – Demand Response) may become a future opportunity. Other examples include ongoing improvements in the efficiency of heat pumps and related technologies. GDS recommends that Entergy continue to refine its understanding of its energy efficiency markets and their associated opportunities and challenges for delivering energy savings, updating measure assumptions, or otherwise identifying the assets that its customers bring to help reduce or manage loads over time.

1 Introduction

The Council of the City of New Orleans (the Council) engaged GDS Associates and its team of subcontractors (the GDS Team) to provide an estimate of demand side management (DSM) energy efficiency and demand response potential for Entergy New Orleans (Entergy). The analysis of DSM potential is intended to provide input to Entergy's Integrated Resource Plan (IRP), covering the 2021 through 2040 timeframe. Beyond the potential for DSM savings over the 20-year period, the study also analyzed possible program spending levels required to achieve the outcomes from several possible achievable cases.

The GDS Team worked with the Council's representatives to develop several achievable energy efficiency cases. Along with technical and economic potential, these include:

- ***High Case Achievable Potential* (HCAP)** estimates achievable potential from aggressive adoption rates based on paying incentives equal to 100% of measure incremental costs and increased program awareness.
- ***2% Council Policy Case* (2% Case)** estimates achievable potential in-line with Council policy, reflecting a 0.2% increase in savings as a percent of sales until savings as a percent of sales achieves 2%.
- ***Reference Achievable Potential* (RAP)** estimates achievable potential with Entergy paying incentive levels (as a percent of incremental measure costs) and program awareness closely calibrated to historical levels but is not constrained by any previously determined spending levels.

For demand response, the GDS Team focused on providing a High Case Achievable Potential (HCAP) and Reference Achievable Potential case (RAP). Both energy efficiency and demand response cases are presented in more detail in subsequent report sections.

An additional energy efficiency stakeholder case was developed in collaboration with other stakeholders and will be provided in a separate report.

1.1 STUDY APPROACH

The purpose of this DSM potential study is to provide a foundation for the continuation of utility-administered energy efficiency and demand response programs in the Entergy New Orleans service territory, to determine the remaining opportunities for cost-effective energy and demand in the service territory. This study has examined a full array of technologies, programs, and energy efficient practices that are technically achievable, as a starting point for examining the economic opportunities, along with achievable program opportunities.

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

1.2 REPORT ORGANIZATION

This report is organized into several sections. These include:

Section 1: An introduction to the study and background

Section 2: Describes the methods and results for the energy efficiency analysis

Section 3: Describes the methods and results for the demand response analysis

Appendices: Descriptions and details and key study elements or assumptions, including a benchmarking analysis to compare results from this study to other recent potential studies, along with a description of the Delphi Panel approach and results.

1.3 STUDY LIMITATIONS AND CAVEATS

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

- Energy efficiency measure lives, savings, and costs (total measure costs, incremental costs, and incentive costs)
- Projected potential adoption rates for energy efficiency measures
- Projections of energy consumption and avoided costs
- End-use saturations and energy consumption shares

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

In the next sections of the report, we present the details of the DSM potential analysis.

2 Energy Efficiency Potential Analysis

2.1 ANALYSIS APPROACH

This section describes the overall methodology proposed to assess the electric energy efficiency potential for residential and nonresidential customers in the Entergy New Orleans service territory. The main objectives of this Demand Side Management (DSM) Potential Study were to estimate the energy efficiency potential in terms of technical and economic potential, along with three achievable energy efficiency adoption cases in the Entergy New Orleans service territory:

- High Case Achievable Potential ("HCAP")
- Reference Achievable Potential ("RAP"), and
- Council (2%) Policy case (2% Council Policy Case)

These estimates were quantified in terms of MWh and MW savings, expected incremental and cumulative program participants, and associated costs, for each level of achievable energy efficiency potential. The energy efficiency potential results are presented in Section 2.2. Detailed appendices also provide a catalog of assumptions and annual outputs associated with this analysis.

2.1.1 Overview of Approach

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

For the C&I sector, GDS employed a bottom-up modeling approach to first estimate measure-level savings, costs, and cost-effectiveness, and then applied measure savings to all applicable shares of energy load.

2.1.2 Market Characterization

The initial step in the analysis was to gather a clear understanding of the current market segments in the Entergy New Orleans (Entergy) service territory. The GDS team issued a data request to Entergy and received data regarding utility sales, sales forecasts, customer data, and related materials. These data define the market sectors and market segments from which energy efficiency can be derived and inform the types of measures that can drive energy efficiency savings.

In addition to Entergy data, the GDS compiled information related to:

- Energy efficiency saturation data
- End uses and relative shares of energy load

2.1.2.1 Forecast Disaggregation

GDS began with a forecast of Entergy's forecasted energy sales and demand, covering 2019 through 2040.[2] The forecast presented data for the residential sector and nonresidential sectors, including commercial customers, industrial customers, and government customers. For the C&I sector, GDS utilized SIC codes for each customer to further refine the forecast into building types. GDS refined both the residential and nonresidential building-types energy consumption into end uses using EIA data and, for the nonresidential

[2] This data is considered Highly Sensitive Protected Material and not included in this report.

sector, calibrating future end-use energy intensities using a forecast provided by Entergy. These refinements and general sources of information are summarized below.

For each major segment, GDS used the following data, with government customer loads combined with commercial customer loads to define an overall commercial sector:

- Residential. Utilized Entergy's description of customer types and share of load to define single family and multifamily homes. EIA's Residential Energy Consumption Survey (RECS) data were used to segment these loads into end-uses.
- Commercial. GDS utilized the following building types, based on the prior potential studies for consistency: college/university, healthcare, warehouse, lodging, small office, large office, grocery, other commercial, restaurants, retail (non-grocery), and schools. EIA's Commercial Building Energy Consumption Survey (CBECS) data and forecasted changes in intensity were used to define end-use shares of energy loads.
- Industrial. Entergy's SIC data was used to segment the industrial loads into major categories that align with EIA's Manufacturing Energy Consumption Survey (MECS). Based on the MECS data, the share of electricity loads associated with major end uses for each industry type were then weighted by the share of load from each industry to arrive at overall industrial end-use energy consumption estimates.[3]

2.1.2.1.1 Residential Sector

In the residential sector, disaggregated forecast data is useful for fine tuning measure baseline consumption and savings estimates, as well as calculating interactive effects to account for measures which save energy in the same end use (e.g. insulation and heat pumps both save on heating use). Entergy provided GDS with a sector-level sales forecast and end-use intensity forecast. This data was leveraged in the interactive effect calculations and annual savings adjustments.

The GDS team researched the breakdown of the number of customers by housing type (single-family vs. multifamily) and income type. The study assumes 76% of homes are single-family and 24% are multifamily and that 24% of homes are income-qualified.

2.1.2.1.2 C&I Sector

In the C&I sector, disaggregated forecast data provides the foundation for the development of energy efficiency potential estimates. Entergy provided GDS with energy consumption data for its C&I accounts (segmented by rate category) and the account's SIC code. GDS utilized the SIC code data to classify nonresidential customers into either commercial or industrial categories, associating their energy loads with either commercial or industrial building functions. For commercial customers identified as Transportation, Communications, or Utilities, GDS shifted 75 percent of this load to the industrial sector load. Figure 2-1 provides a breakdown of commercial electricity sales shares by building type.

[3] Industrial sector potential was ultimately aggregated into an additional building type in the overall C&I (nonresidential) sector analysis.

FIGURE 2-1. C&I ELECTRIC SALES BREAKDOWN BY BUILDING/INDUSTRY TYPE[4]

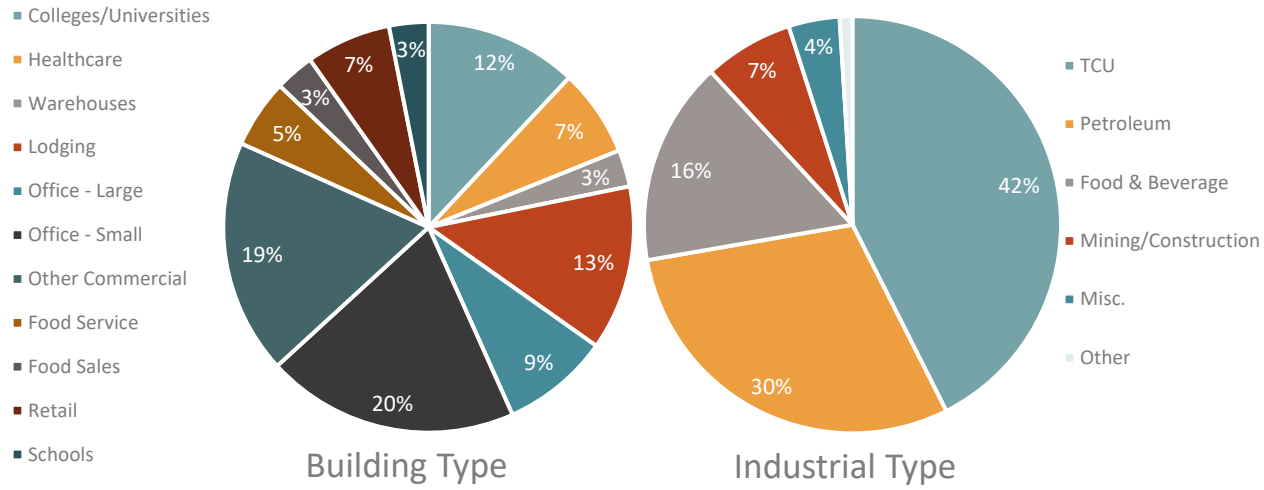
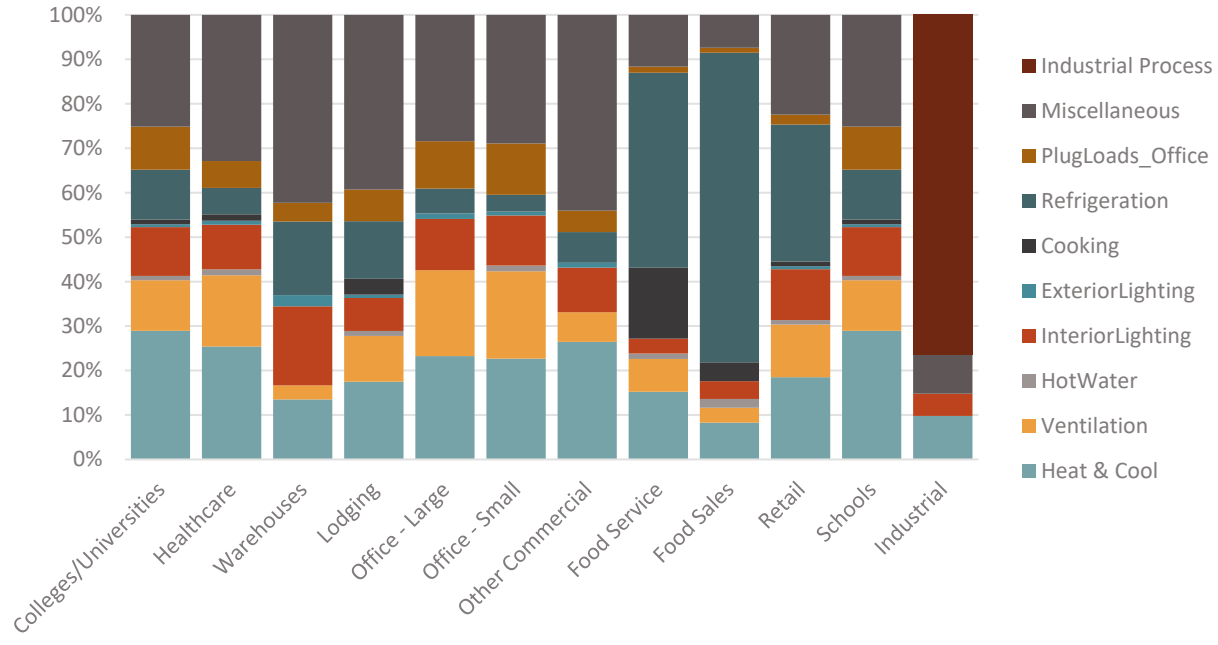


Figure 2-2 provides an illustration of the major end-uses across all building types in the commercial sector. Lighting represents 11% of the commercial business sector load across buildings, with HVAC (heating, cooling, ventilation) representing 35% or more across building types. Shares of refrigeration and office/computing are often dependent on the type of building, with refrigeration loads greatest in food sales and food service while office/computing loads are greatest in offices and education. Miscellaneous end-use load represents 30% of commercial sales with the overall contribution varying by building type.

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



[4] TCU (Transportation, Communications, and Utilities) load is reflected in ENO's commercial sales but the majority was moved to Industrial for purpose of the potential analysis. Other represents specific industry types (i.e. fabricated metals, electronics, etc.) with <1% of industrial load.

2.1.2.2 Building Stock/Equipment Saturation

To assess the potential electric energy efficiency savings available, estimates of the current saturation of baseline equipment and energy efficiency measures are necessary. These are described for the Residential and C&I sectors, below.

2.1.2.2.1 Residential Sector

For the residential sector, GDS relied on the 2016 Entergy Residential Appliance Saturation Survey. This data allowed for GDS Team to characterize the baseline and efficiency saturations of the residential sector using housing-type specific data. Other data sources included ENERGY STAR unit shipment data, and the EIA Residential Energy Consumption Survey data from 2015. The ENERGY STAR unit shipment data filled data gaps related to the increased saturation of energy efficient equipment across the U.S. in the last decade.

2.1.2.2.2 C&I Sector

For the C&I sector, building stock and equipment saturation data was informed by available regional or national data. Energy Star sales data helped inform shipments and shares of Energy Star rated equipment, which served as a proxy for efficient equipment sales shares over time for similar equipment. EIA data was used to describe the relative share of electricity consumption for a variety of end-uses, while USDOE Energy Scout[5] data provided breakdowns of load associated with specific equipment types to further refine EIA end-use data. GDS also leveraged its library of prior potential studies that leveraged a variety of equipment saturation surveys from around the U.S.

For the industrial sector, the analysis employed a top-down analysis at the end-use level. Accordingly, it was not critical to disaggregate the industrial sales at a measure-level. Instead, measures were developed to estimate savings at a total end-use level. Based on EIA MECS data, each industry type has characteristics of end-use equipment shares, with those shared weighted by their relative presence in Entergy's New Orleans service territory.

2.1.2.3 Remaining Factor

The remaining factor is the proportion of a given market segment and technology that is not yet efficient and can still be converted to an efficient alternative. It is the inverse of the saturation of an energy efficient measure, prior to any adjustments. For this study we made two key adjustments to recognize that the energy efficient saturation does not necessarily always fully represent the state of market transformation. In other words, while a percentage of installed measures may already be efficient, this does not preclude customers from backsliding, or reverting to standard technologies, or otherwise less efficient alternatives in the future, based on considerations like measure cost and availability and customer preferences. For example, some customers have disliked CFL light quality, and have reverted to incandescent and halogen bulbs after the CFLs burn out. Similarly, high efficiency air conditioning equipment could be replaced with less efficient equipment in the future.

For measures categorized as market opportunity (i.e. replace-on-burnout), we assumed that 60% of the instances in which an efficient measure is already installed, the burnout or failure of those measures would be eligible for inclusion in the estimate of future savings potential. Essentially this adjustment implies that we are assuming that 40% of the market is transformed, and no future savings potential exists, whereas the remaining 60% of the market is not transformed and could backslide without the intervention of an I&M program and an incentive. Similarly, for retrofit measures, we assumed that only 25% of the instances in which an efficient measure is already installed, the burnout or failure of those measures would be eligible for inclusion in the estimate of future savings potential. This recognizes the more proactive nature of retrofit measures, as the

[5] https://scout.energy.gov/

implementation of these measures are more likely to be elective in nature, compared to market opportunity measures, which are more likely to be needs-based. We recognize the uncertainty in these assumptions, but we believe these are appropriate assumptions, as they recognize a key component of the nature of customer decision making.

2.1.3 Measure Characterization

2.1.3.1 Measure Lists

The study's sector-level energy efficiency measure lists were informed by a range of sources. Entergy provided a list of measures expected to be used by Guidehouse, a consultant of Entergy. GDS utilized this measure list and added to that list using experience from other market potential studies. To develop measure-level characterizations, GDS primarily used the Entergy New Orleans Technical Reference Manual v4.0. In addition to this resource, additional measures were considered for inclusion by referencing current Entergy New Orleans program measure assumptions, publicly available research, and technical reference manuals (TRMs) from a variety of jurisdictions. The chief purpose in utilizing program offerings and alternate TRMs was to inform measure assumptions to align with potential study data requirements or to inform specific calculation approaches requiring a formulation or generalization not present in the Entergy TRM.

In total, GDS analyzed 104 residential and 83 C&I unique measure types. GDS developed a total of 1,349 measure permutations for this study. Each permutation was screened for cost-effectiveness according to the Total Resource Cost (TRC) Test. The parameters for cost-effectiveness under the TRC are discussed in detail later in Section 2.1.3.5

For each measure, key factors associated with energy efficiency performance included:

- Baseline energy and demand consumption, along with associated energy and demand savings
- Measure lifetime
- Measure cost (incremental or full)
- Status as retrofit or replace on burnout

2.1.3.2 Measure Baseline and Savings

GDS estimated the energy consumption of the baseline and energy efficient alternative using engineering analyses. For some measures, if savings percentages were known and the primary driver, an estimate of baseline and efficient energy consumption was derived from the savings percentage. As noted above, the TRM was the primary resource to inform savings. However, not all TRM measure characterization had sufficient detail to derive baseline and efficient consumption, necessitating the use of calculations from other TRMs or other industry literature. In all cases, current federal standards were used to inform baselines or derived baselines.

2.1.3.3 Measure Lifetime

Measure lifetimes describe how long a measure can be expected to provide savings over time and is a key factor in estimating measure cost-effectiveness. GDS relied primarily on the New Orleans TRM to inform measure lifetimes, though utilized other TRMs and GDS's library of measure characterizations as necessary.

2.1.3.4 Measure Costs

Measure costs are a key consideration in cost-effectiveness testing and incentive setting. GDS relied primarily on the New Orleans TRM as the source of incremental costs. In some cases, GDS relied on other recent TRMs, online product research, or GDS's library of measure characterizations. Measure costs represent either incremental or full costs. These costs typically include the incremental cost of measure installation, when

appropriate based on the measure definition. For purposes of this study, nominal measure costs held constant over time.[6]

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

2.1.3.5 Measure Cost-Effectiveness

GDS screened each measure and sector portfolio for cost-effectiveness using the Total Resource Cost Test (TRC). The Total Resource Cost (TRC) test measures benefits and costs from the perspective of the utility and utility customers as a whole. The benefits include the present value of the energy and capacity saved by the measures but exclude any natural gas or other fossil fuel benefits. The forecast of electric avoided costs of energy and capacity were obtained from Entergy and represent their most recent forecast of avoided electric benefits.7 The costs are the present value of all costs to implement those measures. These costs include measure full or incremental costs (depending on the type of measure), but exclude incentive payments that offset measure costs to customers. Utility lost revenues are also excluded. For measure level screening, non-incentive program costs were excluded. Non-incentive program costs were included in the analysis of portfolio cost-effectiveness, which included the potential for measures that passed the cost-effectiveness screening. Measures were treated as passing the cost-effectiveness screening with a benefit-cost ratio of 0.85. Sector portfolios were all found to have cost-effectiveness greater than 1.0, detailed below in the results section.

To develop the present value of benefits and costs, GDS applied Entergy's weighted average cost of capital[8] as the discount rate. Additionally, GDS utilized an inflation rate of 2%, applying the inflation rate to future program non-incentive costs, while not inflating future measure costs. Inflating the program non-incentive costs reflects general cost factors associated with increasing personnel salaries, marketing, or other program operational expenses.

2.1.3.6 Retail Rates

Retail rates do not influence the TRC results. However, for analyzing C&I sector adoption rates, the simple payback period was used to estimate the impact of customer measure costs net of incentives. This data aligns with the Delphi panel approach for the C&I sector adoption curves, which are based on measure adoption levels and timing due to simple customer payback periods. The rate used to estimate simple payback was based on Entergy's current rate schedule.

[6] GDS has noted that measure costs in TRMs do not show significant changes over time. For example, the deemed measure cost assumptions included in the Illinois TRM from 2012 (v1) through 2018 (v7) found no changes to measure costs across 80% of residential and business measures.

[7] These avoided costs are treated as Highly Sensitive Protected Materials and not disclosed in this report.

[8] Entergy's weighted average cost of capital is Highly Sensitive Protected Material and not disclosed.

2.1.4 Types of Potential

Potential studies often distinguish between several types of energy efficiency potential: technical, economic, and various forms of achievable potential. The first two types of potential, technical and economic, provide a theoretical upper bound for energy savings from energy efficiency measures. Still, even the best-designed portfolio of programs is unlikely to capture 100 percent of the technical or economic potential. Therefore, achievable potentials attempt to estimate what savings may realistically be achieved through market interventions, when it can be captured, and how much it would cost to do so. In this analysis, achievable potentials included an assessment of a high case achievable potential (HCAP), a reference achievable potential case (RAP), and a 2% of energy sales case (the 2% Council Policy Case). For the achievable cases, various assumption regarding the level of incentives and program effectiveness at moving a market were made to drive the outcomes. The RAP reflects the current level of incentives and level of savings as a percent of sales currently achieved by Entergy. The other two cases reflect higher incentives and program effectiveness.

Figure 4-2 illustrates the types of energy efficiency potential considered in this analysis.

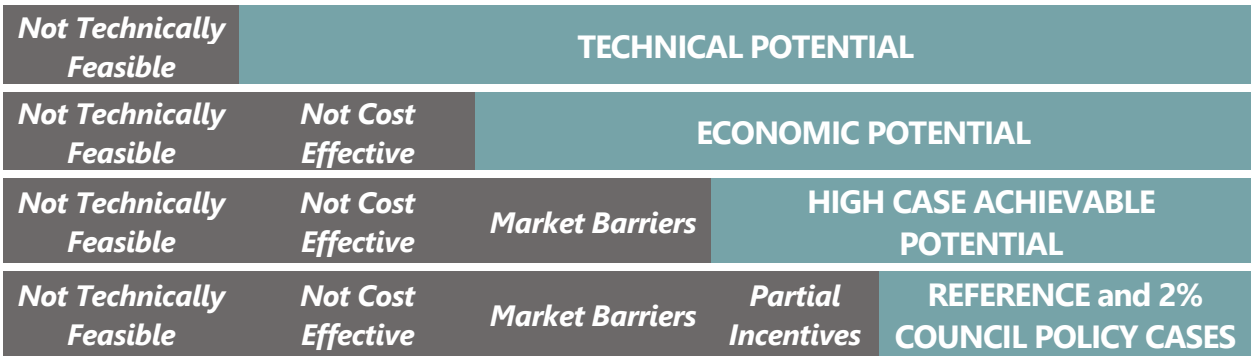


FIGURE 2-3. TYPE OF ENERGY EFFICIENCY POTENTIAL[9]

Each type of potential is described in more detail, below.

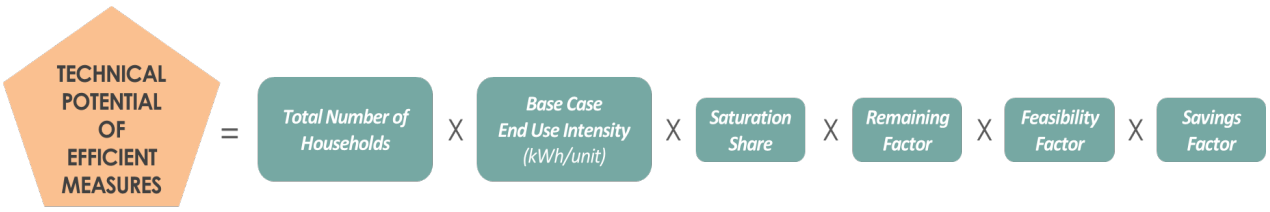
2.1.5 Technical Potential

Technical potential is the theoretical maximum amount of energy use that could be displaced by efficiency, disregarding all non-engineering constraints such as cost-effectiveness and the willingness of end users to adopt the efficiency measures. Technical potential only constrained by factors such as technical feasibility of measures. Under technical potential, GDS assumes that 100% of new construction and market opportunity measures are adopted as those opportunities become available (e.g., as new buildings are constructed, they immediately adopt efficiency measures, or as existing measures reach the end of their useful life). For retrofit measures, implementation will be assumed to be resource constrained and that it is not possible to install all retrofit measures all at once. Rather, retrofit opportunities will be assumed to be replaced incrementally until 100% of stock will be converted to the efficient measure over a period of no more than 19 years.

The core equation used in the residential sector energy efficiency technical potential analysis for each individual efficiency measure is shown in Equation 4-1 below. The C&I sector employs a similar analytical approach, but with the top-down approach utilizes the building-type energy load share in place of the count of households.

[9] Reproduced from "Guide to Resource Planning with Energy Efficiency." November 2007. US Environmental Protection Agency (EPA). Modified to depict the levels of achievable and program potential cases included in this study.

EQUATION 2-1. CORE EQUATION FOR RESIDENTIAL SECTOR TECHNICAL POTENTIAL



Where…

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

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

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

Feasibility Factor = (also functions as the applicability factor) the fraction of the applicable units that is technically feasible for conversion to the most efficient available technology from an engineering perspective (e.g., it may not be possible to install heat pump water heaters in all homes because of space limitations).[10]

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

2.1.5.1 Competing Measures & Interactive Effects Adjustments

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

Baseline Saturation Adjustment. Competing measure shares may be factored into the baseline saturation estimates. For example, nearly all homes can receive insulation, but the analysis will create multiple measure permutations to account for varying impacts of different heating/cooling combinations and will apply baseline saturations to reflect proportions of households with each heating/cooling combination.

Feasibility Factor Adjustment. GDS combines measures into measure groups, where total applicability factor across measures is set to 100%. For example, homes cannot receive a programmable thermostat, connected thermostat, and smart thermostat. In general, the models assign the measure with the most savings the greatest feasibility factor in the measure group, with competing measures picking up any remaining share.

In instances where there are two (or more) competing technologies for the same electrical end use, such as heat pump water heaters with different tiers of efficiency, an applicability factor aids in determining the proportion of the available population assigned to each measure. In estimating the technical potential, measures with the most savings are given priority for installation. The applicability factors for Economic Potential and the achievable cases are adjusted to account for cost-effectiveness screening results.

Interactive Savings Adjustment. As savings are introduced from select measures, the per-unit savings from other measures need to be adjusted (downward) to avoid over-counting. The analysis typically

prioritizes market opportunity equipment measures (versus retrofit measures that can be installed at any time). For example, the savings from a smart thermostat are adjusted down to reflect the efficiency gains of installing an efficient air conditioner. The analysis also prioritizes efficiency measures relative to conservation (behavioral) measures. These impacts are accounted for in all phases of estimated potential savings.

2.1.6 Economic Potential

Economic potential refers to the subset of the technical potential that is economically cost-effective (based on screening with the TRC Test) as compared to conventional supply-side energy resources. Both technical and economic potential ignore market barriers to ensuring actual implementation of energy efficiency. Finally, they typically only consider the costs of efficiency measures themselves, ignoring any programmatic costs (e.g., marketing, analysis, administration, program evaluation, etc.) that would be necessary to capture them.

The TRC test calculations in this study follow the prescribed methodology detailed in the latest version of the California Standard Practice Manual (CA SPM). The California Standard Practice Manual establishes standard procedures for cost-effectiveness evaluations for utility-sponsored or public benefits programs and is generally considered to be an authoritative source for defining cost-effectiveness criteria and methodology. This manual is often referenced by many other states and utilities.

The TRC Test was used as the screening test for measure, program, and portfolio cost-effectiveness for inclusion in economic potential and achievable cases. In each year of the analysis, the benefits of each measure are calculated as the cumulative energy and demand impact multiplied by all applicable avoided costs; the net present value of annual lifetime benefits are then compared against the cost of each measure.

All measures that are not found to be cost-effective with a ratio of at least 0.85 based on the results of the measure-level cost effectiveness screening were excluded from the economic potential and achievable cases. Feasibility factors were then re-adjusted and applied to the remaining measures that are cost effective, where appropriate.

2.1.7 Achievable Potential

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

- ***High Case Achievable Potential*** estimates achievable potential from aggressive adoption rates based on paying incentives equal to 100% of measure incremental costs and increased program awareness.
- ***2% Council Policy Case*** estimates achievable potential in-line with Council policy, reflecting a 0.2% increase in savings as a percent of sales until savings as a percent of sales achieves 2%.
- ***Reference Achievable Potential*** estimates achievable potential with Entergy paying incentive levels (as a percent of incremental measure costs) and program awareness closely calibrated to historical levels but is not constrained by any previously determined spending levels.

2.1.7.1 Achievable Adoption Rates

The assumed level of customer participation for each energy efficiency measure is a key driver of market potential estimates. To inform estimates of future market adoption, the GDS team relied on both the historical PY9 Entergy programs, Entergy's PY10 through PY12 plan, as well as end-use long-term adoption rate estimates. The use of historical performance and near-term plans as references provides a point-estimate to serve as an initial "ground floor" market adoption rate while the final adoption rates reflect the presence of possible market barriers and associated difficulties in achieving the 100% market adoption assumed in the technical and economic scenarios.

Initial Year Measure Adoption. First year adoption levels were informed by Entergy's PY9's historical adoption rates and PY10 through PY12 planned adoption rates. These guided the starting 2021 adoptions, from which the several achievable adoption scenarios then reflected the various program assumptions in subsequent years.

Long-Term Market Adoption Rates. Long-term market adoption rate estimates were derived from several sources. The Delphi panel provided expert local input to inform both residential and C&I maximum adoption rates under varying incentive levels or simple payback periods. These long-term adoption rates were then adjusted for the 2% Council Policy Case and High Case Achievable Potential, reflecting adjustments in incentives and program effectiveness. The details of the Delphi Panel approach and results are presented in Appendix B. The results of the long-term market adoption rates informed by the Delphi Panels are presented below.

In all technology cases, one can see that measures with lower incentive levels or longer simple payback periods are expected to achieve lower maximum adoption levels than those with higher incentive levels or shorter simple payback periods, indicating the importance of incentives to drive market adoption.

TABLE 2-1. RESIDENTIAL SECTOR MAXIMUM ADOPTION RATES

Generic Measure Description/Category	100% Incentive	75% Incentive	50% Incentive	25% Incentive	0% Incentive
LED/Appliance (ROB)	75.2%	66.5%	56.5%	41.0%	29.0%
HVAC/WH Equip (ROB)	79.0%	66.5%	52.5%	35.8%	22.5%
Early Replacement	46.0%	34.1%	23.0%	11.0%	4.2%
Retrofit ($)	67.5%	62.5%	46.2%	34.0%	25.6%
Retrofit ($$)	65.0%	52.6%	40.7%	24.6%	15.0%
Retrofit ($$$)	49.9%	35.0%	22.6%	12.0%	4.6%

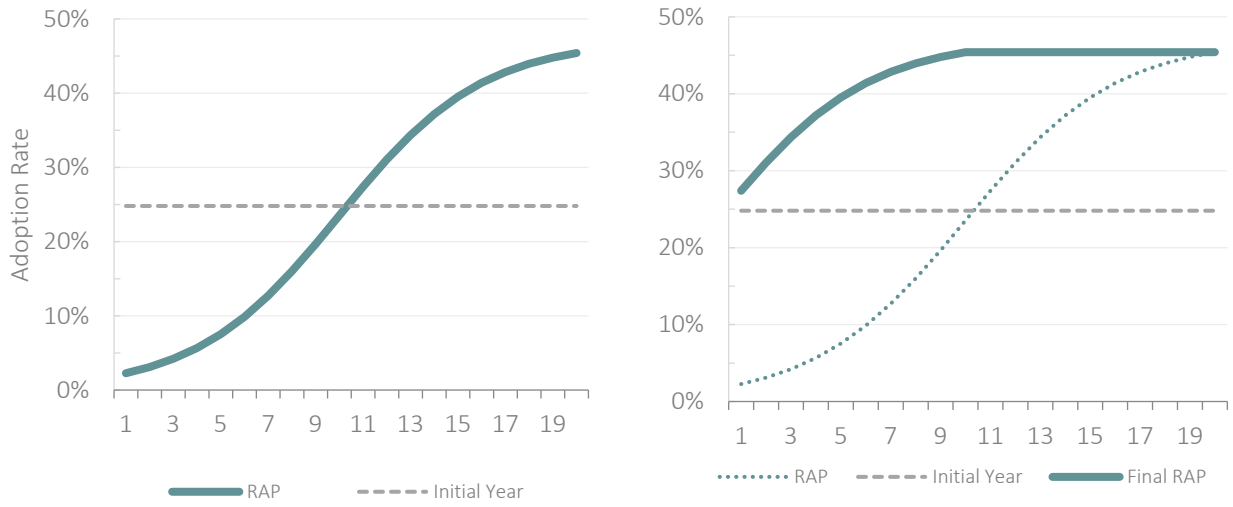
TABLE 2-2. C&I SECTOR MAXIMUM ADOPTION RATES

Generic Measure Description/Category	0 Year Payback	1 Year Payback	2 Year Payback	4 Year Payback	8 Year Payback
Lighting / ROB $	80.5%	64.4%	50.3%	38.5%	22.9%
HVAC / ROB $$$	83.0%	59.3%	49.4%	37.6%	24.7%
Early Replacement	36.8%	24.6%	15.7%	9.3%	8.8%
SEM/RCx/EMS / Retrofit $	71.0%	55.2%	44.3%	30.5%	21.4%
Cooking / Compressed Air / Industrial Process	76.7%	49.7%	43.9%	38.5%	26.7%
Retrofit $$$	68.3%	42.0%	37.0%	31.6%	19.1%

Adoption Curves. Once the initial year adoption rate and long-term adoption rates are determined, the remaining step was to determine the rate and duration to get from the first year adoption rate to the long term, which was never treated as greater than the 20 year forecast period. The 1st year point estimate (based on the historical calibration targets) was then used to establish the number of years remaining to reach the long-term adoption rate and the slope of adoption.

In the illustrative figure below (Figure 3-3), the initial s-shaped curve (left chart) reaches a long-term adoption rate of 45% of the annual eligible market over a period of 20 years. However, the initial year calibration indicates that the program has historically reached 25% of the annual eligible market. The curve (right chart) is reset so that the initial year adoption aligns with recent historical levels and the 45% long-term adoption rate target is reached in a shortened period of 9 years.

FIGURE 2-4. EXAMPLE INITIAL ADOPTION CURVE (LEFT) AND FINAL ADJUSTED ADOPTION CURVE (RIGHT) FOR ESTIMATING ACHIEVABLE POTENTIAL



2.1.7.2 Program Costs

GDS conducted a review of Entergy's PY9 program costs and savings. Program costs were split between incentive and non-incentive costs and converted to a dollars per kWh metric. This metric allows for scaling program costs to different levels of energy savings and adoption cases. The key metrics, for each of the residential and C&I sectors include:

- Verified Energy Savings, by sector, for PY9
- Non-incentive costs ($ per 1st-year kWh saved) from PY9
    - $0.105 per kWh savings residential
    - $0.11 per kWh savings C&I

The incentive costs were developed for each case and then combined with the non-incentive per kWh budget to arrive at annual budgets that would meet each case's kWh savings.

Consistent with National Action Plan for Energy Efficiency (NAPEE) guidelines[11], utility non-incentive costs were also included in the overall assessment of cost-effectiveness in the economic potential and

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

achievable cases. Non-incentive costs were escalated by the rate of inflation, from the Initial Year (2021, PY11).

2.2 ENERGY EFFICIENCY POTENTIAL FINDINGS

Figure 2-5 provides the technical, economic, HCAP, RAP, and 2% policy case results for the 3-year, 10-year, and 20-year timeframes. Over the duration of the study timeframe the technical and economic potential reach 43% and 38% of forecasted sales, respectively. This relatively close alignment of technical and economic potential suggests that a large portion of the technical potential is cost-effective. The HCAP case reaches 29% of forecasted ENO 2041 sales (or 76% of the economic potential). The RAP and 2% policy case achieve respectively to 21% and 23% of forecasted sales over the study timeframe. The gap between economic potential and the achievable policy cases represents market barriers to prospective program participants, both financial and non-financial, to achieving the full amount of economic potential.

FIGURE 2-5. OVERVIEW OF ELECTRIC ENERGY EFFICIENCY POTENTIAL

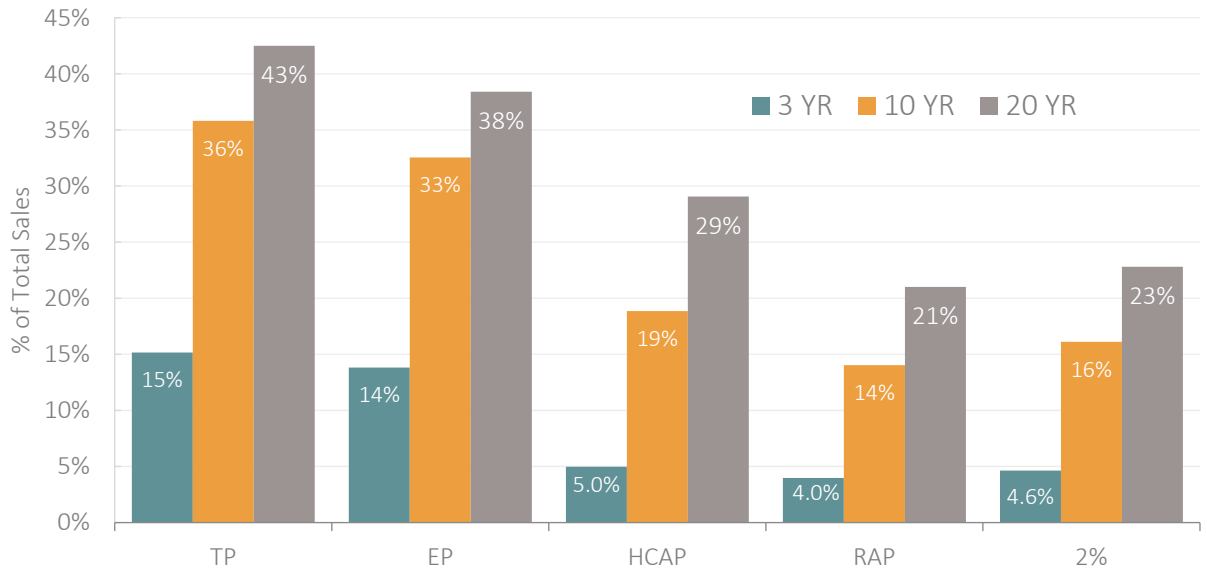


Table 2-3 shows the incremental energy and demand savings per year for each case. Figure 2-6 shows the cumulative annual energy savings for each case.

TABLE 2-3. ANNUAL INCREMENTAL ACHIEVABLE ENERGY EFFICIENCY SAVINGS BY CASE

Year	Energy (GWh/Year)			Peak Demand (MW)		
	RAP	HCAP	2%	RAP	HCAP	2%
2021	79	98	86	17	19	19
2022	87	106	98	21	23	24
2023	90	110	110	22	26	27
2024	91	115	116	23	26	29
2025	94	121	116	24	27	30
2026	99	128	116	27	30	31
2027	103	136	116	30	33	33
2028	106	142	109	33	35	32
2029	107	145	111	35	37	34
2030	105	143	109	36	38	35

Year	Energy (GWh/Year)			Peak Demand (MW)		
	RAP	HCAP	2%	RAP	HCAP	2%
2031	101	137	106	35	37	35
2032	94	129	100	33	35	33
2033	86	118	92	30	32	30
2034	79	106	84	26	28	26
2035	71	96	76	23	24	23
2036	72	99	79	20	22	21
2037	66	90	71	17	19	18
2038	60	80	66	15	16	16
2039	56	75	63	13	15	14
2040	53	71	58	11	13	12

FIGURE 2-6. CUMULATIVE ANNUAL ACHIEVABLE ELECTRIC ENERGY SAVINGS POTENTIAL BY CASE

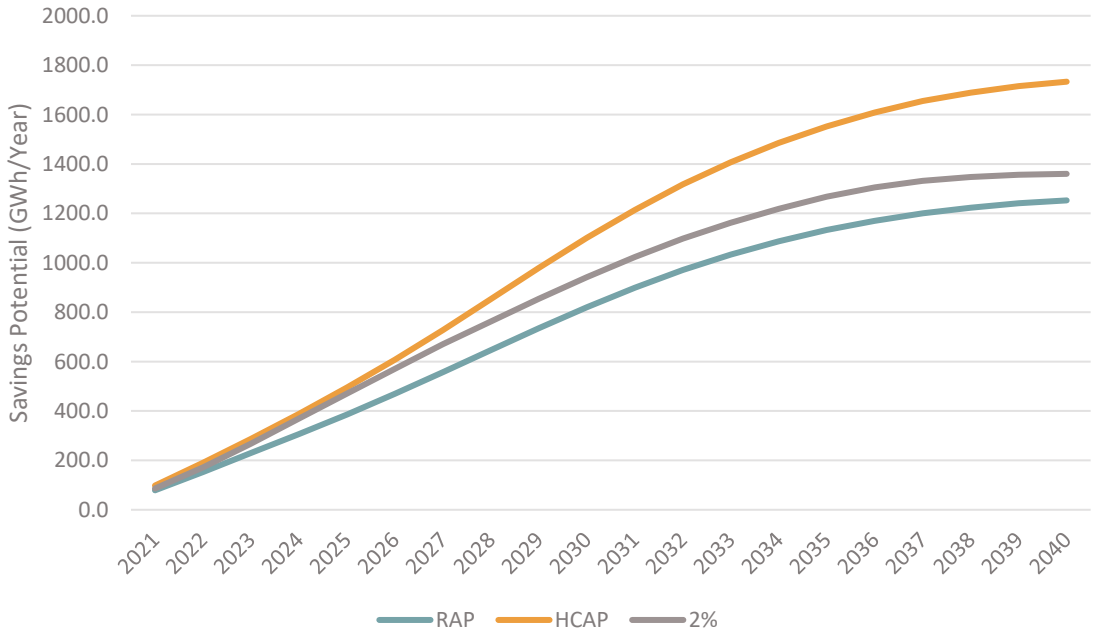


Table 2-4 shows the incremental electric energy achievable savings as a percentage of ENO's total sales for each case. For the 2% case, savings increase by 0.2% a year in 2021-2023, and 2% savings per year from 2024-2027. Savings decrease over time as energy efficiency potential becomes more limited in the second decade on an incremental annual basis. The 2% policy case is slightly higher than the RAP case because of higher incentives and increased marketing awareness. The HCAP, which assumes incentives that are equal to the incremental measure cost, can sustain 2% savings over a longer period, though again, savings decrease during the second decade as remaining efficiency potential from measures included in this analysis are depleted. However, over a long-term study horizon, new technologies and program designs could result in additional cost-effective energy savings.

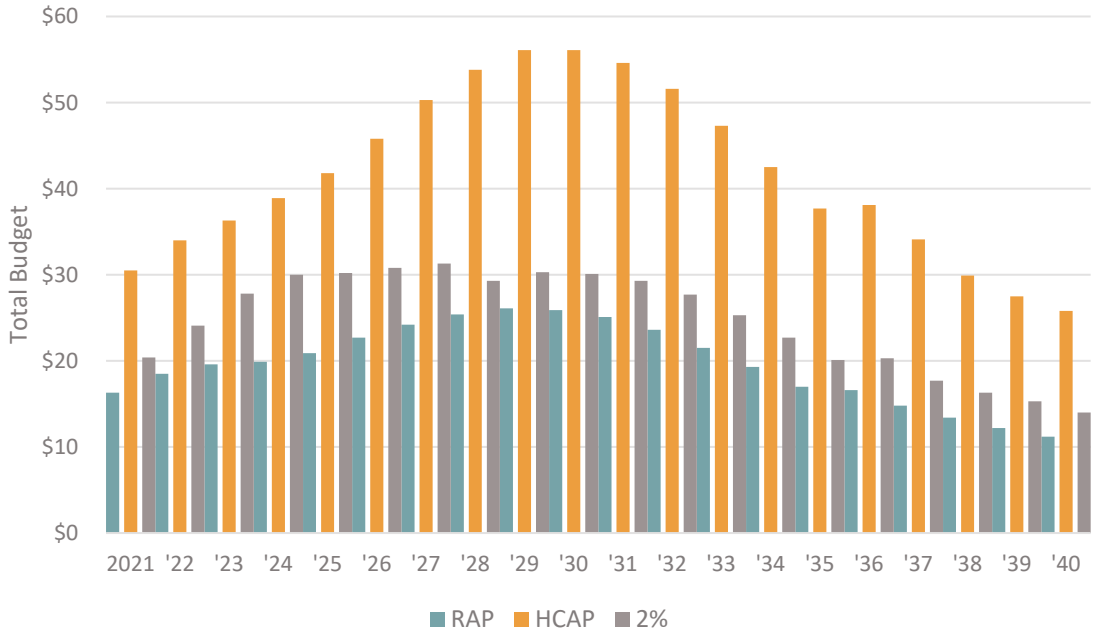
TABLE 2-4. ANNUAL INCREMENTAL ELECTRIC ENERGY SAVINGS POTENTIAL (AS A % OF SALES) BY CASE

Year	RAP	HCAP	2%
2021	1.4%	1.7%	1.5%
2022	1.5%	1.8%	1.7%
2023	1.6%	1.9%	1.9%
2024	1.6%	2.0%	2.0%

Year	RAP	HCAP	2%
2025	1.6%	2.1%	2.0%
2026	1.7%	2.2%	2.0%
2027	1.8%	2.3%	2.0%
2028	1.8%	2.4%	1.9%
2029	1.8%	2.5%	1.9%
2030	1.8%	2.4%	1.9%
2031	1.7%	2.3%	1.8%
2032	1.6%	2.2%	1.7%
2033	1.5%	2.0%	1.6%
2034	1.3%	1.8%	1.4%
2035	1.2%	1.6%	1.3%
2036	1.2%	1.7%	1.3%
2037	1.1%	1.5%	1.2%
2038	1.0%	1.3%	1.1%
2039	0.9%	1.3%	1.0%
2040	0.9%	1.2%	1.0%

The total costs for each case are provided in Figure 2-7. Total costs are comparable between the RAP and 2% policy case, with differences aligned with the savings achieved in both cases. However, the HCAP case demonstrates significantly higher costs as a result of the corresponding modeling assumption that incentives are equivalent to 100% of the modeled incremental measure cost. Overall, incentives average between 50%-55% in the RAP and 2% policy cases. In the HCAP case, incentives are roughly 70% of the overall costs.

FIGURE 2-7. ANNUAL BUDGETS FOR ACHIEVABLE POTENTIAL BY CASE ($ MILLIONS/YEAR)



GDS calculated TRC ratios for each measure based on the present value of the benefits and costs over each measure's effective useful life. GDS also examined the overall electric energy efficiency portfolios TRC ratio for each policy case. The TRC ratios for these cases are provided in Table 2-5. Despite the large increase in incentives noted above, the HCAP case remains cost effective. It is important to note that incentives are considered a transfer payment under the TRC Test and do not directly affect the TRC Test result. However, as

noted from the Delphi Panel research, increased incentives are expected to result in increased market adoption rates for all measures and results in less cost-effective measures included in the overall analysis.

TABLE 2-5. PORTFOLIO TRC BENEFIT-COST RATIOS FOR ACHIEVABLE POTENTIAL BY CASE

Year	RAP	HCAP	2%
2021-2040	2.6	1.8	2.5

2.2.1 Residential Results

Figure 2-8 provides a summary of the cumulative annual electric energy efficiency potential results across the 2021-2023 (3YR) timeframe, as well as for 2030 (10th-year) and 2040 (20th-year). The technical potential represents 47% of residential sales in 2040. Economic potential, a subset of technical, represents 41% of sales. Achievable potential in the 20th year ranges from 26%-31% by case.

FIGURE 2-8. OVERVIEW OF RESIDENTIAL ELECTRIC ENERGY EFFICIENCY POTENTIAL

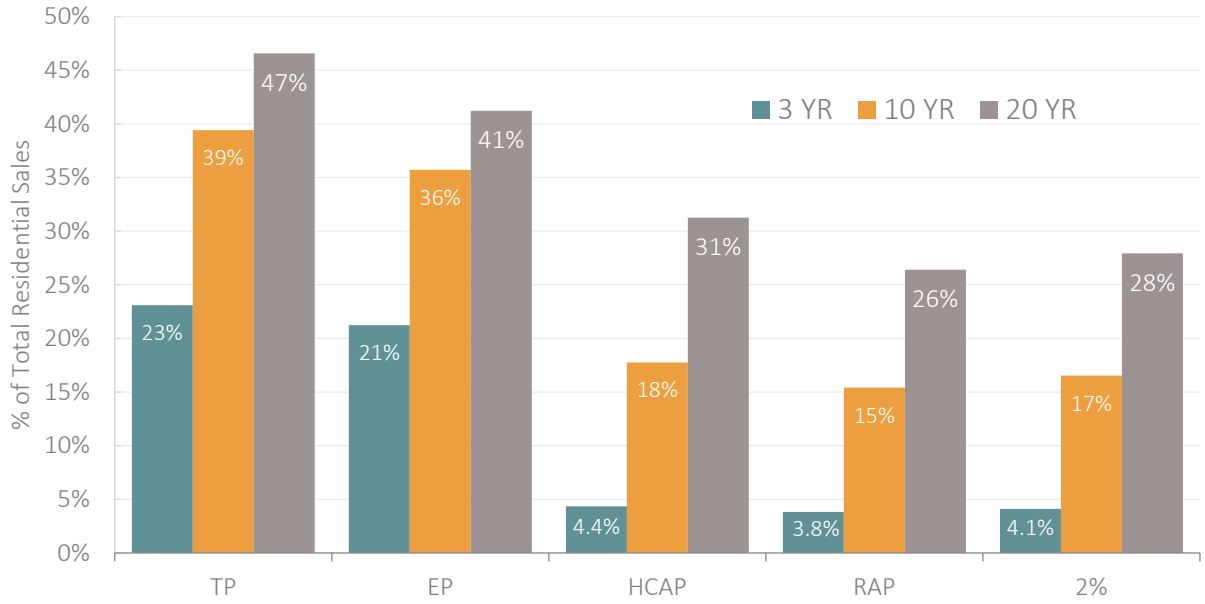


Table 2-7 shows the residential incremental electric energy achievable savings, by case, as a percentage of ENO's total residential sales. The reference case achievable averages 2.1% of residential sales. The high case achievable averages 2.4% of residential sales, and the 2% case averages 2.2% of residential sales.

TABLE 2-6. INCREMENTAL ANNUAL RESIDENTIAL ELECTRIC ENERGY ACHIEVABLE POTENTIAL SAVINGS BY CASE (AS A % OF RESIDENTIAL SALES)

Year	RAP	HCAP	2%
2021	1.47%	1.64%	1.48%
2022	1.70%	1.89%	1.78%
2023	1.80%	2.00%	1.98%
2024	1.87%	2.08%	2.12%
2025	1.97%	2.19%	2.22%
2026	2.17%	2.42%	2.38%
2027	2.37%	2.64%	2.53%
2028	2.55%	2.86%	2.55%
2029	2.68%	3.01%	2.69%

Year	RAP	HCAP	2%
2030	2.72%	3.07%	2.75%
2031	2.74%	3.10%	2.79%
2032	2.64%	3.02%	2.69%
2033	2.46%	2.83%	2.51%
2034	2.28%	2.64%	2.32%
2035	2.09%	2.43%	2.14%
2036	1.95%	2.30%	2.02%
2037	1.80%	2.14%	1.87%
2038	1.65%	1.99%	1.75%
2039	1.57%	1.92%	1.69%
2040	1.48%	1.82%	1.59%

Figure 2-13 provides the cumulative annual achievable potential across the 20-yr timeframe of the study. The reference case and 2% policy case achieve similar levels of potential by the 20th year, with the 2% policy case achieving the savings at an overall quicker pace in the first decade. The HCAP case aligns with the 2% policy case in early years but achieves nearly 31% of residential sector sales by 2040.

FIGURE 2-9 RESIDENTIAL ELECTRIC ENERGY CUMULATIVE ANNUAL ACHIEVABLE SAVINGS POTENTIAL BY CASE

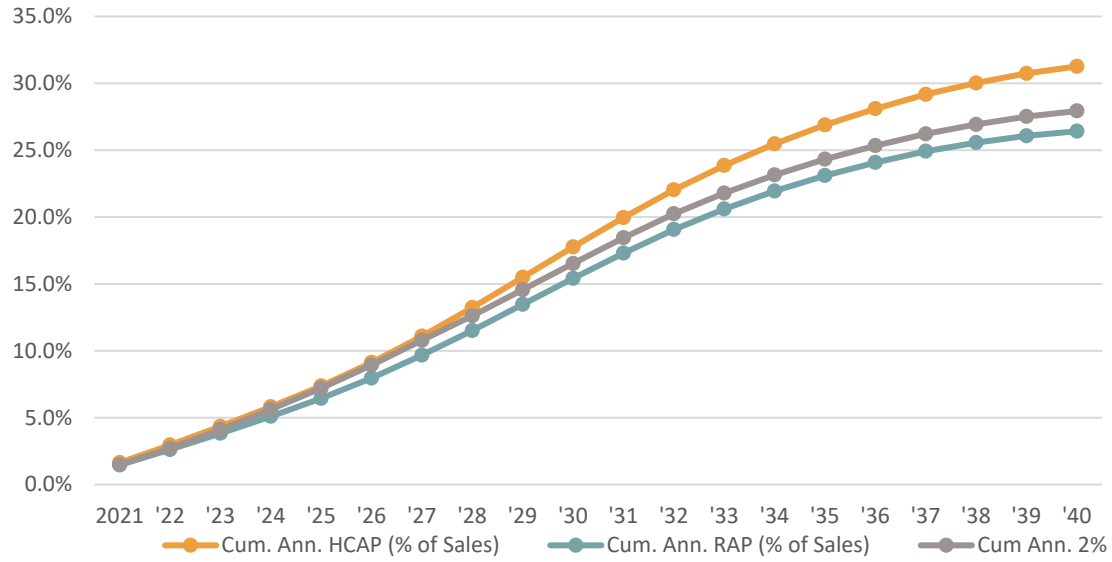


Figure 2-10 and Figure 2-11 provide a breakdown of the RAP potential in 2040 across end-uses and building type market segments. In the near-term, behavioral savings provide the greatest savings opportunity at 37% of the total in 2021. Over the long-term, HVAC measures and Building Envelope provide the greatest cumulative annual savings opportunity at close to 70% of the total by 2040. Existing single-family non-low-income ("NLI") homes provide the greatest potential among the housing type-income type market segments. Over time, the low-income segments and new construction segment grow as a proportion of the total, from 22% in 2021 to 26% in 2040.

FIGURE 2-10. RESIDENTIAL POTENTIAL BY END-USE AND BUILDING TYPE – RAP 2021

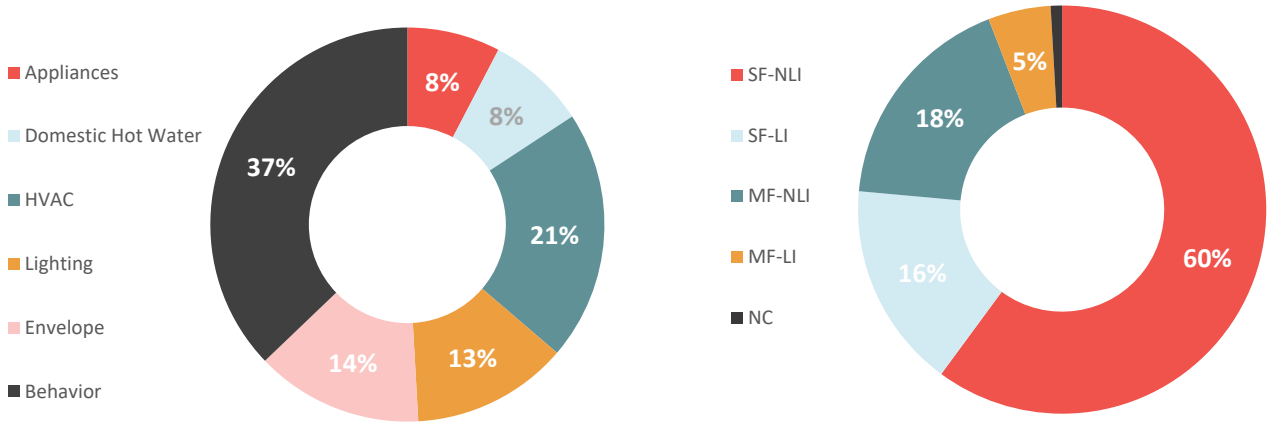
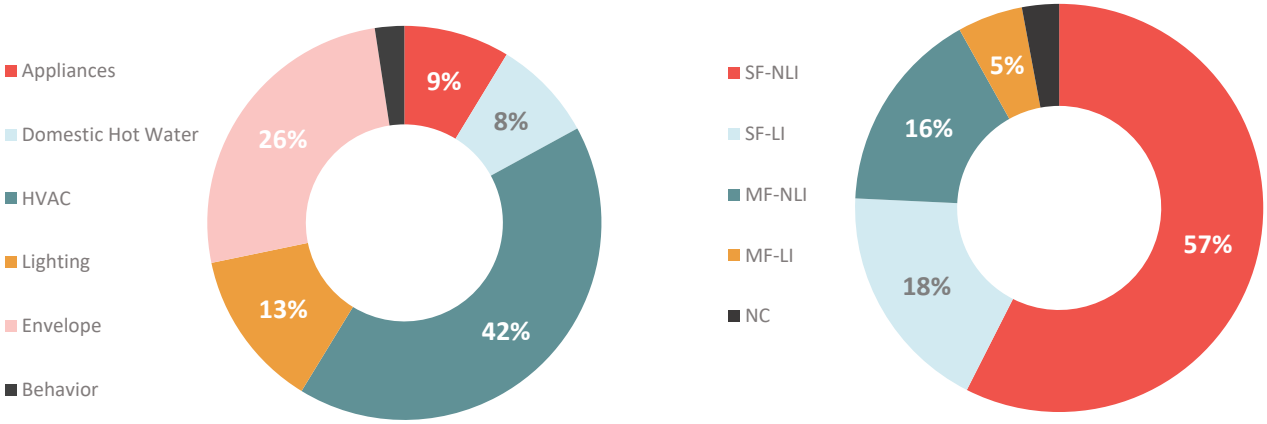


FIGURE 2-11. RESIDENTIAL POTENTIAL BY END-USE AND BUILDING TYPE – RAP 2040



2.2.2 C&I Energy Efficiency Potential

Figure 2-12 provides a summary of the cumulative annual electric energy efficiency potential results across the 2021-2023 (3YR) timeframe, as well as for 2030 (10th-year) and 2040 (20th-year). The technical potential represents 40% of C&I sales in 2040. Economic potential, a subset of technical, represents 37% of sales. Achievable potential in the 20th year ranges from 18%-28% by case.

FIGURE 2-12. OVERVIEW OF C&I ELECTRIC ENERGY EFFICIENCY POTENTIAL

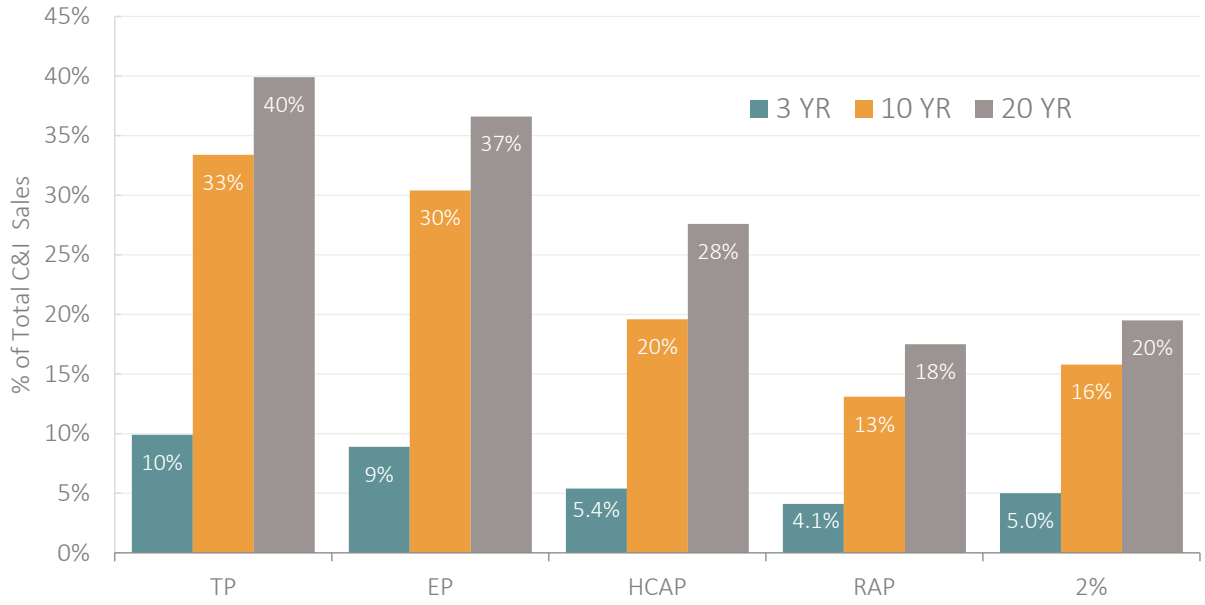


Table 2-7 shows the C&I incremental electric energy achievable savings, by case, as a percentage of ENO's total C&I sales. The reference case achievable averages 1.0% of C&I sales. The high case achievable averages 1.6% of C&I sales, and the 2% case averages 1.2% of sales. In the 2% case, C&I sector savings alone do not reach 2% of sales; residential and C&I savings need to be combined to meet the 2% goal.

TABLE 2-7. INCREMENTAL ANNUAL C&I ELECTRIC ENERGY ACHIEVABLE POTENTIAL SAVINGS BY CASE (AS A % OF C&I SALES)

Year	RAP	HCAP	2%
2021	1.3%	1.8%	1.5%
2022	1.4%	1.8%	1.6%
2023	1.4%	1.9%	1.8%
2024	1.4%	1.9%	1.9%
2025	1.4%	2.0%	1.9%
2026	1.4%	2.1%	1.8%
2027	1.4%	2.2%	1.7%
2028	1.3%	2.2%	1.4%
2029	1.3%	2.1%	1.4%
2030	1.2%	2.0%	1.3%
2031	1.0%	1.8%	1.2%
2032	0.9%	1.6%	1.1%
2033	0.8%	1.4%	0.9%
2034	0.7%	1.3%	0.8%
2035	0.6%	1.1%	0.7%
2036	0.7%	1.3%	0.9%
2037	0.7%	1.1%	0.8%
2038	0.6%	0.9%	0.7%
2039	0.5%	0.8%	0.6%
2040	0.5%	0.8%	0.6%

Figure 2-13 provides the cumulative annual achievable potential across the 20-yr timeframe of the study. The reference case and 2% policy case achieve similar levels of potential by the 20th year, with the 2% policy case achieving the savings at an overall quicker pace in the first decade. The HCAP case aligns with the 2% policy case in early years but achieves nearly 28% of C&I sector sales by 2040, significantly more than the other two achievable cases.

FIGURE 2-13.C&I ELECTRIC ENERGY CUMULATIVE ANNUAL ACHIEVABLE SAVINGS POTENTIAL BY CASE

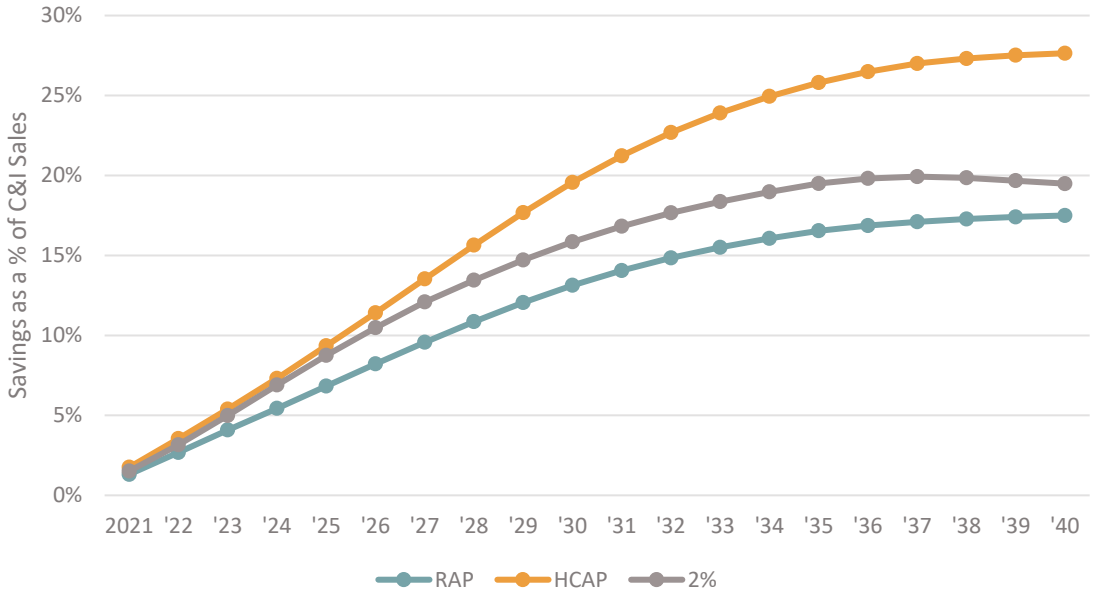


Figure 2-14. provides a breakdown of the RAP potential, across end-uses and building type market segments, in 2021 and 2040, respectively. While lighting is the dominant end-use for C&I savings early on, savings from heating and cooling and total facility energy efficiency measures increase over time and represent significant shares of C&I savings by 2040. Small office and other commercial facilities contribute the most savings for the C&I sector, followed by higher education and lodging. The share of savings by building type does not shift dramatically over the study horizon.

FIGURE 2-14. C&I POTENTIAL BY END-USE AND BUILDING TYPE – RAP 2021

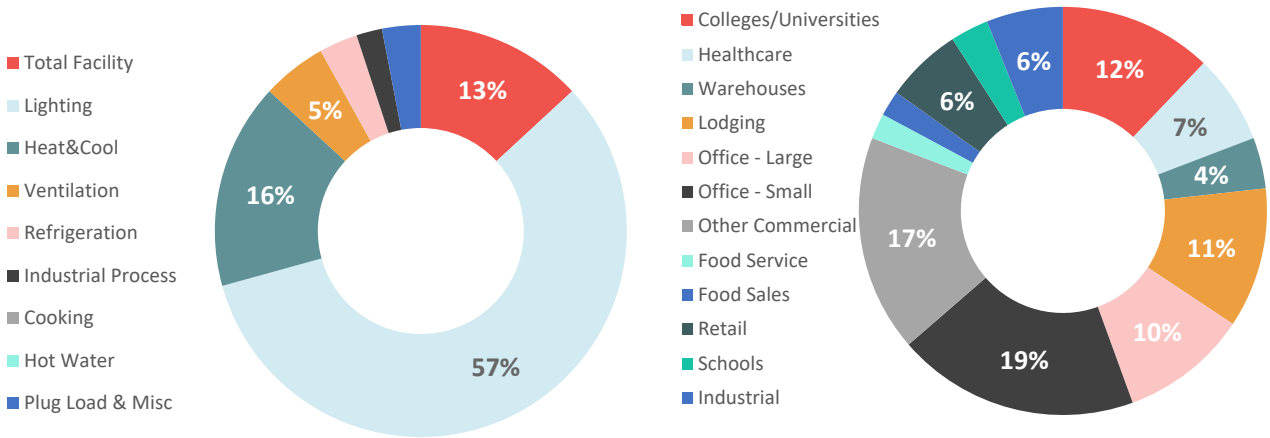
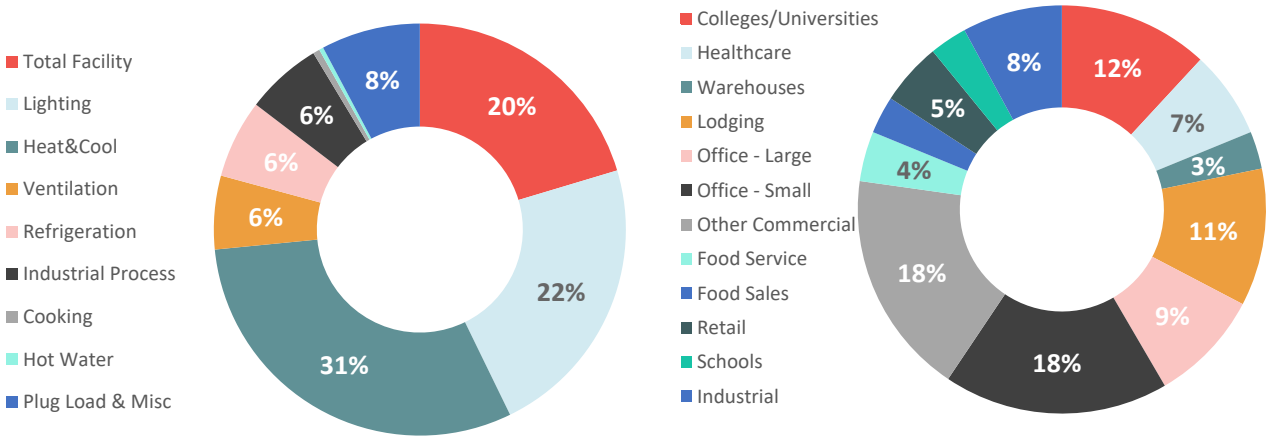


FIGURE 2-15. C&I POTENTIAL BY END-USE AND BUILDING TYPE – RAP 2040 (CUMULATIVE ANNUAL)



3 Demand Response Potential Results

3.1 ANALYSIS APPROACH

This section provides an overview of the demand response potential methodology.

3.1.1 Demand Response Program Options

Table 3-1 a brief description of the demand response (DR) program options considered and identifies the eligible customer segment for each demand response program that was considered in this study. This includes direct load control (DLC), rate, and aggregator design options.

TABLE 3-1. DEMAND RESPONSE PROGRAM OPTIONS AND ELIGIBLE MARKETS

Demand Response Option	Description	Eligible Sectors
DLC of Air Conditioners (Thermostats)	The compressor of the air conditioner is remotely shut off (cycled) by the system operator for periods that may range from 7 ½ to 15 minutes during every 30-minute period (i.e., 25%-50% duty cycle). Controlled via smart thermostat. Participant has option to override control.	Residential, Small C&I
DLC of Air Conditioners (Switches)	The compressor of the air conditioner is remotely shut off (cycled) by the system operator for periods that may range from 7 ½ to 15 minutes during every 30-minute period (i.e., 25%-50% duty cycle). Controlled via load control switch. Participant cannot override control.	Residential, Small C&I
DLC of Electric Water Heaters	The water heater is remotely shut off by the system operator for periods normally ranging from 2 to 8 hours.	Residential, Small C&I
DLC of Swimming Pool Pumps	The swimming pool pump is remotely shut off by the system operator for periods normally ranging from 2 to 4 hours.	Residential, Small C&I
DLC of Lighting	A portion of the lighting load (typically 25-33%) is remotely shut off by the system operator for periods normally ranging from 2 to 4 hours	Small C&I
DLC of Room Air Conditioners	The compressor of the air conditioner is remotely shut off (cycled) by the system operator for periods that may range from 7 ½ to 15 minutes during every 30-minute period (i.e., 25%-50% duty cycle). Controlled via load control switch. Participant cannot override control.	Residential, Small C&I
Critical Peak Pricing with Enabling Technology	A retail rate in which an extra-high price for electricity is provided during critical periods (e.g. 100 hours) of the year. Prices can be fixed or fluctuate with the market. Market-based prices are typically provided on a day-ahead basis, or an hour-ahead basis. Participants are required to have enabling technology (usually a smart thermostat) to help more consistently control the load during peak hours.	Residential, Small C&I, Large C&I

Demand Response Option	Description	Eligible Sectors
Critical Peak Pricing without Enabling Technology	A retail rate in which an extra-high price for electricity is provided during critical periods (e.g. 100 hours) of the year. Prices can be fixed or fluctuate with the market. Market-based prices are typically provided on a day-ahead basis, or an hour-ahead basis. Participants not are required to have enabling technology.	Residential, Small C&I, Large C&I
Time of Use Rate with Enabling Technology	A retail rate with different prices for usage during different blocks of time. Daily pricing blocks could include on-peak, mid-peak, and off-peak periods. Participants are required to have enabling technology (usually a smart thermostat) to help more consistently control the load during peak hours.	Residential, Small C&I
Time of Use Rate without Enabling Technology	A retail rate with different prices for usage during different blocks of time. Daily pricing blocks could include on-peak, mid-peak, and off-peak periods. Participants are not required to have enabling technology.	Residential, Small C&I
Interruptible Rate	A discounted rate is offered to the customer for agreeing to interrupt or curtail load during peak period. The interruption is mandatory. No buy-through options are available.	Large C&I
Charging of Electric Vehicles Off Peak	Special rate service for electric vehicles that charge off-peak.	Residential, Small C&I
Charging of Electric Utility Vehicles Off Peak	Special rate service for electric vehicles that charge off-peak.	Small C&I
Charging of Golf Carts Off Peak	Special rate service for golf courses that charge electric golf carts off-peak.	Golf Courses
Electric Thermal Storage Rate	The use of a cold storage medium such as ice, chilled water, or other liquids. Off-peak energy is used to produce chilled water or ice for use in cooling during peak hours. The cool storage process is limited to off-peak periods.	Small C&I
Peak Time Rebate	12.9% Demand Response Market Research:Portland General Electric, 2016 to 2035, The Brattle Group, January 2016.	Residential, Small C&I
Capacity Bidding	Flexible bidding program offering qualified businesses payments for agreeing to reduce load when an event is called. Participants make monthly nominations and receive capacity payments based on the amount of capacity reduction nominated each month, plus energy payments based on your actual kilowatt-hour (kWh) energy reduction when an event is called. The amount of capacity nomination can be adjusted on a monthly basis. The program can be Internet-based, providing ready access to program information and ease-of-use. Penalties occur if load nominations are not met.	Large C&I
Demand Bidding	Year-round, flexible, Internet-based bidding program that offers business customers credits for voluntarily reducing power when a DBP event is called.	Small C&I
Battery Storage	Triggers a power dispatch from battery storage systems that are grid-connected during peak load conditions.	Residential, Small C&I

3.1.1.1 Battery Storage Description

The GDS Team collected information on energy storage technologies from the National Renewable Energy Laboratory (NREL) and from battery manufacturers. The GDS Team obtained the information in this section of our report from an NREL report titled "Energy Storage Technology Modeling Input Data Report".[12] Direct quotes from this NREL report are place in quotation marks. "There is dramatic and growing interest in batteries from both distributed and grid-scale project developers amid recent dramatic price drops in Lithium-Ion Battery (LIB) chemistries. Lowerbattery storage costs combined with significant decreases in solar PV and wind costs have led many experts to postulate that the combination of technologies will be market leaders going forward, something the Storage Futures Study (SFS) will explore."

For its Energy Storage Technology Report, NREL collected battery costs for a variety of technologies. The reports states that "LIBs are the current market growth leader in energy storage deployments, with over 99% market share by capacity deployment in the United States in 2019 (Wood Mackenzie P&R/ESA 2020), but many of the other battery technologies have their own advantages and market niches." Throughout this NREL report, the terms "battery cell", "battery module" and "battery pack" are referenced. "These are stages of assembly of the overall battery system. The battery cell is the smallest unit of the battery system. The battery cells are wired together into a battery module of various cells to achieve a desired voltage level. These modules are then combined into a battery pack which contains sensors and controls to monitor the battery and provide safety controls."

3.1.2 Demand Response Potential Assessment Approach Overview

The analysis of DR, where possible, closely followed the approach outlined for energy efficiency. The framework for assessing the cost-effectiveness of demand response programs is based *on A Framework for Evaluating the Cost-Effectiveness of Demand Response, prepared for the National Forum on the National Action Plan (NAPA) on Demand Response*.[13] Additionally, GDS reviewed the May 2017 National Standard Practice Manual published by the National Efficiency Screening Project.[14] GDS utilized this guide to define avoided ancillary services and energy and/or capacity price suppression benefits.

The demand response analysis was conducted using the GDS Demand Response Model. The Model determines the estimated savings for each demand response program by performing a review of all benefits and cost associated with each program. GDS developed the model such that the value of future programs could be determined and to help facilitate demand response program planning strategies. The model contains approximately 50 required inputs for each program including: expected life, coincident peak ("CP") kW load reductions, proposed rebate levels, program related expenses such as vendor service fees, marketing and evaluation cost and on-going O&M expenses. This model and future program planning features can be used to standardize the cost-effectiveness screening process between Entergy departments interested in the deployment of demand response resources.

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[12] Augustine, Chad; Blair, Nathan, National Renewable Energy Laboratory, "Energy Storage Technology Modeling Input Data Report". This report is available at no cost from the National Renewable Energy Laboratory (NREL) at www.nrel.gov/publications.

[13] Study was prepared by Synapse Energy Economics and the Regulatory Assistance Project, February 2013.

[14] National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources, May 18, 2017, Prepared by The National Efficiency Screening Project

The TRC was used to determine the cost-effectiveness of each demand response program. Benefits are based on avoided demand, energy (including load shifting), wholesale cost reductions and T&D costs. Costs include incremental program equipment costs (such as control switches or smart thermostats), fixed program capital costs (such as the cost of a central controller), program administrative, marketing, and evaluation costs. Incremental equipment program costs are included for both new and replacement units (such as control switches) to account for units that are replaced at the end of their useful life.

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

HCAP represents an estimate of the highest cost-effective demand response potential that can be achieved over the 20-year study period. For this study, this is defined as customer participation in demand response program options that reflect a "best practice" estimate of what could eventually be achieved. HCAP assumes no barriers to effective delivery of programs.

RAP represents an estimate of the amount of demand response potential that can be realistically achieved over the 20-year study period. For this study, this is defined as achieving customer participation in demand response program options that reflect a realistic estimate of what could eventually be achieved assuming typical or "average" industry experience. RAP is a discounted HCAP, by considering program barriers that limit participation, therefore reducing savings that could be achieved.

3.1.3 Avoided Costs

Demand response avoided costs were consistent with those utilized in the energy efficiency potential analysis and were provided by Entergy.[15] The primary benefit of demand responses is avoided generation capacity, resulting from a reduction in the need for new peaking generation capacity. Demand response can also produce energy related benefits. If the demand response option is considered "load shifting", such as direct load control of electric water heating, the consumption of energy is shifted from the control period to the period immediately following the period of control. For this study, GDS assumed that for load shifting, the energy is shifted with additional energy penalty. If the program is not considered to be "load shifting" the measure is turned off during peak control hours, and the energy is that would have been consumed during the control period is saved.

3.1.4 Demand Response Program Assumptions

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

Load Reduction: Demand reductions were based on load reductions found in Entergy's existing demand response programs, and various secondary data sources including the FERC and other industry reports, including demand response potential studies. DLC and thermostat-based DR options were calculated based on a per-unit kW demand reduction whereas rate-based DR options were assumed to reduce a percentage of the total facility peak load. Table 3-2 shows load reduction assumptions for each DR program option.

TABLE 33-2. DEMAND RESPONSE LOAD REDUCTION IMPACTS

Program	Residential Load Reduction (kW)	C&I Load Reduction (kW)
DLC Central AC (Switch)	0.56	N/A
DLC Central AC (Thermostat)	1.0	1.5

[15] Avoided costs are treated as Highly Sensitive Protected Materials and not disclosed in this report.

Program	Residential Load Reduction (kW)	C&I Load Reduction (kW)
DLC Room AC	0.504	N/A
DLC Water Heating	0.4	1.2
DLC Pool Pumps	1.36	N/A
DLC Lighting	N/A	1.97
Interruptible Rate	N/A	209.88
Critical Peak Pricing with Enabling Technology	1.0	5.55
Critical Peak Pricing without Enabling Technology	0.36	1.08
Time of Use with Enabling Technology	0.2	0.84
Time of Use without Enabling Technology	0.16	0.43
Peak Time Rebates	0.4	0.15
Capacity Bidding	N/A	35.0
Demand Bidding	N/A	1.54
PEV Charging Rate	0.66	N/A
Utility Vehicle Charging Rate	N/A	0.66
Golf Cart Charging Rate	N/A	42.75
Thermal Electric Storage Cooling Rate	N/A	19.4
Battery Storage	3.0	25.0

Useful Life: The useful life of equipment used in demand response programs, such as load control switches, smart thermostats, or AMI equipment, was determined using TRMs, and data from manufacturers. This useful life was used to determine when equipment needs to be re-installed in the program after the device has failed, therefore adding a second equipment cost. GDS used a useful life of 20 years for AMI meters[16], 11 years for smart thermostats[17], 10 years for level 2 EV chargers[18], and 15 years for load switches.[19]

Equipment and Incentive Costs: Equipment costs were included for each new participant. Incentives were included for all programs in the Base Case. These costs were either on a per participant, per kW or per kWh basis (noted in Table 3-3).[20]

[16] Ameren Illinois AMI Cost/Benefit Analysis, 2012
[17] Illinois Technical Reference Manual 2018
[18] US DOE, Costs Associated with Non-Residential EV Supply Equipment, 2015
[19] Freeman, Sullivan & Co Cost Effectiveness of CECONY Demand Response Programs 2013; PA Act 129 Order 2013
[20] 4 CSR 240-22.050 (3)(G)5A; 4 CSR 240-22.050 (3)(G)5B

TABLE 33-3. ASSUMED EQUIPMENT AND INCENTIVE COSTS

Sector	Program	Equipment & Installation Cost	Incentive Cost
Residential	DLC Central AC (Switch)	$295	$40/participant-year
	DLC Central AC (Thermostat)	$100	$40/participant-year
	DLC Room AC	$295	$40/participant-year
	DLC Water Heating	$295	$40/participant-year
	DLC Pool Pumps	$146	$40/participant-year
	Critical Peak Pricing with Enabling Technology	$100 for thermostat	0
	Critical Peak Pricing without Enabling Technology	$0	0
	Time of Use with Enabling Technology	$100 for thermostat	0
	Time of Use without Enabling Technology	$0	0
	Peak Time Rebates	$0	$0.75/kWh-year
	PEV Charging Rate	$0	0
	Battery Storage	Starts at $12.385 in 2021 and decreases to $8,049 in 2040 (based on NREL forecast)	0
C&I	DLC Central AC (Thermostat)	$100	$40/participant-year
	DLC Water Heating	$295	$40/participant-year
	DLC Lighting	$1,900	$40/participant-year
	Interruptible Rate	$0	$23.5/kW-Yr
	Critical Peak Pricing with Enabling Technology	$100 for thermostat	0
	Critical Peak Pricing without Enabling Technology	$0	0
	Time of Use with Enabling Technology	$100 for thermostat	0
	Time of Use without Enabling Technology	$0	0
	Peak Time Rebates	$0	$0.75/kWh-year
	Capacity Bidding	$0	$8.5/kW-year
	Demand Bidding	$0	$0.50/kWh-year
	Utility Vehicle Charging Rate	$0	0
	Golf Cart Charging Rate	$9,000	4500

Sector	Program	Equipment & Installation Cost	Incentive Cost
	Thermal Electric Storage Cooling Rate	$55,712	0
	Battery Storage	Starts at $299,036 in 2021 and decreases to $203,351 in 2040 (based on NREL forecast)	0

Program Costs: One-time program development costs included in the first year of the analysis for new programs. No program development costs are assumed for programs that already exist. Each new program includes an evaluation cost. It was assumed that there would be a cost of $50[21] per new participant for marketing for the DLC programs. Marketing costs are assumed to be 33.3% higher for HCAP. All program costs were escalated each year by the general rate of inflation assumed for this study.

Eligible Control Units: The number of control units per participant was assumed to be one for all direct load control programs using switches (such as water heaters and air conditioning switches), because load control switches can control up to two units. However, for controllable thermostats, some participants have more than one thermostat. The average number of residential thermostats per home was assumed to be 1.72 thermostats[22].

Eligible Market Size: For direct load control programs, the size of the eligible market was determined by multiplying the forecast of Entergy's customers by the saturation of the end use to be controlled. End use saturations were obtained from the 2016 RASS analysis provided by ENO as well as data from CBECS[23] for the C&I programs.

Entergy expects AMI infrastructure to be fully deployed in 2022, with saturation being at 99% in 2021. Two-way communication is fundamental for pricing programs and AMI meters allow for hourly load data to be read and transmitted to the utility. Since it is imperative that hourly data must be read for pricing programs, GDS assumed AMI meters were required to participate in the pricing programs.

3.1.5 DR Program Adoption Levels

Long-term program adoption levels (or "steady state" participation) represent the enrollment rate once the fully achievable participation has been reached. GDS reviewed industry data and program adoption levels from several utility DR programs. As noted earlier in this section, for direct load control programs, HCAP participation rates rely on industry best adoption rates and RAP participation rates are based on industry average adoption levels. For the rate programs, the HCAP steady-state participation rates assumed programs were opt-out based and RAP participation assumed opt-in status.

Customer participation in new demand response programs is assumed to reach the steady state take rate over a five-year period. The path to steady state customer participation follows a "S-shaped" curve, in which participation growth accelerates over the first half of the five-year period, and then slows over the second half of the period (see Figure 3-1. Illustration of S-Shaped Market Adoption Curve). Existing programs have already gone through this ramp-up period, so they were escalated linearly to the final participation rate. Table 3-4 provides the long-term adoption rates for HCAP and RAP.

[21] TVA Potential Study Volume III: Demand Response Potential, Global Energy Partners, December 2011
[22] EIA RECS database
[23] https://www.eia.gov/consumption/commercial/data/2012/

FIGURE 33-1. ILLUSTRATION OF S-SHAPED MARKET ADOPTION CURVE

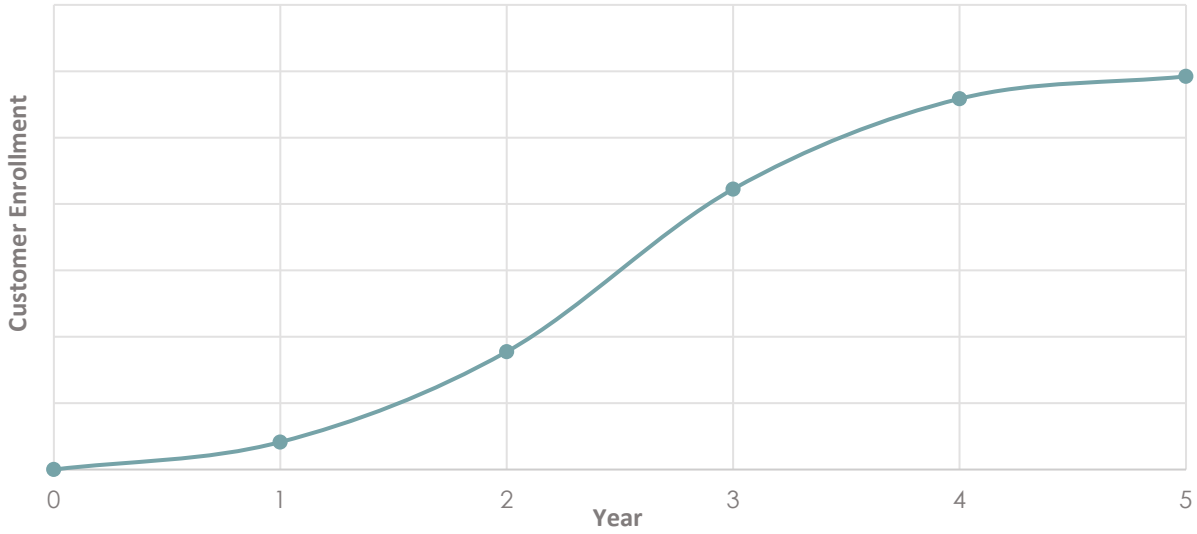


TABLE 33-4. ADOPTION RATES

Sector	Program	Steady State HCAP Adoption Rate	Steady State RAP Adoption Rate
Residential	DLC Central AC (Switch)	10%	7%
	DLC Central AC (Thermostat BYOT)	12%	8%
	DLC Central AC (Thermostat Utility Sponsored)	12%	8%
	DLC Room AC	31%	20%
	DLC Water Heating	36%	23%
	DLC Pool Pumps	38%	19%
	Critical Peak Pricing with Enabling Technology	91%	22%
	Critical Peak Pricing without Enabling Technology	82%	17%
	Time of Use with Enabling Technology	38%	14%
	Time of Use without Enabling Technology	85%	28%
	Peak Time Rebates	93%	21%
	PEV Charging Rate	94%	57%
	Battery Storage	1.1%	1.1%
C&I	DLC Central AC (Thermostat BYOT)	10%	4%
	DLC Central AC (Thermostat Utility Sponsored)	10%	4%
	DLC Water Heating	16%	7%
	DLC Lighting	19%	8%
	Interruptible Rate	21%	14%

Sector	Program	Steady State HCAP Adoption Rate	Steady State RAP Adoption Rate
	Critical Peak Pricing with Enabling Technology	69%	20%
	Critical Peak Pricing without Enabling Technology	63%	18%
	Time of Use with Enabling Technology	20%	7%
	Time of Use without Enabling Technology	74%	13%
	Peak Time Rebates	71%	22%
	Capacity Bidding	21%	3%
	Demand Bidding	8%	1%
	Utility Vehicle Charging Rate	94%	57%
	Golf Cart Charging Rate	81%	16%
	Thermal Electric Storage Cooling Rate	81%	16%
	Battery Storage	9.7%	9.7%

Double-counting savings from demand response programs that affect the same end uses is a common issue that must be addressed when calculating the demand response savings potential. For example, a customer cannot elect to participate in both DLC programs and rate programs and claim savings from both programs for curtailing the same end use. One cannot save a kW of load in a specific hour more than once. In general, the hierarchy of demand response programs is accounted for by subtracting the number participants in a higher priority program from the eligible market for a lower priority program. Table 3-5 shows the hierarchy for each sector, ordered in decreasing priority.

TABLE 33-5. DR HIERARCHY FOR EACH SECTOR

Order	Residential Hierarchy	C&I Hierarchy
1	Direct Load Control	Direct Load Control
2	Critical Peak Pricing	Interruptible Rate
3	Peak Time Rebate	Capacity Bidding
4	Time of Use	Critical Peak Pricing
5		Time of Use
6		Peak Time Rebate

3.2 DEMAND RESPONSE POTENTIAL

This section provides results for the demand response study by sector as well as the total.

3.2.1 Residential Demand Response Potential

Figure 3-2 shows the residential HCAP demand response potential. The total residential HCAP potential in 2040 is 159 MW. The program with the largest potential is Critical Peak Pricing with 116 MW of potential. Figure -3 shows the residential RAP demand response potential. The total residential RAP potential in 2040 is 79 MW,

with Critical Peak Pricing once again being the program with the largest potential at 37 MW. These demand reduction values are presented at the customer meter level of the Entergy New Orleans grid.

FIGURE 33-2. SUMMER PEAK MW RESIDENTIAL SECTOR HCAP POTENTIAL

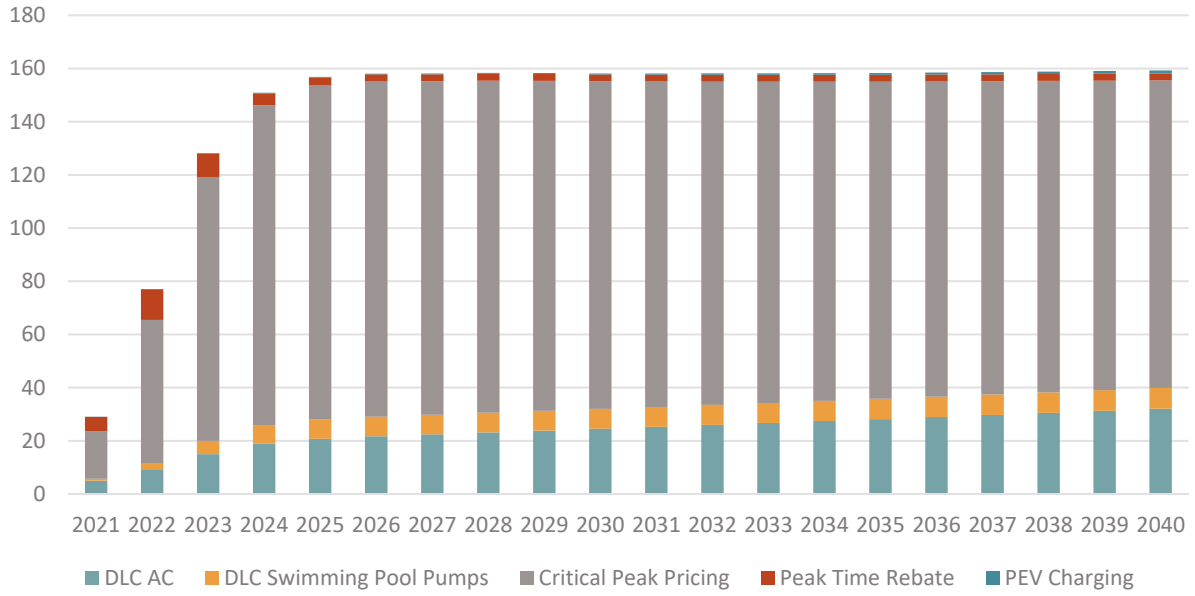
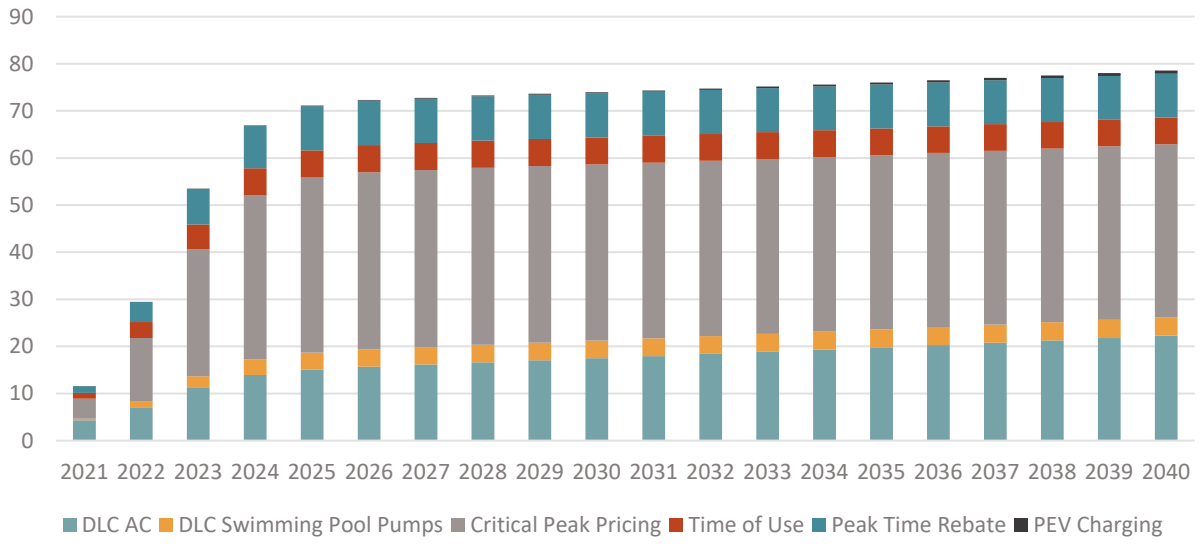


FIGURE 33-3. SUMMER PEAK MW RESIDENTIAL SECTOR RAP POTENTIAL



3.2.2 C&I Demand Response Potential

Figure 3-4 shows the C&I sector HCAP demand response potential. The total C&I sector HCAP potential in 2040 is 119 MW. The program with the largest potential is for interruptible rater for large C&I customers, with a potential of 36 MW. Entergy New Orleans already has a handful of customers on this rate program. Figure 3-5 shows the C&I sector RAP demand response potential. The total potential for C&I RAP in 2040 is 51 MW. The interruptible rate program is once again the program with the largest potential, at 24 MW. These demand reduction values are present at the customer meter level of the Entergy New Orleans grid.

FIGURE 33-4. SUMMER PEAK MW C&I SECTOR HCAP POTENTIAL

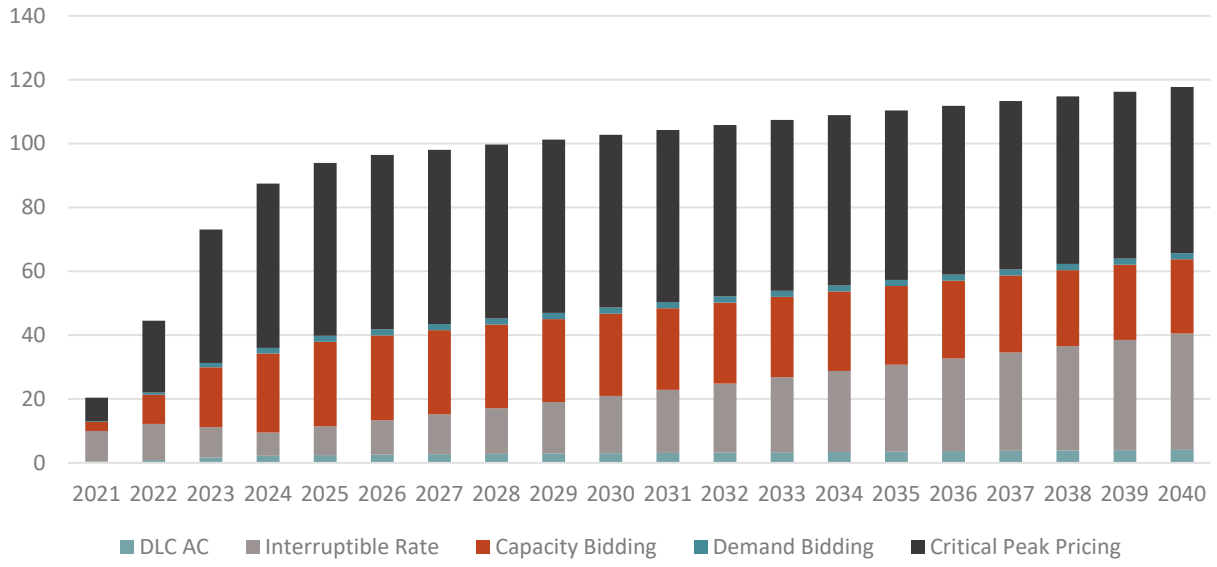
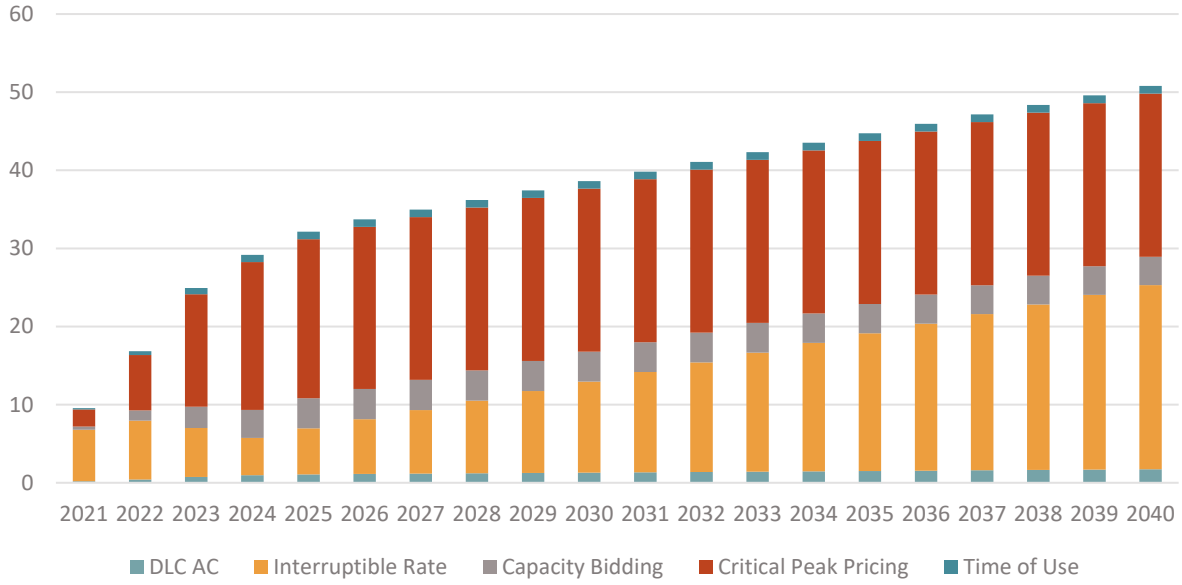


FIGURE 33-5. SUMMER PEAK MW C&I SECTOR RAP POTENTIAL



3.2.3 Total Demand Response Potential

Figure 3-6 shows the total annual demand response RAP potential by sector. The total RAP potential in 2040 is 130 MW. These demand reduction values are present at the customer meter level of the Entergy New Orleans grid. Figure 3-7 shows the total annual RAP by program as a percentage of peak load. The program with the largest potential is Critical Peak Pricing.

FIGURE 33-6. TOTAL ANNUAL SUMMER PEAK MW RAP POTENTIAL BY SECTOR

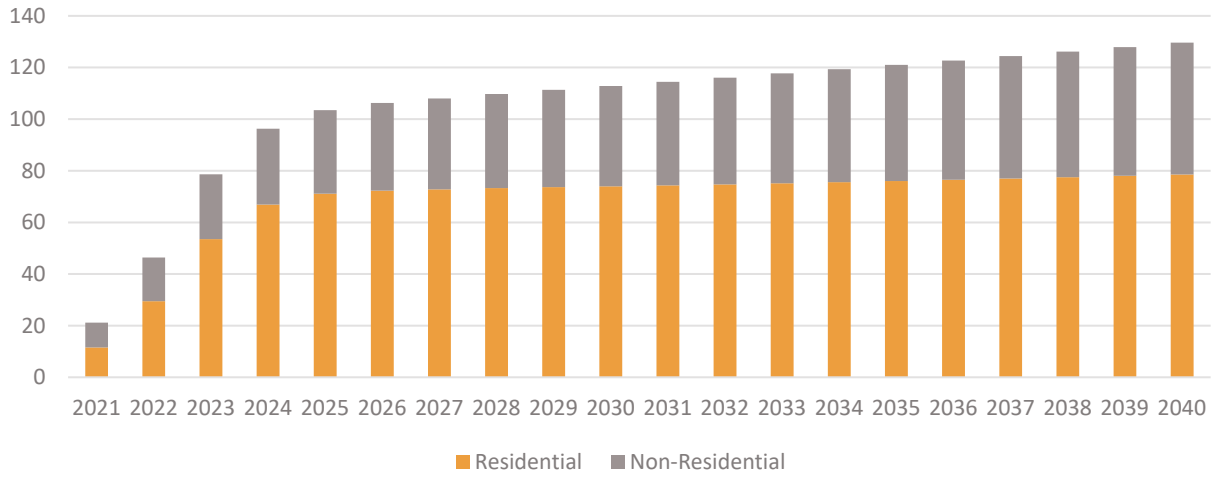
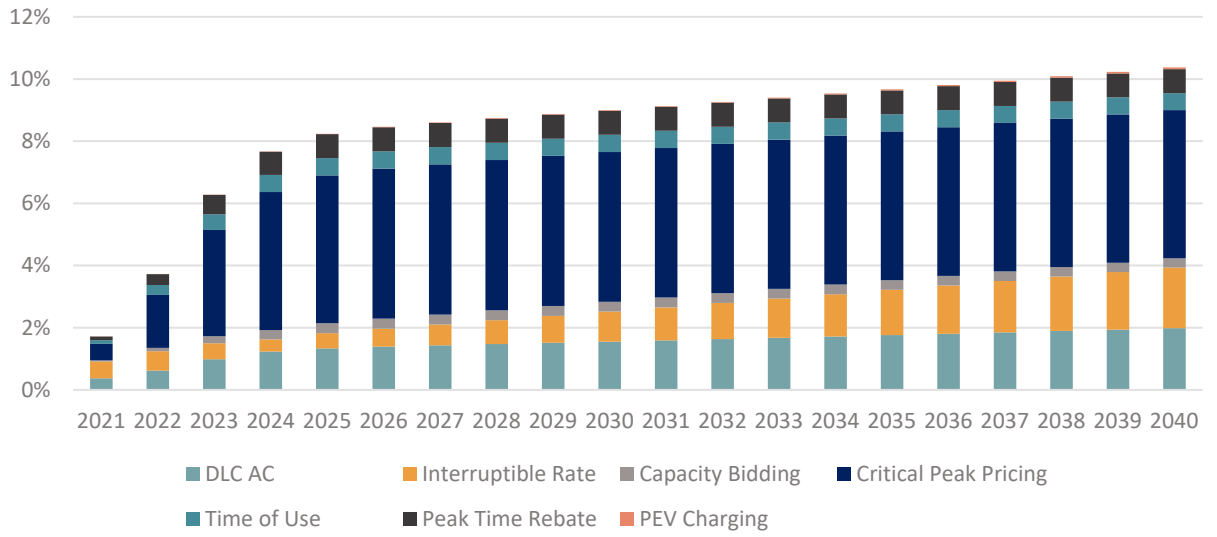


FIGURE 33-7. TOTAL ANNUAL SUMMER PEAK RAP BY PROGRAM AS A PERCENTAGE OF PEAK LOAD



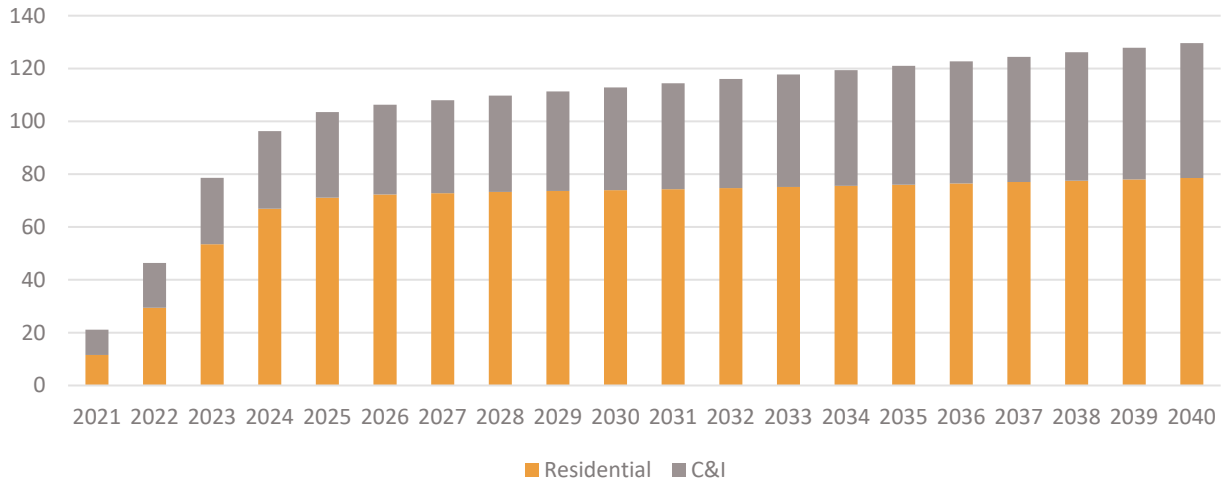
3.2.4 Battery Storage Cumulative Storage Capacity

GDS used an NREL study[24] on battery storage in the US to derive numbers for the DR model. This study provided annual costs for residential and C&I batteries, which are forecasted to decrease over the next 20 years. GDS chose a 3 kW battery to use for residential and 25 kW to use for C&I. This report provides the potential of battery storage for the MISO South region. GDS used this potential along with the MISO South peak load forecast for 2040 to determine the percentage of battery storage.

While demand response control of battery storage is currently not cost-effective, Figure 3-8 shows what the maximum cumulative storage capacity is for battery storage in the ENO service territory. Note that this is the capacity for battery storage, and the potential for demand response control of battery storage would be lower if customers do not want the utility to have control of the battery.

[24] NREL. Storage Futures Study. Economic Potential of Diurnal Storage in the US Power Sector. https://www.nrel.gov/docs/fy21osti/77449.pdf

FIGURE 33-8. BATTERY STORAGE CUMULATIVE STORAGE CAPACITY MW BY SECTOR



3.2.5 Benefits/Costs of Achievable Potential

Cost-effectiveness of demand response measures was determined based on screening with the TRC test. Table -6 and Table -7 shows the residential and C&I benefits, costs, and TRC ratios for each program for HCAP and RAP.

TABLE 3-6. BASE CASE HCAP BENEFITS, COSTS, AND TRC RATIOS

	Program	NPV Benefits	NPV Costs	TRC Ratio
Residential	DLC AC (BYOT Thermostat)	$8,282,842	$6,864,044	1.21
	DLC AC (Utility Incentivized Thermostat)	$12,718,076	$10,961,257	1.16
	DLC AC (Switch)	$4,663,115	$9,467,080	0.49
	DLC Swimming Pool Pumps	$6,176,845	$4,087,418	1.51
	DLC Water Heating	$10,686,860	$25,630,035	0.42
	DLC Room AC	$3,038,000	$6,690,006	0.45
	Critical Peak Pricing with Enabling Tech	$92,568,744	$24,974,819	3.71
	Critical Peak Pricing without Enabling Tech	$11,220,472	$3,176,540	3.53
	Time of Use with Enabling Tech	$238,485	$1,401,024	0.17
	Time of Use without Enabling Tech	$738,024	$1,505,029	0.49
	Peak Time Rebate	$3,928,513	$2,211,947	1.78
	PEV Charging Rate	$646,346	$364,412	1.77
	Battery Storage	$2,607,166	$17,292,056	0.15
C&I	DLC AC (BYOT Thermostat)	$911,072	$581,566	1.57
	DLC AC (Utility Incentivized Thermostat)	$1,636,316	$1,011,003	1.62
	DLC Water Heating	$1,203,528	$1,397,996	0.86
	DLC Lighting	$4,322,474	$8,375,363	0.52
	Interruptible Rate	$17,113,286	$5,125,332	3.34

	Program	NPV Benefits	NPV Costs	TRC Ratio
	Capacity Bidding	$21,232,677	$2,995,908	7.09
	Demand Bidding	$1,595,094	$1,154,212	1.38
	Critical Peak Pricing with Enabling Tech	$40,312,306	$2,112,645	19.08
	Critical Peak Pricing without Enabling Tech	$5,047,977	$633,506	7.97
	Time of Use with Enabling Tech	$51,617	$378,902	0.14
	Time of Use without Enabling Tech	$409,896	$450,396	0.91
	Peak Time Rebate	$90,350	$477,487	0.19
	Utility Vehicle Charging Rate	$200,943	$304,799	0.66
	Golf Cart Charging Rate	$199,542	$10,927,940	0.02
	Thermal Electric Storage Rate	$9,426,433	$25,653,456	0.37
	Battery Storage	$21,776,884	$364,050,561	0.06

TABLE 3-7. BASE CASE RAP BENEFITS, COSTS, AND TRC RATIOS

	Program	NPV Benefits	NPV Costs	TRC Ratio
Residential	DLC AC (BYOT Thermostat)	$6,228,322	$4,957,072	1.26
	DLC AC (Utility Incentivized Thermostat)	$8,831,997	$7,571,258	1.17
	DLC AC (Switch)	$3,204,899	$6,274,269	0.51
	DLC Swimming Pool Pumps	$3,088,423	$2,306,263	1.34
	DLC Water Heating	$6,827,716	$16,282,686	0.42
	DLC Room AC	$1,960,000	$4,460,386	0.44
	Critical Peak Pricing with Enabling Tech	$24,100,284	$6,134,694	3.93
	Critical Peak Pricing without Enabling Tech	$6,955,808	$1,357,557	5.12
	Time of Use with Enabling Tech	$3,023,364	$2,037,774	1.48
	Time of Use without Enabling Tech	$5,052,723	$1,356,088	3.73
	Peak Time Rebate	$7,961,911	$1,426,671	5.58
	PEV Charging Rate	$391,933	$327,422	1.20
	Battery Storage	$2,607,166	$17,276,185	0.15
C&I	DLC AC (BYOT Thermostat)	$410,157	$329,581	1.24
	DLC AC (Utility Incentivized Thermostat)	$688,975	$558,260	1.23
	DLC Water Heating	$526,543	$821,358	0.64
	DLC Lighting	$1,843,137	$3,763,480	0.49
	Interruptible Rate	$11,157,228	$3,352,958	3.33
	Capacity Bidding	$3,161,873	$764,747	4.13
	Demand Bidding	$213,654	$473,240	0.45

	Program	NPV Benefits	NPV Costs	TRC Ratio
	Critical Peak Pricing with Enabling Tech	$14,468,255	$895,193	16.16
	Critical Peak Pricing without Enabling Tech	$2,772,797	$438,048	6.33
	Time of Use with Enabling Tech	$559,366	$390,044	1.43
	Time of Use without Enabling Tech	$781,745	$357,646	2.19
	Peak Time Rebate	$255,683	$420,430	0.61
	Utility Vehicle Charging Rate	$121,848	$300,243	0.41
	Golf Cart Charging Rate	$39,416	$2,396,460	0.02
	Thermal Electric Storage Rate	$1,862,012	$5,290,562	0.35
	Battery Storage	$21,776,884	$364,034,701	0.06

APPENDIX A. Comparison of Recent Potential in Other Jurisdictions

The GDS Team gathered information from fourteen recent and publicly available potential studies conducted in or near the South and Southeast of the U.S. as well as other utilities in the MISO region. These studies and their outcomes can be used to compare the 2021 GDS potential study results for the City of New Orleans' to studies conducted elsewhere. This appendix provides summary information from fourteen studies, providing key metrics and a discussion of nuances that can drive differences between the studies and the interpretation of results.

All fourteen studies were completed between 2015 and 2021. They share common elements – modeling technical, economic, and achievable potential. Most utilize the TRC test for cost-effectiveness screening, one uses the UCT exclusively while others use more than one test. Achievable potential definitions and boundaries differ, but typically have realistic achievable potential estimates constraining a maximum achievable estimate with annual budget limitations or assumptions about market adoption of measures that pass the economic potential screening. Each study provides a different range of detail and information. Table A-1 summarizes key metrics, below. Following Table A-1, each study is summarized and includes additional information for further comparison.

Across the fourteen comparison studies, achievable potential varied as a percent of annual kWh sales and system peak load. Factors that can impact study results include underlying modeling assumptions or unique conditions not present in one study versus another. For example, Louisville Gas & Electric and Kentucky Utilities applied a value of $0 to any capacity savings for energy efficiency and allowed only replace-on-failure (i.e. lost opportunity) measures for the second ten years of their potential studies. Studies with longer time horizons tended to have higher achievable potential savings, reflecting a greater opportunity given more time. Other factors that may shape differences between the studies, but were not readily apparent because consistent information was not always available in the reports, include:

- Forecasts of avoided costs and other major modeling assumptions
- Demographic and firmographic differences between utilities
- Differences in utility climate and weather sensitive loads
- The assumptions used to account for current equipment saturation
- Differences in adoption curves or willingness-to-pay modeling

All of these factors can cause potential study outcomes to differ from the results of the GDS potential study for New Orleans. As a body of recent potential studies, however, they do provide context and perspective useful for making comparisons to the GDS potential study for New Orleans'.

Table A-1 below, provides a summary of key comparison metrics. Beneath the table, each of the utilities included in the comparison has a brief description of its potential study and more detail behind the summary results.

TABLE A-1 KEY POTENTIAL STUDY METRICS

Study Name	ISO	Subject	Year Published	Forecast Period	Market Size	Overall Achievable Potential (forecast period)
Ameren Illinois Demand Side Management Market Potential Study	MISO	Energy Efficiency	2016	2017-2036	2036 Forecast: Res: 11,300 GWh C&I: 24,000 GWh	RAP[25]: 12.5% MAP[26]: 16.4%
Arkansas Energy Efficiency Potential Study	MISO (mostly)	Energy Efficiency (statewide, IOUs only)	2015	2016-2025	2016 Statewide: C&I: ~14,000 GWh Res: ~11,500 GWh	Higher $: 9.0% Current $:7.8% Lower $:5.7%
		Demand Response (statewide, IOUs only)			Not presented for DR	9%
ComEd Energy Efficiency Potential Study	PJM	Energy Efficiency	2016	2017-2030	Res: 3.5 MM C&I: 376 k	Max: 10% PP[27] Ach: 7%
DTE Energy Efficiency Potential Study	MISO	Energy Efficiency	2016	2016-2025 and 2016-2035	2014 customers Res: 1.9 MM Com: 198k Ind: 778 2016 forecasted load: Res: 16,586 GWh Com: 21,439 GWh Ind: 12,551 GWh	2016-2025: 12.5% traditional 8.9% constrained 2016-2035: 18.8% traditional 13.5% constrained
Duke Energy North Carolina EE and DSM Market Potential Study (Duke Energy North Carolina)	N/A	Energy Efficiency	2020	2020-2044	Forecast 2020-2044 Res: 27,508 GWh C&I: 39,946 GWh Total: 67,545 GWh	Scenario: 25-yr % savings Base: 12.2% Enhanced: 12.8% Avoided Energy Cost: 12.3%
Duke Energy North Carolina EE and DSM Market Potential Study (Duke Energy Progress)	N/A	Energy Efficiency	2020	2020-2044	Forecast 2020-2044 Res: 21,138 GWh C&I: 20,266 GWh Total: 41,404 GWh	Scenario: 25-yr % savings Base: 14.2% Enhanced: 14.7% Avoided Energy Cost: 14.4%
Georgia Power Company's Report on Achievable Energy Efficiency Potential Assessment	N/A	Energy Efficiency	2021	2021-2032	Redacted	Incentive Scenarios % of 2032 Load (GWh): 25%: 4.0% 50%: 5.1% 75%: 6.6% 100%: 8.7%

[25] Realistically Achievable Potential (RAP) is the subset of economic potential describing EE and DSM measure adoption by customers participating in utility-sponsored programs operating within the subject market or jurisdiction.

[26] Maximum Achievable Potential (MAP) compares the expected costs and benefits of energy and demand savings provided by EE and DSM measures and applies the total resource cost (TRC) test to determine whether measures meet the scenario screening criterion of a benefit-cost ratio greater than 1.

[27] Program Potential (PP) includes the allocation and bundling of individual measures into specific program concepts to support utility program planning.

Study Name	ISO	Subject	Year Published	Forecast Period	Market Size	Overall Achievable Potential (forecast period)
Indianapolis Power & Light (IPL)	MISO	Energy Efficiency	2018	2021-2039	2020 forecasted load: Res: 5,000 GWh C&I: 7,000 GWh	RAP: 19% MAP: 31%
		Demand Response			Not presented for DR	RAP: 8% MAP: 12%
Kansas City Power & Light 2016 DSM Potential Study	SPP	Energy Efficiency	2017	2019-2037	2015 loads Res: 8,585 GWh Com: 8,760 GWh Ind: 5,208 GWh	RAP: 8.7% MAP: 12.0%
		Demand Response			Not presented for DR	RAP: 11.0% MAP: 13.0%
Louisville Gas & Electric and Kentucky Utilities	N/A	Energy Efficiency	2017	2019-2038	Res: 11,453 GWh Com: 10,200 GWh	Incentive Scenarios Low: 4.2% Mid: 5.5% High: 6.2%
Ameren Missouri 2020 DSM Market Potential Study	MISO	Energy Efficiency	2020	2022-2040	2040 Forecast: Res: 13,400 GWh C&I: 15,800 GWh	MAP: 14.9% RAP: 11.4%
MN Statewide	MISO	Energy Efficiency	2018	2020-2029	Res: 32% of market% Com: 36% Ind: 19% Opt-Out: 13%	PP Ach: 14% MAP: 21%
Energy Efficiency Potential Study for Pennsylvania	PJM	Energy Efficiency (Statewide)	2015	2016-2025	2010 load[28] Res: 54,193 GWh Com: 55,957 GWh Ind: 36,511 GWh	Max Ach: 13.2% Base Ach: 8.3% (% of 2010 load)
Focus on Energy Wisconsin Energy Efficiency Potential Study	MISO	Energy Efficiency (Statewide)	2017	2019-2030	Res: 2.5 MM C&I: 347 k	BAU: 9.1% Mid: 12.7% Max: 14.2%

Summary Descriptions of Comparison Potential Studies

In developing the data to support Table A-1, GDS researched the details of each of the example potential studies to help provide context to the underlying modeling and considerations for developing achievable potential. Below, each study is described in a mini-case study format, with information related to how achievable potential was defined and scenarios that that were used to test the sensitivity of multiple achievable potential perspectives.

Ameren Illinois Demand Side Management Market Potential Study (2016)

Ameren Illinois' 2016 DSM Market Potential Study served to assess various tiers of energy efficiency potential including technical, economic, maximum achievable, and realistic achievable potential. The study developed

[28] In Pennsylvania utilities must meet energy efficiency percentage reductions relative to their 2010 load.

updated baseline estimates with the latest information on federal, state, and local codes and standards for improving energy efficiency. The study consisted of three primary components: market research, a full energy efficiency potential analysis at the measure and program levels, and estimation of supply curves.

Ameren Illinois undertook primary market research to collect data for the Ameren Illinois service territory, including electric and natural gas end-use data, end-use saturation data, and customer psychographics, demographics, and firmographics. This information enables Ameren Illinois to understand how their customers make decisions related to their energy use and energy efficiency investment decisions.

Ameren Illinois' definition of maximum achievable assumed ideal market, implementation, and customer preference conditions, with well-established communication channels, trade allies and delivery partners, and high levels of incentives, administrative, and marketing costs. Realistic achievable potential assumed more conservative conditions as well as limited program budgets. Savings were presented as net.

Primary market research produced adoption rates that were typically lower than those produced from the 2019 Ameren Missouri market research, particularly for maximum achievable potential. In addition, estimates of technical and economic potential are generally lower, suggesting differences in electric equipment penetration or assumptions regarding the current saturation of efficient equipment. Avoided costs were not presented in the study.

TABLE A-2. AMEREN ILLINOIS 2017-2036 ENERGY EFFICIENCY POTENTIAL COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Share of Savings	Commercial Share of Savings	Industrial Share of Savings
2017-2036	TRC	Max: 16.4% PP: 12.5%	Max: 22% PP: 23%	Max: 54% PP: 52%	Max: 24% PP: 24%

Arkansas Energy Efficiency Potential Study (2016)

The Arkansas Public Service Commission filed its 2016-2025 potential study in mid-2015. Economic potential was estimated at 15.5 percent of the 2025 load forecast. Using current budgeting as the base achievable potential scenario, a cumulative saving of 7.8 percent was estimated as achievable across the 10-year forecast period. Additional scenarios also tested the effect of lower budgets, higher budgets, and in the event of a carbon value. The cumulative achievable potential ranged from 5.7 percent (low budget) to 9.0 percent (high budget), thus no scenario equivalent to maximum achievable potential was seemingly modeled. Savings are described as being net of free riders, though no details were offered on how net savings were developed. In Arkansas some customers have the option to operate their own self-direct program. Achievable savings were treated as net of self-direct customers, removing their underlying load from the analysis for all technical, economic, and achievable estimates of potential savings.

The market scope included all investor-owned utilities (IOUs) in Arkansas. The market size being modeled for the study was not explicitly described. However, graphical depictions of the residential and commercial/industrial loads were included. The residential market is approximately 11,500 GWh per year, with the commercial/industrial market at approximately 14,000 GWh per year. Technical potential is a 32% of the residential market, yet only 13% of the C&I market. To model achievable potential, the study incorporates Arkansas energy efficiency policy requiring that "all major end-uses" be covered, and that achievable potential include savings of "all achievable within a reasonable time-period and maximizing net benefits to customers and utility system." Achievable potential was determined by applying payback acceptance curves that were based on 2012 market research conducted for Kansas City Power & Light.

The potential study included a section related to demand response. The demand response "realistic" achievable potential was estimated at nine percent of capacity by 2025. The "realistic" demand response potential considered demand forecasts, customer acceptance rates, and programmatic best practices. Economic potential was not presented in the report.

Table A-3 summarizes key achievable potential metrics by sector resulting from the Arkansas Energy Efficiency Potential Study for energy efficiency. Sector-level details were not provided for the low and high incentive scenarios.

TABLE A-3. ARKANSAS ENERGY EFFICIENCY POTENTIAL STUDY KEY COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Ach Potential	C&I Ach Potential
2016-2025	TRC	Low $:5.7% Current $7.8% High $: 9.0%	Low $: N/A Current $: 10.3% High $: N/A	Low $: N/A Current $: 5.2% High $: N/A

ComEd Energy Efficiency Potential Study, 2017-2030

ComEd's distribution arm operates energy efficiency programs across its service territory. In 2016, ComEd published its potential study which forecasted opportunities for energy efficiency spanning the 14 years of 2017-2030. The study found an overall economic potential of roughly 29% at the end of 2030 and a maximum achievable potential of 10%. Once constrained by program assumptions that maintained current funding levels, the cumulative achievable potential in 2030 was found to be 7 percent. The share of savings was heavily weighted toward the commercial sector, with 66 percent of savings. The residential sector was estimated to achieve 25 percent of savings, with the industrial sector contributing the remaining eight percent.

In the ComEd study, achievable savings were presented as net savings and defined as:

1. Maximum achievable is the amount of cost-effective program potential that could be achieved absent program budget constraints and with incentives set at 100 percent of incremental cost.
2. Program achievable is based on the maximum budget under a two percent of customers' electricity costs limitation and follow current program budgets.

Net savings were derived from the historical evaluated net to gross ratios developed by program evaluators. The industrial sector does not appear to exclude any existing load from the energy efficiency potential analysis (a provision that exempts certain customers was signed into law in late 2016). Adoption rates were informed by interviews with program managers and often constrained by current participation levels and often assumed some potential decrease over time.

Avoided costs were not presented in the study. Savings by year were not tabulated, though were indicated as being influenced by known code and standards changes as well as the treatment of behavioral programs for persistence year-to-year.

TABLE A-4. COMED 2017-2030 ENERGY EFFICIENCY POTENTIAL COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Share of Savings	Commercial Share of Savings	Industrial Share of Savings
2017-2030	TRC	Max: 10% PP: 7%	Max: 22% PP: 25%	Max: 72% PP: 66%	Max: 6% PP: 8%

DTE Energy Efficiency Potential Study (2016)

In 2016, DTE completed its most recent energy efficiency potential study. This study presented gross savings across two forecast periods – a near-term 10-year estimate (2016-2025) and a longer-term 20-year estimate (2016-2035). Unlike most studies in this comparison analysis, DTE Energy utilized the Utility Cost Test, also known as the Program Administrator Cost Test. The economically achievable potential was estimated at 34.8 percent in the 10-year and 35.6 percent in the 20-year models. Maximum achievable potential (MAP) was estimated as 12.5 percent in the 10-year model and 18.8% in the 20-year model. Realistically achievable potential (RAP) was estimated 8.9 percent in the 10-year model and 13.5 percent in the 20-year model.

The MAP and RAP definitions for achievable potential utilized two scenarios to describe their treatment. In both scenarios, incentives were assumed to be 50 percent of incremental cost. The chief different between MAP and RAP is overall program spending. MAP analyzed savings by having no cap on program budgets, while RAP capped program budgets at two percent of retail sales. In the RAP scenario, cost-effective savings are constrained by Michigan's Public Act 295 of 2008, which limited utility expenditures to two percent of retail sales unless approved by the Michigan Public Service Commission.

TABLE A-5. DTE ENERGY EFFICIENCY POTENTIAL STUDY COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Achievable Potential	Commercial Achievable Potential	Industrial Achievable Potential
2016-2025	UCT	MAP: 12.5% RAP: 8.9%	MAP: 15.6% RAP: 10.3%	MAP: 12.5% RAP: 8.4%	MAP: 9.3% RAP: 7.7%
2016-2035	UCT	MAP:18.8% RAP: 13.5%	MAP:20.5% RAP: 17.6%	MAP:18.9% RAP: 10.6%	MAP:16.3% RAP: 13.2%

Duke Energy EE and DSM Market Potential Study (2020)

Duke Energy commissioned the potential study to determine the what savings could be achieved by energy efficiency (EE) and demand-side management (DSM) programs in the Duke Energy Carolinas (DEC) and Duke Energy Progress (DEP) service territories. The report described the potential for DSM savings for both of Duke's service territories in North Carolina. The main objectives of the study were:

- Provide a market potential study, which estimates the technical, economic and realistic achievable market potential energy savings over the short term (5 year projection), medium term (10 year projection), and long term (25 year projection).
- Estimate the potential energy and demand savings for Duke Energy's North Carolina service territory.
- Develop savings estimates with a focus on different perspectives: compliance and system planning.

The DSM savings potential was estimated by applying an analytical framework, Nexant's Microsoft Excel-based energy efficiency modeling tool, TEA-POT (Technical / Economic / Achievable POTential), to estimate baseline market conditions for energy consumption and demand and DSM opportunities. The assessment started with the current Duke Energy load and sales forecasts, which were disaggregated into customer-class and end use components. The assessment examined the effect of the range of energy efficiency measures and practices on each end-use, taking into account fuel shares, current market saturations, technical feasibility, and costs.

Nexant examined three scenarios for achievable potential: base, enhanced, and an avoided energy cost sensitivity. These scenarios provide a sensitivity for EE costs and benefits to understand how market conditions and trends affect the costs and benefits of utility-sponsored programs over the study's time horizon of twenty-five years:

- Base scenario – aligns with existing program portfolio, and includes existing EE programs and measures currently offered by DEC or DEP
- Enhanced scenario – includes the base scenario, but with increased program spending (via incentives) designed to attract new customers into the market for EE technology and program participation
- Avoided Energy Cost Sensitivity scenario – covers the base scenario, but with a sensitivity analysis around enhanced EE benefits, such as may occur if avoided energy costs were higher than current values. Higher benefits for EE may lead to additional cost-effective measures and increased achievable potential

TABLE A-6. DUKE ENERGY NORTH CAROLINA MARKET POTENTIAL STUDY FINDINGS

Baseline Period	Benefit-Cost Model	Technical Potential (GWh)	Economic Potential (GWh)	25-yr sum of annuals per scenario
2020	TRC	15,034	5,992	Base: 8,257 Enhanced: 8,663 Avoided Energy Cost Sensitivity: 8,336

TABLE A-6. DUKE ENERGY PROGRESS MARKET POTENTIAL STUDY FINDINGS

Baseline Period	Benefit-Cost Model	Technical Potential (GWh)	Economic Potential (GWh)	25-yr sum of annuals per scenario
2020	TRC	10,350	3,414	Base: 5,910 Enhanced: 6,107 Avoided Energy Cost Sensitivity: 5,972

Georgia Power Company's Report on Achievable Energy Efficiency Potential Assessment (2021)

The Georgia Power (GP) study uses the "TEAPOT" methodology, estimating the technical, economic, and achievable energy reduction potential for energy efficiency technologies for Georgia Power's residential, commercial, and industrial customers.

The technical potential includes all measures suitable for GP's customers, climate, building stock, and production facilities, and assumes there are no economic or other market barriers preventing customers from adopting these measures.

The economic potential is defined as taking all the technically-feasible measures and adopting all that are economic, as defined by the Total Resource Cost ("TRC") Test. The TRC Test is a measure of net societal value that compares the benefits of avoided utility supply costs (including electricity, natural gas, and water) with the costs to achieve those savings (incremental measure costs). Other cost tests that measure economic attractiveness from the participant's perspective (the Participant Cost Test), the

non-participant's perspective (the Ratepayer Impact Measure Test), and the utility's perspective (the Program Administrator Cost Test) are also provided.

The achievable potential included in the report consists of four planning scenarios based on different levels of incentives provided by Georgia Power to customers to encourage the purchase and installation of energy efficiency measures. The scenarios are based on a 25%, 50%, 75%, and 100% monetary incentives to customers, equaling the respective percent of incremental costs of energy efficiency improvements.

TABLE -7. GEORGIA POWER EE ACHIEVABLE POTENTIAL ASSESSMENT METRICS

Forecast Period	Benefit-Cost Model	Achievable Potential by Scenario % of 2032 Load (GWh)	Residential Achievable Potential % of 2032 Load (GWh)	Commercial Achievable Potential % of 2032 Load (GWh)	Industrial Achievable Potential % of 2032 Load (GWh)I
2021-2032	TRC, RIM, PAC, PCT	25%: 4.0% 50%: 5.1% 75%: 6.6% 100%: 8.7%	25%	53%	22%

Indianapolis Power & Light Demand Side Management Market Potential Study (2018)

Conducted by GDS Associates, the IPL DSM Market Potential Study covered the 2021-2039 timeframe, and included an assessment of market potential for the residential, commercial, and industrial sectors. GDS used a bottom-up approach to estimate energy efficiency potential in the residential sector. In the C&I sectors, GDS utilized the bottom-up modeling approach to first estimate measure-level savings and costs, as well as cost-effectiveness, and then applied cost-effective measure savings to all applicable energy shares of load. All savings estimates are provided at the gross level.

Economic potential was determined using the UCT Test. Economic potential represented nearly 37% of total system load. The analysis included estimates of maximum and realistic achievable potential, with definitions of each scenario like the 2020 Ameren MPS. In total, the IPL study included 187 residential measures, 237 commercial measures, and 130 industrial measures. Industrial opt-outs were excluded from the estimates of long-term potential. Traditional retail buydown for screw-based lighting was only included for the first two years of the analysis timeframe, and additional direct install opportunities were included from the 2023-2024 timeframe. Beginning in 2025, residential LED lighting savings were essentially eliminated. Behavioral potential represented a substantial portion of the incremental annual residential potential (~25% of the sector annual potential)

In the MAP scenario, incentive levels were assumed to represent 100% of the incremental measure cost. In the RAP scenario, incentives typically ranged from 25%-40% of measure cost in the residential sector, and less than 30% in the C&I sectors. Achievable potential adoption rates were based on primary WTP data collected as part of the MPS. Maximum adoption rates typically ranged from 70%-90%. Realistic achievable potential adoption rates typically ranged from 40%-60% of annual eligible measures over the analysis timeframe. Similar to the 2020 Ameren Missouri MPS, measures that reached the end of their useful life were allowed to re-enter the eligible potential market, assuming sustained savings and a new set of measure/program costs.

TABLE A-8. IPL DEMAND SIDE MANAGEMENT MARKET POTENTIAL STUDY COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Achievable Potential	Commercial Achievable Potential	Industrial Achievable Potential
2021-2039	UCT	MAP: 31% RAP: 19%	MAP: 35% RAP: 23%	MAP: 37% RAP: 20%	MAP: 14% RAP: 7%

Kansas City Power & Light 2016 DSM Potential Study

In early 2017, Kansas City Power & Light (KCP&L) completed its 2016 DSM Potential Study, estimating DSM potential from 2019 through 2037. This study considered both energy efficiency and demand response, with energy efficiency savings reflecting net savings (the baseline forecast incorporated naturally occurring energy efficiency). The savings percentages are presented as net savings relative to the baseline forecast year (2015 loads). The KCP&L potential study presented a cumulative economic potential for energy efficiency of 19.6 percent, using the TRC cost-effectiveness test. The economic potential for demand response was not presented due to many cost-effective but mutually exclusive program and measure options. KCP&L removed the potential savings from customers who have an option to not participate in KCP&L programs.

20-year technical potential is just under 30% of baseline sales, with economic at approximately 22% of baseline sales. These lower initial estimates of potential then produce lower estimates of achievable despite similar definitions of maximum and realistic achievable potential. The achievable potential was presented with two metrics – maximum achievable potential (MAP) and realistic achievable potential (RAP). The MAP was developed by assuming ideal program conditions with incentives that covered a substantial portion of measure costs, along with high administrative and marketing costs. The RAP was developed by assuming the current program conditions, including current participation rates and spending. The RAP was meant to reflect less-than-ideal program conditions that include constrained barriers, imperfect markets, and barriers to customer acceptance. Overall energy efficiency MAP and RAP were estimated at 12.0 percent and 8.7 percent across the forecast period. Demand response MAP and RAP were developed along similar logics, with an estimate of anticipated participation rates across different programs and measures, resulting in a MAP of 13 percent and RAP and 11 percent.

TABLE A-9. KCP&L 2016 DSM POTENTIAL STUDY COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Achievable Potential	Commercial Achievable Potential	Industrial Achievable Potential
2019-2037 Energy Efficiency	TRC	MAP: 12.0% RAP: 8.7%	MAP: 10.4% RAP: 8.2%	MAP: 16.4% RAP: 12.4%	MAP: 7.6% RAP: 5.2%
2019-2037 Demand Response	TRC	MAP: 13% RAP: 11%	Not available	Not available	Not available

Louisville Gas and Electric and Kentucky Utilities Demand-Side Potential Study (2017)

In 2017 Louisville Gas and Electric and Kentucky Utilities (LG&E and KU), as one company with two operating units, completed its DSM potential study for the 2019 through 2038 period. Using the TRC cost-effectiveness test, the study found economic energy efficiency potential equal to nine percent of LG&E and KU's forecasted 2038 loads (technical potential was approximately 33% of baseline sales). The baseline forecast includes the presence of naturally occurring energy efficiency, but otherwise describes savings as gross savings. This study

exhibits the lowest economic potential of any of the compared studies. Of note, the analysts modeled avoided energy costs that had decreased 20 percent since the prior 2013 study. Additionally, avoided capacity from energy efficiency was valued at $0/kW, rather than the $100/kW value used in the 2013 study. This treatment of avoided costs may explain the lower economic and achievable potential found for LG&E and KU compared to other studies, with a sensitivity analysis showing economic potential increasing to 15 percent of the 2038 forecasted load if capacity values were set at $100/kW.

Achievable potential was developed using three scenarios, representing varying incentive levels. The scenarios presented incentive levels of 0 percent, 50 percent, and 75 percent of incremental cost coverage. Willingness-to-pay survey results were used to estimate achievable program adoption within the service territory. The outcome were achievable potentials of 4.0 percent, 5.8 percent, and 6.5 percent, increasing along with higher incentives. The study calculated achievable potential savings with only the first ten years allowing for measure retrofits and lost opportunity (natural replacement and new construction) measures. In the second half of the study period, only lost opportunity measures were considered for savings. The effect of this assumption on 2038 cumulative savings is unknown.

Table A-10 presents summary results of the achievable potential estimates, reflecting the three incentive scenarios described above.

TABLE A-10. LG&E AND KU ENERGY EFFICIENCY POTENTIAL COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Achievable Potential	Com & Ind Achievable Potential
2019-2038	TRC	75%: 6.5% 50%: 5.8% 0%: 4.0%	75%: 6.2% 50%: 5.5% 0%: 4.2%	75%: 6.8% 50%: 6.1% 0%: 3.8%

Minnesota Energy Efficiency Potential Study (2018)

The Minnesota Energy Efficiency Potential Study analyzed energy efficiency potential over a 10-year period, beginning in 2020 through 2029. The study included 117 residential and 186 business sector energy efficiency measure (comparable to the 2020 Ameren Missouri MPS). This included 18 emerging technology measures across within each sector. Whereas the 2020 Ameren MPS uses a "bottom-up" approach in the residential sector and "top-down" approach for the business sector, the MN MPS utilizes a "top-down" approach for all sectors. All savings are reported as gross savings.

The MN EE Potential Study used the Societal Test for screening. Avoided costs were typically lower than current Ameren Missouri avoided cost, but also included a value for avoided emissions to help balance out the total value of avoided energy across both jurisdictions. Overall economic potential for the state by 2029 was estimated to be 33%.

The definition of maximum achievable potential generally mirrored the 2020 Ameren Missouri MPS with financial incentives representing 100% of the incremental costs of each measure, along with aggressive marketing and program designs. Beyond maximum achievable, the study also provided an estimate of program achievable, which assumed a standard incentive that represents 50% of incremental measure costs for program planning purposes. To estimate achievable penetration, the MN MPS utilized a combination of program awareness and willingness factor. The awareness factors were not readily accessible, but the MN MPS does note that willingness factors generally ranged from 60% to 85% for market-drive measures and 50%-80% for retrofit measures. Maximum penetrations rates were generally met over a period of 5-15 years.

TABLE A-11. MINNESOTA ENERGY EFFICIENCY POTENTIAL COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Achievable Potential	Com & Ind Achievable Potential
2020-2029	Societal	MAP: 21% Prog Pot:14%	Program Potential: 8%	Program Potential: 18%

Ameren Missouri DSM Market Potential Study (2020)

Ameren Missouri's 2020 DSM Market Potential Study served to provide a foundation for the continuation of utility-administered energy efficiency and demand response programs in the Ameren Missouri service area, to determine the remaining opportunities for cost-effective energy savings, demand savings, and distributed energy resources for the Ameren Missouri service area. The study was commissioned by Ameren Missouri as part of their larger Integrated Resource Plan (IRP) process.

Energy efficiency potential included technical, economic, achievable potential (MAP and RAP), and program potential (MAP and RAP). For each level of potential, the study presented the energy savings, peak demand savings, benefits, and costs for the Ameren Missouri service area for the period of 2022-2040, a 19-year time frame.

The study consisted of four distinct areas of analyses: residential market-rate and business sector energy efficiency potential, income-eligible sector energy efficiency potential, demand response potential, and Distributed Energy Resource (DER) potential. Each study sought to identify and assess a wide-range of demand-side resources across all major customer classes, market segments, and end-uses.

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

Ameren Missouri definition of maximum achievable included financial incentives representing 100% of the incremental costs of each measure, along with aggressive marketing and program designs. Beyond maximum achievable, the study also provided an estimate of program achievable, which assumed a standard incentive that represents 50% of incremental measure costs for program planning purposes.

TABLE A-12. AMEREN MISSOURI 2022-2040 ENERGY EFFICIENCY POTENTIAL COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Residential Achievable Potential	Business Achievable Potential	Demand-Response Potential
2022-2040	TRC	MAP: 22% RAP: 16%	MAP: 25% RAP: 17%	MAP: 9% RAP: 5%

Pennsylvania Energy Efficiency Potential Study (2015)

Pennsylvania completed its most recent potential study in 2015, spanning a 10-year forecast of potential savings from 2016 through 2025. As a statewide study, it reflects the potential energy efficiency savings from all investor owned utilities in the State. Pennsylvania's study is somewhat different from other studies in this comparison in that it used 2010 as a baseline year – substantially preceding the forecast period. Using the TRC and with no option for opt-out electricity customers, the study found an overall economic potential of 18.4 percent relative to the 2010 baseline year using the TRC cost-effectiveness test. The study presents savings at the gross-level, without net savings effects.

The Pennsylvania potential study presents two levels of achievable potential: Maximum Achievable Potential (MAP) and Base Achievable Potential (BAP). The MAP assumes an aggressive program scenario that includes 100 percent of measure incremental costs being paid for by the program. The BAP restricts the savings potential by using the historical program spending of the Pennsylvania utilities as well as the measure adoption rates evident in prior program years. The overall achievable potential (relative to the 2010 base year loads) is 13.2 percent under MAP and 8.3 percent under BAP.

TABLE A-13. PENNSYLVANIA STATEWIDE ENERGY EFFICIENCY POTENTIAL COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Achievable Potential	Commercial Achievable Potential	Industrial Achievable Potential
2016-2025	TRC	MAP: 13.2% BAP: 8.3%	MAP: 17.5% RAP: 12.2%	MAP: 9.8% RAP: 5.7%	MAP: 12.1% RAP: 6.4%

Focus on Energy Wisconsin Energy Efficiency Potential Study (2017)

Wisconsin has a state-wide energy efficiency program that includes all IOUs, most municipal utilities, and many cooperative utilities. In 2017, the Public Service Commission of Wisconsin published its Focus on Energy 2016 Energy Efficiency Potential Study. The study analyzed energy efficiency savings potential for the 2019-2030 time period. Data were based largely on loads associated with the IOUs and loads representing most municipal utilities. For 12-year span, the study found an economic potential of 21 percent of forecasted 2030 electricity sales and an achievable potential under a "business as usual" scenario as savings of 9.1 percent. 2030 forecasted sales included 19.6 million MWh for the residential sector and 48.5 million MWh for the combined commercial and industrial sectors.

For the Focus on Energy study, achievable potential was defined as representing "the portion of economic potential that might be reasonably achievable by Focus on Energy, after taking into account market barriers... and program funding limitations." The study authors do not consider the analysis results as program potential as program design elements were not incorporated into the analysis. Additionally, savings are only presented as gross savings and explicitly do not consider net to gross ratios or other considerations for program attribution or spillover. Wisconsin uses a modified TRC test that incorporates a $15 per ton of carbon value as well as criteria air pollutant emission values reflecting utility costs for avoidance.

The study presents several scenarios to compare the "business as usual" (BAU) case to other funding and incentive levels. The BAU demonstrated the lowest achievable potential, assuming 25 percent of incremental cost incentives as a cap on overall spending at historical percent-of-utility revenue levels (1.09 percent). The other scenarios included low, medium, high, and maximum incentives set at 25 percent, 50 percent, 75 percent, and 100 percent of incremental costs, respectively, but without the funding cap applied used in the BAU scenario. The maximum achievable was modeled as the 100 percent of measure cost incentive level. The achievable potentials across these scenarios ranged from 9.3 percent to 14.2 percent by 2025. Note that the BAU case is the lowest performing scenario.

Table A-14 summarizes key achievable metrics by sector for the Focus on Energy BAU scenario with sector-level results for each scenario.

TABLE A-14. FOCUS ON ENERGY WISCONSIN SCENARIO COMPARISON METRICS

Forecast Period	Benefit-Cost Model	Overall Ach Potential	Residential Ach Potential	C&I Ach Potential
2016-2025	Modified TRC	BAU: 9.1% Low: 9.3% Mid: 12.7% High: 13.7% Max: 14.2%	BAU: 11.5% Low: 11.7% Mid: 16.8% High: 17.6% Max: 18.2%	BAU: 8.1% Low: 8.2% Mid: 11.1% High: 12.1% Max: 12.6%

APPENDIX B. Delphi Panel Description

A Delphi Panel was utilized to inform possible market adoption levels and pacing. A Delphi Process develops consensus estimates for difficult for topics that are uncertain, difficult to quantify, or may have widely varying perspectives. For the GDS Team's New Orleans DSM potential study, the Delphi Process was used to estimate market adoption rates and speed for adoption for different types of technologies. A set of New Orleans experts knowledgeable in either the residential or C&I sector were recruited in panels. The Delphi Panels participated in two rounds of questioning. In the first round, the panelists, provided their best estimates for how the New Orleans market may adopt each technology type. In the second round, the panelists were provided with the average of the first round's responses and logic from the other panelists. In the second round, the panelists were given the opportunity to reconsider their initial estimates. The survey is done anonymously, giving panelists comfort in providing honest feedback to what may be contentious issues.

The panelists represented market actors familiar with either the residential or C&I buildings sectors in New Orleans. Panelists were asked to respond to the general technology types based on measure incentive levels (residential) or simple payback periods (C&I). Each panel had 10 participants that all provided responses. As part of panel recruitment, the GDS Team confirmed that the local expert had the appropriate knowledge to make reasonable judgements on market adoption rates.

Each panel contained representation from each of the following categories:

- Home builders
- HVAC contractors
- Builders of multi-family facilities
- Residential program implementers
- Residential program planner/managers
- Equipment distributors
- Low-income sector and housing advocates
- Real estate developers (residential sector)
- Multi-family building/facility managers
- Local energy efficiency business owners and managers

Panelists were first asked to gauge their view of each measure type for the maximum adoption rate of a measure if incentives were at 100 percent of incremental costs – an instant payback. They also provided the time they thought it would take for the market to reach that maximum adoption. No measure was estimated to achieve a 100 percent adoption rate, even with an instant payback. Panelists were then asked to provide their best estimate of how long it would take to achieve 10% and 90% of the maximum level they identified.

The responses to the "instant payback/100% incentive" questions form the basis to understand the maximum achievable potential. Panelists were additionally asked to provide their view on adoption levels and pacing for alternative incentive conditions.

Residential Sector: incentives equal to 0%, 25%, 50%, or 75% of incremental costs

C&I Sector: simple paybacks of 1 year, 2 years, 4 years, or 8 years

The case descriptions for both the residential and C&I sectors were the same, described below:

Case 1: These measures are easy for [sector customers] to understand: one-for-one replacements. They have low upfront costs and are not very disruptive to install. Examples would be LED lamps or pre-rinse spray valves that can easily pop into existing structures. Assume for now that this is a non-discretionary purchase: either the existing equipment has failed and the owner needs to buy a new unit, or this is new equipment for new construction. In both cases, the decision is between standard efficiency and high efficiency equipment.

Case 2: These measures are fairly easy for [sector customers] to understand, one-for-one replacements, but are higher cost than standard efficiency equipment and often require contractor involvement. Examples would be efficient unitary air conditioning or water heating equipment. Assume for now that this is a non-discretionary purchase: either the existing equipment has failed and the owner needs to buy a new unit, or this is new equipment for new construction. In both cases, the decision is between standard efficiency and high efficiency equipment.

Case 3: Now assume that the equipment is a discretionary purchase (one that is not needed to replace failed equipment). The current equipment is functioning correctly, but the program tries to convince the owner to replace it with a new, higher efficiency unit.

Case 4: These measures are fairly inexpensive but require active engagement and may require behavioral changes in the participant. Examples would be [lighting and controls – C&I] [programmable/learning thermostats – residential].

Case 5 (C&I): These are measures that impact equipment that is core to the central business. Examples may be commercial kitchen equipment for a restaurant, industrial process improvements, and compressed air measures. Assume for now that this is a non-discretionary purchase: either the existing equipment has failed, and the owner needs to buy a new unit or this is new equipment for new construction. In both cases, the decision is between standard efficiency and high efficiency equipment.

Case 5 (Residential): These measures are not that expensive, but are hard to understand, and any homeowner would have to rely on the word of a contractor that the action would have any impact. Examples would be Air Conditioner tune-ups or air sealing.

Case 6: These measures are both expensive and complex, and often have interactions with multiple major building systems. Examples would include [insulation retrofits, energy management systems, a change of cooling system (i.e. from rooftop units to a chilled water plant), as well as holistic above-code new construction – C&I] [insulation retrofits, solar water heaters, deep energy retrofits, and holistic efficiency on new construction projects]

Below we provide examples of qualitative feedback from each of the two panels to the varying cases and provide context to their scoring – considerations that could inform key market barriers or opportunities.

<u>Residential</u>

Case 1:

"Situation depends on age of homeowner."

"A 100% incentive would entice buyers to almost always choose this energy efficient system. Because why not? It seems as if they would cost about the same since the upfront costs are low and install is easy."

"I would say that not many people are educated on these new energy efficiency methods and are unaware of how much money it can save down the road. I have put almost no change between the 0-25% incremental measure cost due to the lack of substantial money savings."

"I believe many people in the New Orleans area will be reluctant to come out of their own pocket up front to buy new appliances that are more expensive specifically for the fact of being more energy efficient. Even though these appliances will likely pay for themselves over their 10–15-year lifespan, people often see more expensive and become very hesitant. The more of the total percentage that Entergy covered, the more participants they will get. In this case though with the easy installment of these appliances, there will likely be a good number of participants."

Case 2:

"Big ticket items like this scenario are hard to sell without high incentive."

"Since the appliances are needed regardless this would still be higher %'s who would choose this option. Lower incentive % would be lower acceptance because of higher costs associated with contractor involvement."

"When it comes to air conditioning and water heating systems, which usually have life spans of over 10 years, people will not change unless their system fails."

"Similar to case 1, participants will be hesitant to spend their own money if Entergy does not cover the full incremental cost. In case 2, I think less people will want to be involved strictly due to the need for some contractor involvement. Many would hear that they need a contractor and immediately say "oh no that's too expensive." However, there would still be a large number of participants due to the need of the appliances."

Case 3: "People won't want to upgrade something that isn't broken, potentially even with incentive."
"Getting people to switch will be difficult, even with 100% incentive."
"Like stated above, most people will not change their system unless they one running fails. Lack of education on the subject also plays a role."
"I think people will be very unwilling to go out of their way to replace perfectly good appliances."

Case 4: "Most older people would not like adopting however as time went on, I think this method could be widely adopted especially with incentive."
"The younger generations are more tech savvy and are incorporating these new devices in their homes already, there will still be older population that will not change. Again, most people won't change a system if theirs isn't broken."
"I think the younger crowd of New Orleans would be more than willing to learn some simple technological changes in their appliances or make some minor changes in their daily routines. The older crowd would be much more hesitant to update technology or change their behavior."

Case 5: "Almost depends on ability of contractor to convince homeowner."
"Some would be willing to rely on others because they don't understand the equipment anyway."
"Most homeowners wouldn't know that their system would need to be resealed unless a contractor was sent out to their homes and inspected the system."
"I think people would tend to be willing for someone else to make changes to their air conditioning if the measures are completely paid for."

Case 6: "Would be most used for new construction, some would not opt into the perceived very high cost."
"Many people will likely see these expensive and complicated changes as too big of a hassle, even with the full payment from Entergy. The less contribution that Entergy makes, exponentially less people will participate."

<u>Commercial and Industrial</u>

Case 1: "Payback needs to be more immediate for people to adopt."
"Better product, people will wait reasonable time period for payback."
"Assume that a long payback period would desensitize energy efficient use."
"Since its non-disruptive, most people would want it immediately. Some just may be able to cover the higher cost without getting paid back for too long."
"People would enjoy this since it is a cheap and needed cost."

Case 2: "Expensive equipment has higher incentive to adopt."
"Better product, people will wait reasonable time period for payback."
"Greater savings and benefit for high-cost equipment. Fewer people to want to payback because high cost of equipment."
"I see people in the real world moving to this option. I see it taking so long though due to the cost."

Case 3: "Hard to see spending discretionary replacement, only see owners swapping when needed or for tax credit."
"Lower adoption rate because some people will not want to be hassled with changing equipment that is functioning properly, even if 100% paid for."
"Some people will say, if it not broke, why fix it?"
"I do not see this being too highly praised. Especially since the existing unit has no problems."

Case 4: "Fully informed buyers play a key factor into the adoption percentages. Marketing this program is a large part of if it will be successful."
"Better product, people will wait reasonable time period for payback."
"Active engagement probably means fewer adopters, sadly."
"Some people may be stuck in their own ways."
"It is a simple transition to go to this option of lighting. The hardest factor would be getting use to the new systems behavior (automatic lights)"

Case 5: "The reliability factor plays a key role in the adoption of the higher energy efficiency measure. this scenario involves risk in the new measure."
"Better product, people will wait reasonable time period for payback."
"Businesses may understand the cost savings over long term, better than individuals."
"While most owners would want to upgrade equipment there will still be a few who don't want change."
"This would be a good option since commercial grade business enjoy saving money."

Case 6: "Hard to see happen for retrofit. So much more goes into construction cost than and MEP. New construction is more sellable."
"High cost, fewer want payback terms. Complexity means fewer may want to partake in adoption."
"I believe it will take to long for the owner to make their money back in long run."
"Complex equals confusing to most customers. This would be an expensive option as well and if not needed, I do not see people wanting to switch over to it."

The results of the Delphi panelists' quantiative results are presented below for each of the two sectors. The GDS Team provided naming conventions to summarize the concept of each case and that were ultimately used to assign adoption curve factors to each of the measures in the study. The data were used to inform the maximum adoption rate in each potential case.

C&I Delphi Panel Results

The following table presents the maximum adoption rates for the C&I sector. Inexpensive measures are tagged with a single "$" while more expensive measures are identifed with "$$$." In all technology cases, one can see that measures with longer paybacks are expected to achieve lower maximum adoption levels than those with shorter paybacks, indicating the importance of incentives to drive market adoption to decrease payback periods.

Table B-1 C&I Sector Maximum Adoption Rates

Measure Case	Description	0 Year Payback	1 Year Payback	2 Year Payback	4 Year Payback	8 Year Payback
1	Lighting / ROB $	80.5%	64.4%	50.3%	38.5%	22.9%
2	HVAC / ROB $$$	83.0%	59.3%	49.4%	37.6%	24.7%
3	Early Replacement	36.8%	24.6%	15.7%	9.3%	8.8%
4	SEM/RCx/EMS / Retrofit $	71.0%	55.2%	44.3%	30.5%	21.4%
5	Cooking / Compressed Air / Industrial Process	76.7%	49.7%	43.9%	38.5%	26.7%
6	Retrofit $$$	68.3%	42.0%	37.0%	31.6%	19.1%

Residential Delphi Panel Results

The following table presents the maximum adoption rates for the residential sector. Inexpensive measures are tagged with a single "$" while more expensive measures are identifed with "$$$." In all technology cases, one can see that measures with lower incentive levels are expected to achieve lower maximum adoption levels than those with higher incentive levels, indicating the importance of incentives to drive market adoption.

Table B-2 Residential Sector Maximum Adoption Rates

Measure Case	Description	100% Incentive	75% Incentive	50% Incentive	25% Incentive	0% Incentive
1	LED/Appliance (ROB)	75.2%	66.5%	56.5%	41.0%	29.0%
2	HVAC/WH Equip (ROB)	79.0%	66.5%	52.5%	35.8%	22.5%
3	Early Replacement	46.0%	34.1%	23.0%	11.0%	4.2%
4	Retrofit ($)	67.5%	62.5%	46.2%	34.0%	25.6%
5	Retrofit ($$)	65.0%	52.6%	40.7%	24.6%	15.0%
6	Retrofit ($$$)	49.9%	35.0%	22.6%	12.0%	4.6%

APPENDIX C. Residential Energy Efficiency Measure Detail

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
1001	Appliances	ENERGY STAR Clothes Washer - electric WH / electric dryer	No program	SF	ROB	570	44%	251	0.06	14	$190	100%	18%	75%	26%	55%	78.9%	68.5%	68.5%	0.7	5,482	0	0	0	0
1002	Appliances	ENERGY STAR Clothes Washer - electric WH / electric dryer	No program	SF	ROB	570	44%	251	0.06	14	$190	100%	18%	75%	26%	55%	78.9%	68.5%	68.5%	0.7	1,703	0	0	0	0
1003	Appliances	ENERGY STAR Clothes Washer - electric WH / electric dryer	No program	SF	NC	570	44%	251	0.06	14	$190	100%	18%	75%	26%	0%	78.9%	37.4%	66.5%	0.7	876	0	0	0	0
1004	Appliances	ENERGY STAR Clothes Washer - electric WH / electric dryer	No program	MF	ROB	570	44%	251	0.06	14	$190	100%	18%	75%	26%	55%	78.9%	68.5%	68.5%	0.7	1,731	0	0	0	0
1005	Appliances	ENERGY STAR Clothes Washer - electric WH / electric dryer	No program	MF	ROB	570	44%	251	0.06	14	$190	100%	18%	75%	26%	55%	78.9%	68.5%	68.5%	0.7	538	0	0	0	0
1006	Appliances	ENERGY STAR Clothes Washer - electric WH / electric dryer	No program	MF	NC	570	44%	251	0.06	14	$190	100%	18%	75%	26%	0%	78.9%	37.4%	66.5%	0.7	277	0	0	0	0
1007	Appliances	ENERGY STAR Clothes Washer - electric WH / gas dryer	No program	SF	ROB	207	54%	112	0.03	14	$190	100%	18%	75%	17%	55%	78.9%	68.5%	68.5%	0.3	1,606	0	0	0	0
1008	Appliances	ENERGY STAR Clothes Washer - electric WH / gas dryer	No program	SF	ROB	207	54%	112	0.03	14	$190	100%	18%	75%	17%	55%	78.9%	68.5%	68.5%	0.3	499	0	0	0	0
1009	Appliances	ENERGY STAR Clothes Washer - electric WH / gas dryer	No program	SF	NC	207	54%	112	0.03	14	$190	100%	18%	75%	17%	0%	78.9%	37.4%	66.5%	0.3	257	0	0	0	0
1010	Appliances	ENERGY STAR Clothes Washer - electric WH / gas dryer	No program	MF	ROB	207	54%	112	0.03	14	$190	100%	18%	75%	17%	55%	78.9%	68.5%	68.5%	0.3	507	0	0	0	0
1011	Appliances	ENERGY STAR Clothes Washer - electric WH / gas dryer	No program	MF	ROB	207	54%	112	0.03	14	$190	100%	18%	75%	17%	55%	78.9%	68.5%	68.5%	0.3	158	0	0	0	0
1012	Appliances	ENERGY STAR Clothes Washer - electric WH / gas dryer	No program	MF	NC	207	54%	112	0.03	14	$190	100%	18%	75%	17%	0%	78.9%	37.4%	66.5%	0.3	81	0	0	0	0
1013	Appliances	ENERGY STAR Clothes Washer - gas WH / electric dryer	No program	SF	ROB	404	40%	161	0.04	14	$190	100%	18%	75%	29%	55%	78.9%	68.5%	68.5%	0.5	3,927	0	0	0	0
1014	Appliances	ENERGY STAR Clothes Washer - gas WH / electric dryer	No program	SF	ROB	404	40%	161	0.04	14	$190	100%	18%	75%	29%	55%	78.9%	68.5%	68.5%	0.5	1,220	0	0	0	0
1015	Appliances	ENERGY STAR Clothes Washer - gas WH / electric dryer	No program	SF	NC	404	40%	161	0.04	14	$190	100%	18%	75%	29%	0%	78.9%	37.4%	66.5%	0.5	628	0	0	0	0
1016	Appliances	ENERGY STAR Clothes Washer - gas WH / electric dryer	No program	MF	ROB	404	40%	161	0.04	14	$190	100%	18%	75%	29%	55%	78.9%	68.5%	68.5%	0.5	1,240	0	0	0	0
1017	Appliances	ENERGY STAR Clothes Washer - gas WH / electric dryer	No program	MF	ROB	404	40%	161	0.04	14	$190	100%	18%	75%	29%	55%	78.9%	68.5%	68.5%	0.5	385	0	0	0	0
1018	Appliances	ENERGY STAR Clothes Washer - gas WH / electric dryer	No program	MF	NC	404	40%	161	0.04	14	$190	100%	18%	75%	29%	0%	78.9%	37.4%	66.5%	0.5	198	0	0	0	0
1019	Appliances	ENERGY STAR Clothes Washer - gas WH / gas dryer	No program	SF	ROB	41	54%	22	0.01	14	$190	100%	18%	75%	19%	55%	78.9%	68.5%	68.5%	0.1	357	0	0	0	0
1020	Appliances	ENERGY STAR Clothes Washer - gas WH / gas dryer	No program	SF	ROB	41	54%	22	0.01	14	$190	100%	18%	75%	19%	55%	78.9%	68.5%	68.5%	0.1	111	0	0	0	0
1021	Appliances	ENERGY STAR Clothes Washer - gas WH / gas dryer	No program	SF	NC	41	54%	22	0.01	14	$190	100%	18%	75%	19%	0%	78.9%	37.4%	66.5%	0.1	57	0	0	0	0
1022	Appliances	ENERGY STAR Clothes Washer - gas WH / gas dryer	No program	MF	ROB	41	54%	22	0.01	14	$190	100%	18%	75%	19%	55%	78.9%	68.5%	68.5%	0.1	113	0	0	0	0
1023	Appliances	ENERGY STAR Clothes Washer - gas WH / gas dryer	No program	MF	ROB	41	54%	22	0.01	14	$190	100%	18%	75%	19%	55%	78.9%	68.5%	68.5%	0.1	35	0	0	0	0
1024	Appliances	ENERGY STAR Clothes Washer - gas WH / gas dryer	No program	MF	NC	41	54%	22	0.01	14	$190	100%	18%	75%	19%	0%	78.9%	37.4%	66.5%	0.1	18	0	0	0	0
1025	Appliances	ENERGY STAR Clothes Dryer - Vented Electric, Standard	No program	SF	ROB	730	21%	152	0.02	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	1.6	1,718	2,273	1,794	1,557	1,557
1026	Appliances	ENERGY STAR Clothes Dryer - Vented Electric, Standard	No program	SF	ROB	730	21%	152	0.02	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	1.6	534	706	557	484	484
1027	Appliances	ENERGY STAR Clothes Dryer - Vented Electric, Standard	No program	SF	NC	730	21%	152	0.02	12	$40	100%	52%	75%	53%	0%	78.9%	57.2%	66.5%	1.6	275	283	195	134	156
1028	Appliances	ENERGY STAR Clothes Dryer - Vented Electric, Standard	No program	MF	ROB	730	21%	152	0.02	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	1.6	543	718	566	492	492
1029	Appliances	ENERGY STAR Clothes Dryer - Vented Electric, Standard	No program	MF	ROB	730	21%	152	0.02	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	1.6	169	223	176	153	153
1030	Appliances	ENERGY STAR Clothes Dryer - Vented Electric, Standard	No program	MF	NC	730	21%	152	0.02	12	$40	100%	52%	75%	53%	0%	78.9%	57.2%	66.5%	1.6	87	89	62	42	49
1031	Appliances	Heat Pump Dryer	No program	SF	ROB	730	59%	432	0.06	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	4.5	13,781	18,230	14,387	12,487	12,487
1032	Appliances	Heat Pump Dryer	No program	SF	ROB	730	59%	432	0.06	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	4.5	4,281	5,662	4,469	3,879	3,879
1033	Appliances	Heat Pump Dryer	No program	SF	NC	730	59%	432	0.06	12	$40	100%	52%	75%	53%	0%	78.9%	57.2%	66.5%	4.5	2,203	2,273	1,563	1,078	1,252
1034	Appliances	Heat Pump Dryer	No program	MF	ROB	730	59%	432	0.06	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	4.5	4,352	5,757	4,543	3,943	3,943
1035	Appliances	Heat Pump Dryer	No program	MF	ROB	730	59%	432	0.06	12	$40	100%	52%	75%	53%	55%	78.9%	68.5%	68.5%	4.5	1,352	1,788	1,411	1,225	1,225
1036	Appliances	Heat Pump Dryer	No program	MF	NC	730	59%	432	0.06	12	$40	100%	52%	75%	53%	0%	78.9%	57.2%	66.5%	4.5	696	718	493	340	396
1037	Appliances	ENERGY STAR Dishwasher - Electric WH	No program	SF	ROB	270	4%	12	0.00	15	$10	100%	20%	75%	29%	55%	78.9%	68.5%	68.5%	0.6	293	0	0	0	0
1038	Appliances	ENERGY STAR Dishwasher - Electric WH	No program	SF	ROB	270	4%	12	0.00	15	$10	100%	20%	75%	29%	55%	78.9%	68.5%	68.5%	0.6	91	0	0	0	0
1039	Appliances	ENERGY STAR Dishwasher - Electric WH	No program	SF	NC	270	4%	12	0.00	15	$10	100%	20%	75%	29%	0%	78.9%	38.3%	66.5%	0.6	47	0	0	0	0
1040	Appliances	ENERGY STAR Dishwasher - Electric WH	No program	MF	ROB	270	4%	12	0.00	15	$10	100%	20%	75%	29%	55%	78.9%	68.5%	68.5%	0.6	92	0	0	0	0
1041	Appliances	ENERGY STAR Dishwasher - Electric WH	No program	MF	ROB	270	4%	12	0.00	15	$10	100%	20%	75%	29%	55%	78.9%	68.5%	68.5%	0.6	29	0	0	0	0
1042	Appliances	ENERGY STAR Dishwasher - Electric WH	No program	MF	NC	270	4%	12	0.00	15	$10	100%	20%	75%	33%	0%	78.9%	38.3%	66.5%	0.6	17	0	0	0	0
1043	Appliances	ENERGY STAR Dishwasher - Gas WH	No program	SF	ROB	270	2%	5	0.00	15	$10	100%	20%	75%	33%	55%	78.9%	68.5%	68.5%	0.2	139	0	0	0	0
1044	Appliances	ENERGY STAR Dishwasher - Gas WH	No program	SF	ROB	270	2%	5	0.00	15	$10	100%	20%	75%	33%	55%	78.9%	68.5%	68.5%	0.2	43	0	0	0	0
1045	Appliances	ENERGY STAR Dishwasher - Gas WH	No program	SF	NC	270	2%	5	0.00	15	$10	100%	20%	75%	33%	0%	78.9%	38.3%	66.5%	0.2	22	0	0	0	0
1046	Appliances	ENERGY STAR Dishwasher - Gas WH	No program	MF	ROB	270	2%	5	0.00	15	$10	100%	20%	75%	33%	55%	78.9%	68.5%	68.5%	0.2	44	0	0	0	0
1047	Appliances	ENERGY STAR Dishwasher - Gas WH	No program	MF	ROB	270	2%	5	0.00	15	$10	100%	20%	75%	33%	55%	78.9%	68.5%	68.5%	0.2	14	0	0	0	0
1048	Appliances	ENERGY STAR Dishwasher - Gas WH	No program	MF	NC	270	2%	5	0.00	15	$10	100%	20%	75%	33%	0%	78.9%	38.3%	66.5%	0.2	7	0	0	0	0
1049	Appliances	ENERGY STAR Water Cooler - Hot and Cold	No program	SF	ROB	799	6%	47	0.01	10	$4	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	3.6	120	154	121	105	105
1050	Appliances	ENERGY STAR Water Cooler - Hot and Cold	No program	SF	ROB	799	6%	47	0.01	10	$4	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	3.6	37	48	38	33	33
1051	Appliances	ENERGY STAR Water Cooler - Hot and Cold	No program	SF	NC	799	6%	47	0.01	10	$4	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	3.6	19	19	13	9	11
1052	Appliances	ENERGY STAR Water Cooler - Hot and Cold	No program	MF	ROB	799	6%	47	0.01	10	$4	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	3.6	38	48	38	33	33
1053	Appliances	ENERGY STAR Water Cooler - Hot and Cold	No program	MF	ROB	799	6%	47	0.01	10	$4	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	3.6	12	15	12	10	10
1054	Appliances	ENERGY STAR Water Cooler - Hot and Cold	No program	MF	NC	799	6%	47	0.01	10	$4	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	3.6	6	6	4	3	3
1055	Appliances	ENERGY STAR Air Purifier - CADR 151-200	No program	SF	ROB	1,025	29%	295	0.07	9	$50	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	2.1	744	954	753	654	654
1056	Appliances	ENERGY STAR Air Purifier - CADR 151-200	No program	SF	ROB	1,025	29%	295	0.07	9	$50	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	2.1	231	296	234	203	203
1057	Appliances	ENERGY STAR Air Purifier - CADR 151-200	No program	SF	NC	1,025	29%	295	0.07	9	$50	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	2.1	119	119	87	61	71
1058	Appliances	ENERGY STAR Air Purifier - CADR 151-200	No program	MF	ROB	1,025	29%	295	0.07	9	$50	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	2.1	235	301	238	206	206
1059	Appliances	ENERGY STAR Air Purifier - CADR 151-200	No program	MF	ROB	1,025	29%	295	0.07	9	$50	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	2.1	73	94	74	64	64
1060	Appliances	ENERGY STAR Air Purifier - CADR 151-200	No program	MF	NC	1,025	29%	295	0.07	9	$50	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	2.1	38	38	28	19	22
1061	Appliances	ENERGY STAR Ceiling Fan	No program	SF	ROB	105	15%	16	0.01	20	$46	100%	52%	75%	100%	55%	78.9%	68.5%	68.5%	0.4	1,346	0	0	0	0
1062	Appliances	ENERGY STAR Ceiling Fan	No program	SF	ROB	105	15%	16	0.01	20	$46	100%	52%	75%	100%	55%	78.9%	68.5%	68.5%	0.4	418	0	0	0	0
1063	Appliances	ENERGY STAR Ceiling Fan	No program	SF	NC	105	15%	16	0.01	20	$46	100%	52%	75%	100%	0%	78.9%	57.2%	66.5%	0.4	215	0	0	0	0
1064	Appliances	ENERGY STAR Ceiling Fan	No program	MF	ROB	105	15%	16	0.01	20	$46	100%	52%	75%	100%	55%	78.9%	68.5%	68.5%	0.4	425	0	0	0	0
1065	Appliances	ENERGY STAR Ceiling Fan	No program	MF	ROB	105	15%	16	0.01	20	$46	100%	52%	75%	100%	55%	78.9%	68.5%	68.5%	0.4	132	0	0	0	0
1066	Appliances	ENERGY STAR Ceiling Fan	No program	MF	NC	105	15%	16	0.01	20	$46	100%	52%	75%	100%	0%	78.9%	57.2%	66.5%	0.4	68	0	0	0	0
1067	Appliances	Advanced Power Strips - Tier 1	Home Performance	SF	Retrofit	400	13%	53	0.01	10	$21	100%	95%	95%	200%	10%	72.4%	70.4%	70.4%	0.8	0	0	0	0	0
1068	Appliances	Advanced Power Strips - Tier 1	Home Performance	SF	Retrofit	400	13%	53	0.01	10	$21	100%	95%	95%	200%	10%	72.4%	70.4%	70.4%	0.8	0	0	0	0	0
1069	Appliances	Advanced Power Strips - Tier 1	Home Performance	SF	NC	400	13%	53	0.01	10	$21	100%	95%	95%	200%	0%	78.9%	76.4%	76.4%	0.8	0	0	0	0	0
1070	Appliances	Advanced Power Strips - Tier 1	Home Performance	MF	Retrofit	400	13%	53	0.01	10	$21	100%	95%	95%	200%	10%	72.4%	70.4%	70.4%	0.8	0	0	0	0	0
1071	Appliances	Advanced Power Strips - Tier 1	Home Performance	MF	Retrofit	400	13%	53	0.01	10	$21	100%	95%	95%	200%	10%	72.4%	70.4%	70.4%	0.8	0	0	0	0	0
1072	Appliances	Advanced Power Strips - Tier 1	Home Performance	MF	NC	400	13%	53	0.01	10	$21	100%	95%	95%	200%	0%	78.9%	76.4%	76.4%	0.8	0	0	0	0	0
1073	Appliances	Advanced Power Strips - Tier 2	Home Performance	SF	Retrofit	400	51%	204	0.02	10	$65	100%	31%	75%	200%	10%	72.4%	37.0%	62.5%	1.0	40,738	40,738	28,572	12,992	18,286
1074	Appliances	Advanced Power Strips - Tier 2	Home Performance	SF	Retrofit	400	51%	204	0.02	10	$65	100%	31%	75%	200%	10%	72.4%	37.0%	62.5%	1.0	12,654	12,654	8,875	4,036	5,680
1075	Appliances	Advanced Power Strips - Tier 2	Home Performance	SF	NC	400	51%	204	0.02	10	$65	100%	31%	75%	200%	0%	78.9%	44.1%	66.5%	1.0	5,491	5,491	3,604	2,016	3,036
1076	Appliances	Advanced Power Strips - Tier 2	Home Performance	MF	Retrofit	400	51%	204	0.02	10	$65	100%	31%	75%	200%	10%	72.4%	37.0%	62.5%	1.0	12,865	12,865	9,023	4,103	5,775
1077	Appliances	Advanced Power Strips - Tier 2	Home Performance	MF	Retrofit	400	51%	204	0.02	10	$65	100%	31%	75%	200%	10%	72.4%	37.0%	62.5%	1.0	3,996	3,996	2,803	1,274	1,794
1078	Appliances	Advanced Power Strips - Tier 2	Home Performance	MF	NC	400	51%	204	0.02	10	$65	100%	31%	75%	200%	0%	78.9%	44.1%	66.5%	1.0	1,734	1,734	1,138	637	959
1079	Appliances	ENERGY STAR Dehumidifier	No program	SF	ROB	838	17%	142	0.03	15	$10	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	7.9	295	379	299	259	259
1080	Appliances	ENERGY STAR Dehumidifier	No program	SF	ROB	838	17%	142	0.03	15	$10	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	7.9	92	118	93	81	81
1081	Appliances	ENERGY STAR Dehumidifier	No program	SF	NC	838	17%	142	0.03	15	$10	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	7.9	47	47	30	21	24

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
1082	Appliances	ENERGY STAR Dehumidifier	No program	MF	ROB	838	17%	142	0.03	15	$10	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	7.9	93	120	94	82	82
1083	Appliances	ENERGY STAR Dehumidifier	No program	MF	ROB	838	17%	142	0.03	15	$10	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	7.9	29	37	29	25	25
1084	Appliances	ENERGY STAR Dehumidifier	No program	MF	NC	838	17%	142	0.03	15	$10	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	7.9	15	15	10	7	8
1085	Appliances	ENERGY STAR Most Efficient Dehumidifier	No program	SF	ROB	838	25%	210	0.05	15	$75	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	1.7	93	119	94	82	82
1086	Appliances	ENERGY STAR Most Efficient Dehumidifier	No program	SF	ROB	838	25%	210	0.05	15	$75	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	1.7	29	37	29	25	25
1087	Appliances	ENERGY STAR Most Efficient Dehumidifier	No program	SF	NC	838	25%	210	0.05	15	$75	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	1.7	15	15	9	7	8
1088	Appliances	ENERGY STAR Most Efficient Dehumidifier	No program	MF	ROB	838	25%	210	0.05	15	$75	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	1.7	29	38	30	26	26
1089	Appliances	ENERGY STAR Most Efficient Dehumidifier	No program	MF	ROB	838	25%	210	0.05	15	$75	100%	52%	75%	3%	55%	78.9%	68.5%	68.5%	1.7	9	12	9	8	8
1090	Appliances	ENERGY STAR Most Efficient Dehumidifier	No program	MF	NC	838	25%	210	0.05	15	$75	100%	52%	75%	3%	0%	78.9%	57.2%	66.5%	1.7	5	5	3	2	2
1091	Appliances	ENERGY STAR Pool Pump(Variable Spd)	Residential Lighting & Appliance	SF	ROB	3,383	15%	520	0.06	10	$314	100%	56%	75%	9%	55%	78.9%	68.5%	68.5%	0.6	3,937	0	0	0	0
1092	Appliances	ENERGY STAR Pool Pump(Variable Spd)	Residential Lighting & Appliance	SF	ROB	3,383	15%	520	0.06	10	$314	100%	56%	75%	9%	55%	78.9%	68.5%	68.5%	0.6	1,223	0	0	0	0
1093	Appliances	ENERGY STAR Pool Pump(Variable Spd)	Residential Lighting & Appliance	SF	NC	3,383	15%	520	0.06	10	$314	100%	56%	75%	9%	0%	78.9%	58.7%	66.5%	0.6	629	0	0	0	0
1094	Appliances	ENERGY STAR Pool Pump(Variable Spd)	Residential Lighting & Appliance	MF	ROB	3,383	15%	520	0.06	10	$314	100%	56%	75%	9%	55%	78.9%	68.5%	68.5%	0.6	1,243	0	0	0	0
1095	Appliances	ENERGY STAR Pool Pump(Variable Spd)	Residential Lighting & Appliance	MF	ROB	3,383	15%	520	0.06	10	$314	100%	56%	75%	9%	55%	78.9%	68.5%	68.5%	0.6	386	0	0	0	0
1096	Appliances	ENERGY STAR Pool Pump(Variable Spd)	Residential Lighting & Appliance	MF	NC	3,383	15%	520	0.06	10	$314	100%	56%	75%	9%	0%	78.9%	58.7%	66.5%	0.6	199	0	0	0	0
1097	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	SF	ROB	564	10%	56	0.01	17	$40	100%	100%	100%	100%	55%	78.9%	78.9%	78.9%	0.8	8,564	0	0	0	0
1098	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	SF	ROB	564	10%	56	0.01	17	$40	100%	100%	100%	100%	55%	78.9%	78.9%	78.9%	0.8	2,660	0	0	0	0
1099	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	SF	ER	564	10%	56	0.01	17	$70	100%	57%	75%	100%	55%	68.5%	68.5%	68.5%	0.5	582	0	0	0	0
1100	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	SF	ER	564	10%	56	0.01	17	$70	100%	57%	75%	100%	55%	68.5%	68.5%	68.5%	0.5	181	0	0	0	0
1101	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	SF	NC	564	10%	56	0.01	17	$40	100%	100%	100%	100%	0%	78.9%	78.9%	78.9%	0.8	531	0	0	0	0
1102	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	MF	ROB	564	10%	56	0.01	17	$40	100%	100%	100%	100%	55%	78.9%	78.9%	78.9%	0.8	657	0	0	0	0
1103	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	MF	ROB	564	10%	56	0.01	17	$40	100%	100%	100%	100%	55%	78.9%	78.9%	78.9%	0.8	204	0	0	0	0
1104	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	MF	ER	564	10%	56	0.01	17	$70	100%	57%	75%	100%	55%	68.5%	68.5%	68.5%	0.5	190	0	0	0	0
1105	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	MF	ER	564	10%	56	0.01	17	$70	100%	57%	75%	100%	55%	68.5%	68.5%	68.5%	0.5	59	0	0	0	0
1106	Appliances	ENERGY STAR Refrigerator	Residential Lighting & Appliance	MF	NC	564	10%	56	0.01	17	$40	100%	100%	100%	100%	0%	78.9%	78.9%	78.9%	0.8	168	0	0	0	0
1107	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	SF	ROB	564	15%	85	0.01	17	$140	100%	29%	75%	100%	55%	78.9%	68.5%	68.5%	0.3	1,295	0	0	0	0
1108	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	SF	ROB	564	15%	85	0.01	17	$140	100%	29%	75%	100%	55%	78.9%	68.5%	68.5%	0.3	402	0	0	0	0
1109	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	SF	ER	564	15%	85	0.01	17	$170	100%	24%	75%	100%	55%	68.5%	68.5%	68.5%	0.3	539	0	0	0	0
1110	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	SF	ER	564	15%	85	0.01	17	$170	100%	24%	75%	100%	55%	68.5%	68.5%	68.5%	0.3	167	0	0	0	0
1111	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	SF	NC	564	15%	85	0.01	17	$140	100%	29%	75%	100%	0%	78.9%	42.9%	66.5%	0.3	341	0	0	0	0
1112	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	MF	ROB	564	15%	85	0.01	17	$170	100%	24%	75%	100%	55%	78.9%	68.5%	68.5%	0.3	348	0	0	0	0
1113	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	MF	ROB	564	15%	85	0.01	17	$170	100%	24%	75%	100%	55%	78.9%	68.5%	68.5%	0.3	108	0	0	0	0
1114	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	MF	ER	564	15%	85	0.01	17	$170	100%	24%	75%	100%	55%	68.5%	68.5%	68.5%	0.3	176	0	0	0	0
1115	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	MF	ER	564	15%	85	0.01	17	$170	100%	24%	75%	100%	55%	68.5%	68.5%	68.5%	0.3	55	0	0	0	0
1116	Appliances	ENERGY STAR Refrigerator - Tier 2	Residential Lighting & Appliance	MF	NC	564	15%	85	0.01	17	$140	100%	29%	75%	100%	0%	78.9%	42.9%	66.5%	0.3	108	0	0	0	0
1117	Appliances	ENERGY STAR Freezer	No program	SF	ROB	349	10%	35	0.01	22	$42	100%	52%	75%	20%	55%	78.9%	68.5%	68.5%	0.6	535	0	0	0	0
1118	Appliances	ENERGY STAR Freezer	No program	SF	ROB	349	10%	35	0.01	22	$42	100%	52%	75%	20%	55%	78.9%	68.5%	68.5%	0.6	166	0	0	0	0
1119	Appliances	ENERGY STAR Freezer	No program	SF	NC	349	10%	35	0.01	22	$42	100%	52%	75%	20%	0%	78.9%	57.2%	66.5%	0.6	94	0	0	0	0
1120	Appliances	ENERGY STAR Freezer	No program	MF	ROB	349	10%	35	0.01	22	$42	100%	52%	75%	20%	55%	78.9%	68.5%	68.5%	0.6	169	0	0	0	0
1121	Appliances	ENERGY STAR Freezer	No program	MF	ROB	349	10%	35	0.01	22	$42	100%	52%	75%	20%	55%	78.9%	68.5%	68.5%	0.6	53	0	0	0	0
1122	Appliances	ENERGY STAR Freezer	No program	MF	NC	349	10%	35	0.01	22	$42	100%	52%	75%	20%	0%	78.9%	57.2%	66.5%	0.6	30	0	0	0	0
1123	Appliances	Refrigerator Recycling	No program	SF	Recycle	1,192	93%	1,111	0.14	17	$170	100%	29%	75%	8%	0%	70.3%	30.0%	52.6%	3.6	8,147	8,147	3,875	437	417
1124	Appliances	Refrigerator Recycling	No program	SF	Recycle	1,192	93%	1,111	0.14	17	$170	100%	29%	75%	8%	0%	70.3%	30.0%	52.6%	3.6	2,531	2,531	1,204	136	130
1125	Appliances	Refrigerator Recycling	No program	MF	Recycle	1,192	93%	1,111	0.14	17	$170	100%	29%	75%	8%	0%	70.3%	30.0%	52.6%	3.6	2,573	2,573	1,224	138	132
1126	Appliances	Refrigerator Recycling	No program	MF	Recycle	1,192	93%	1,111	0.14	17	$170	100%	29%	75%	8%	0%	70.3%	30.0%	52.6%	3.6	799	799	380	43	41
1127	Appliances	Freezer Recycling	No program	SF	Recycle	772	85%	660	0.08	12	$170	100%	29%	75%	6%	0%	70.3%	30.0%	52.6%	1.5	2,562	2,562	1,509	138	125
1128	Appliances	Freezer Recycling	No program	SF	Recycle	772	85%	660	0.08	12	$170	100%	29%	75%	6%	0%	70.3%	30.0%	52.6%	1.5	796	796	469	43	39
1129	Appliances	Freezer Recycling	No program	MF	Recycle	772	85%	660	0.08	12	$170	100%	29%	75%	6%	0%	70.3%	30.0%	52.6%	1.5	809	809	477	44	40
1130	Appliances	Freezer Recycling	No program	MF	Recycle	772	85%	660	0.08	12	$170	100%	29%	75%	6%	0%	70.3%	30.0%	52.6%	1.5	251	251	148	14	12
2001	Domestic Hot Water	Heat Pump Water Heater - Gas Furnace	Residential Lighting & Appliance	SF	ROB	2,455	74%	1,826	0.16	10	$404	100%	37%	75%	8%	1%	82.2%	43.1%	66.5%	1.4	3,650	3,672	3,328	1,751	2,667
2002	Domestic Hot Water	Heat Pump Water Heater - Gas Furnace	Residential Lighting & Appliance	SF	ROB	2,455	74%	1,826	0.16	10	$404	100%	37%	75%	8%	1%	82.2%	43.1%	66.5%	1.4	1,134	1,141	1,034	544	829
2003	Domestic Hot Water	Heat Pump Water Heater - Gas Furnace	Residential Lighting & Appliance	SF	NC	2,455	74%	1,826	0.16	10	$404	100%	37%	75%	8%	0%	82.2%	43.1%	66.5%	1.4	595	595	536	278	429
2004	Domestic Hot Water	Heat Pump Water Heater - Gas Furnace	Residential Lighting & Appliance	MF	ROB	2,455	74%	1,826	0.16	10	$404	100%	37%	75%	8%	1%	82.2%	43.1%	66.5%	1.4	576	580	525	277	421
2005	Domestic Hot Water	Heat Pump Water Heater - Gas Furnace	Residential Lighting & Appliance	MF	ROB	2,455	74%	1,826	0.16	10	$404	100%	37%	75%	8%	1%	82.2%	43.1%	66.5%	1.4	179	180	163	86	131
2006	Domestic Hot Water	Heat Pump Water Heater - Gas Furnace	Residential Lighting & Appliance	MF	NC	2,455	74%	1,826	0.16	10	$404	100%	37%	75%	8%	0%	82.2%	43.1%	66.5%	1.4	94	94	85	44	68
2007	Domestic Hot Water	Heat Pump Water Heater - Heat Pump	Residential Lighting & Appliance	SF	ROB	2,455	66%	1,631	0.14	10	$404	100%	37%	75%	3%	1%	82.2%	43.1%	66.5%	1.3	1,143	1,150	1,042	548	835
2008	Domestic Hot Water	Heat Pump Water Heater - Heat Pump	Residential Lighting & Appliance	SF	ROB	2,455	66%	1,631	0.14	10	$404	100%	37%	75%	3%	1%	82.2%	43.1%	66.5%	1.3	355	357	324	170	259
2009	Domestic Hot Water	Heat Pump Water Heater - Heat Pump	Residential Lighting & Appliance	SF	NC	2,455	66%	1,631	0.14	10	$404	100%	37%	75%	3%	0%	82.2%	43.1%	66.5%	1.3	186	186	168	87	134
2010	Domestic Hot Water	Heat Pump Water Heater - Heat Pump	Residential Lighting & Appliance	MF	ROB	2,455	66%	1,631	0.14	10	$404	100%	37%	75%	3%	1%	82.2%	43.1%	66.5%	1.3	181	182	165	87	132
2011	Domestic Hot Water	Heat Pump Water Heater - Heat Pump	Residential Lighting & Appliance	MF	ROB	2,455	66%	1,631	0.14	10	$404	100%	37%	75%	3%	1%	82.2%	43.1%	66.5%	1.3	56	56	51	27	41
2012	Domestic Hot Water	Heat Pump Water Heater - Heat Pump	Residential Lighting & Appliance	MF	NC	2,455	66%	1,631	0.14	10	$404	100%	37%	75%	3%	0%	82.2%	43.1%	66.5%	1.3	29	29	27	14	21
2013	Domestic Hot Water	Heat Pump Water Heater - Electric Resistance	Residential Lighting & Appliance	SF	ROB	2,455	61%	1,497	0.13	10	$404	100%	37%	75%	37%	1%	82.2%	43.1%	66.5%	1.2	14,186	14,271	12,934	6,806	10,366
2014	Domestic Hot Water	Heat Pump Water Heater - Electric Resistance	Residential Lighting & Appliance	SF	ROB	2,455	61%	1,497	0.13	10	$404	100%	37%	75%	37%	1%	82.2%	43.1%	66.5%	1.2	4,406	4,433	4,017	2,114	3,220
2015	Domestic Hot Water	Heat Pump Water Heater - Electric Resistance	Residential Lighting & Appliance	SF	NC	2,455	61%	1,497	0.13	10	$404	100%	37%	75%	37%	0%	82.2%	43.1%	66.5%	1.2	2,311	2,313	2,084	1,079	1,666
2016	Domestic Hot Water	Heat Pump Water Heater - Electric Resistance	Residential Lighting & Appliance	MF	ROB	2,455	61%	1,497	0.13	10	$404	100%	37%	75%	37%	1%	82.2%	43.1%	66.5%	1.2	2,240	2,253	2,042	1,075	1,637
2017	Domestic Hot Water	Heat Pump Water Heater - Electric Resistance	Residential Lighting & Appliance	MF	ROB	2,455	61%	1,497	0.13	10	$404	100%	37%	75%	37%	1%	82.2%	43.1%	66.5%	1.2	696	700	634	334	508
2018	Domestic Hot Water	Heat Pump Water Heater - Electric Resistance	Residential Lighting & Appliance	MF	NC	2,455	61%	1,497	0.13	10	$404	100%	37%	75%	37%	0%	82.2%	43.1%	66.5%	1.2	365	365	329	170	263
2019	Domestic Hot Water	Heat Pump Water Heater - Unconditioned	Residential Lighting & Appliance	SF	ROB	2,455	69%	1,690	0.15	10	$404	100%	37%	75%	47%	1%	82.2%	43.1%	66.5%	1.3	20,622	20,746	18,801	9,893	15,068
2020	Domestic Hot Water	Heat Pump Water Heater - Unconditioned	Residential Lighting & Appliance	SF	ROB	2,455	69%	1,690	0.15	10	$404	100%	37%	75%	47%	1%	82.2%	43.1%	66.5%	1.3	6,405	6,444	5,840	3,073	4,680
2021	Domestic Hot Water	Heat Pump Water Heater - Unconditioned	Residential Lighting & Appliance	SF	NC	2,455	69%	1,690	0.15	10	$404	100%	37%	75%	47%	0%	82.2%	43.1%	66.5%	1.3	3,360	3,363	3,029	1,569	2,421
2022	Domestic Hot Water	Heat Pump Water Heater - Unconditioned	Residential Lighting & Appliance	MF	ROB	2,455	69%	1,690	0.15	10	$404	100%	37%	75%	47%	1%	82.2%	43.1%	66.5%	1.3	3,256	3,276	2,969	1,562	2,379
2023	Domestic Hot Water	Heat Pump Water Heater - Unconditioned	Residential Lighting & Appliance	MF	ROB	2,455	69%	1,690	0.15	10	$404	100%	37%	75%	47%	1%	82.2%	43.1%	66.5%	1.3	1,011	1,017	922	485	739
2024	Domestic Hot Water	Heat Pump Water Heater - Unconditioned	Residential Lighting & Appliance	MF	NC	2,455	69%	1,690	0.15	10	$404	100%	37%	75%	47%	0%	82.2%	43.1%	66.5%	1.3	531	531	478	248	382
2025	Domestic Hot Water	Solar with Electric Backup	No program	SF	ROB	2,455	90%	2,212	0.19	15	$8,401	100%	5%	75%	0%	1%	82.2%	30.9%	66.5%	0.1	0	0	0	0	0
2026	Domestic Hot Water	Solar with Electric Backup	No program	SF	ROB	2,455	90%	2,212	0.19	15	$8,401	100%	5%	75%	0%	1%	82.2%	30.9%	66.5%	0.1	0	0	0	0	0
2027	Domestic Hot Water	Solar with Electric Backup	No program	SF	NC	2,455	90%	2,212	0.19	15	$8,401	100%	5%	75%	0%	0%	82.2%	30.0%	66.5%	0.1	0	0	0	0	0
2028	Domestic Hot Water	Solar with Electric Backup	No program	MF	ROB	2,455	90%	2,212	0.19	15	$8,401	100%	5%	75%	0%	1%	82.2%	30.9%	66.5%	0.1	0	0	0	0	0
2029	Domestic Hot Water	Solar with Electric Backup	No program	MF	ROB	2,455	90%	2,212	0.19	15	$8,401	100%	5%	75%	0%	1%	82.2%	30.9%	66.5%	0.1	0	0	0	0	0
2030	Domestic Hot Water	Solar with Electric Backup	No program	MF	NC	2,455	90%	2,212	0.19	15	$8,401	100%	5%	75%	0%	0%	82.2%	30.0%	66.5%	0.1	0	0	0	0	0
2031	Domestic Hot Water	Water Heater Jacket (3"WHJ)	No program	SF	Retrofit	2,455	4%	104	0.01	13	$35	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	1.2	3,848	3,848	2,392	2,392	2,356
2032	Domestic Hot Water	Water Heater Jacket (3"WHJ)	No program	SF	Retrofit	2,455	4%	104	0.01	13	$35	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	1.2	1,195	1,195	743	743	732

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
2033	Domestic Hot Water	Water Heater Jacket (3"WHJ)	No program	SF	NC	2,455	4%	104	0.01	13	$35	100%	100%	100%	47%	0%	72.4%	72.4%	72.4%	1.2	657	657	404	383	383
2034	Domestic Hot Water	Water Heater Jacket (3"WHJ)	No program	MF	Retrofit	2,455	4%	104	0.01	13	$35	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	1.2	1,215	1,215	755	755	744
2035	Domestic Hot Water	Water Heater Jacket (3"WHJ)	No program	MF	Retrofit	2,455	4%	104	0.01	13	$35	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	1.2	377	377	235	235	231
2036	Domestic Hot Water	Water Heater Jacket (3"WHJ)	No program	MF	NC	2,455	4%	104	0.01	13	$35	100%	100%	100%	47%	0%	72.4%	72.4%	72.4%	1.2	208	208	127	121	121
2037	Domestic Hot Water	Water Heater Pipe Insulation (3/4"pipe) See C.2.3.1 (NE for residential retrofit & NC)	Home Performance	SF	Retrofit	2,455	2%	38	0.00	11	$15	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	0.9	1,406	1,406	874	874	851
2038	Domestic Hot Water	Water Heater Pipe Insulation (3/4"pipe) See C.2.3.1 (NE for residential retrofit & NC)	Low Income	SF	Retrofit	2,455	2%	38	0.00	11	$15	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	0.9	437	437	271	271	257
2039	Domestic Hot Water	Water Heater Pipe Insulation (3/4"pipe) See C.2.3.1 (NE for residential retrofit & NC)	Home Performance	SF	NC	2,456	102%	38	0.00	11	$15	100%	100%	100%	47%	0%	72.4%	72.4%	72.4%	0.9	240	240	145	145	145
2040	Domestic Hot Water	Water Heater Pipe Insulation (3/4"pipe) See C.2.3.1 (NE for residential retrofit & NC)	Multifamily	MF	Retrofit	2,457	202%	38	0.00	11	$15	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	0.9	444	444	276	276	274
2041	Domestic Hot Water	Water Heater Pipe Insulation (3/4"pipe) See C.2.3.1 (NE for residential retrofit & NC)	Low Income	MF	Retrofit	2,458	302%	38	0.00	11	$15	100%	100%	100%	47%	36%	72.4%	72.4%	72.4%	0.9	138	138	86	86	81
2042	Domestic Hot Water	Water Heater Pipe Insulation (3/4"pipe) See C.2.3.1 (NE for residential retrofit & NC)	Multifamily	MF	NC	2,459	402%	38	0.00	11	$15	100%	100%	100%	47%	0%	72.4%	72.4%	72.4%	0.9	76	76	46	46	46
2043	Domestic Hot Water	Faucet Aerators - 1.5 gpm, electric resistance WH	Home Performance	SF	Retrofit	173	15%	27	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	9.7	433	433	216	216	215
2044	Domestic Hot Water	Faucet Aerators - 1.5 gpm, electric resistance WH	Low Income	SF	Retrofit	173	15%	27	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	9.7	135	135	67	67	66
2045	Domestic Hot Water	Faucet Aerators - 1.5 gpm, electric resistance WH	Multifamily	MF	Retrofit	173	15%	27	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	9.7	137	137	68	68	68
2046	Domestic Hot Water	Faucet Aerators - 1.5 gpm, electric resistance WH	Low Income	MF	Retrofit	173	15%	27	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	9.7	42	42	21	21	21
2047	Domestic Hot Water	Faucet Aerators - 1.5 gpm, heat pump WH	Home Performance	SF	Retrofit	77	15%	12	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	8.4	14	14	7	7	7
2048	Domestic Hot Water	Faucet Aerators - 1.5 gpm, heat pump WH	Low Income	SF	Retrofit	77	15%	12	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	8.4	4	4	2	2	2
2049	Domestic Hot Water	Faucet Aerators - 1.5 gpm, heat pump WH	Multifamily	MF	Retrofit	77	15%	12	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	8.4	5	5	2	2	2
2050	Domestic Hot Water	Faucet Aerators - 1.5 gpm, heat pump WH	Low Income	MF	Retrofit	77	15%	12	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	8.4	1	1	1	1	1
2051	Domestic Hot Water	Faucet Aerators - 1.0 gpm, electric resistance WH	Home Performance	SF	Retrofit	173	26%	45	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	16.1	1,202	1,202	598	598	597
2052	Domestic Hot Water	Faucet Aerators - 1.0 gpm, electric resistance WH	Low Income	SF	Retrofit	173	26%	45	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	16.1	373	373	186	186	183
2053	Domestic Hot Water	Faucet Aerators - 1.0 gpm, electric resistance WH	Multifamily	MF	Retrofit	173	26%	45	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	16.1	380	380	189	189	189
2054	Domestic Hot Water	Faucet Aerators - 1.0 gpm, electric resistance WH	Low Income	MF	Retrofit	173	26%	45	0.00	10	$4	100%	100%	100%	73%	60%	72.4%	72.4%	72.4%	16.1	118	118	59	59	58
2055	Domestic Hot Water	Faucet Aerators - 1.0 gpm, heat pump WH	Home Performance	SF	Retrofit	77	26%	20	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	14.1	40	40	20	20	20
2056	Domestic Hot Water	Faucet Aerators - 1.0 gpm, heat pump WH	Low Income	SF	Retrofit	77	26%	20	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	14.1	12	12	6	6	6
2057	Domestic Hot Water	Faucet Aerators - 1.0 gpm, heat pump WH	Multifamily	MF	Retrofit	77	26%	20	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	14.1	13	13	6	6	6
2058	Domestic Hot Water	Faucet Aerators - 1.0 gpm, heat pump WH	Low Income	MF	Retrofit	77	26%	20	0.00	10	$4	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	14.1	4	4	2	2	2
2059	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, electric resistance WH	Home Performance	SF	Retrofit	608	17%	102	0.01	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	14.7	784	784	390	390	389
2060	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, electric resistance WH	Low Income	SF	Retrofit	608	17%	102	0.01	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	14.7	243	243	121	121	119
2061	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, electric resistance WH	Home Performance	SF	NC	608	17%	102	0.01	10	$10	100%	100%	100%	63%	0%	72.4%	72.4%	72.4%	14.7	178	178	107	107	107
2062	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, electric resistance WH	Multifamily	MF	Retrofit	608	17%	102	0.01	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	14.7	248	248	123	123	123
2063	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, electric resistance WH	Low Income	MF	Retrofit	608	17%	102	0.01	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	14.7	77	77	38	38	38
2064	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, electric resistance WH	Multifamily	MF	NC	608	17%	102	0.01	10	$10	100%	100%	100%	63%	0%	72.4%	72.4%	72.4%	14.7	56	56	34	34	34
2065	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, heat pump WH	Home Performance	SF	Retrofit	271	17%	46	0.00	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	12.9	26	26	13	13	13
2066	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, heat pump WH	Low Income	SF	Retrofit	271	17%	46	0.00	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	12.9	8	8	4	4	4
2067	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, heat pump WH	Home Performance	SF	NC	271	17%	46	0.00	10	$10	100%	100%	100%	5%	0%	72.4%	72.4%	72.4%	12.9	6	6	4	4	4
2068	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, heat pump WH	Multifamily	MF	Retrofit	271	17%	46	0.00	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	12.9	8	8	4	4	4
2069	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, heat pump WH	Low Income	MF	Retrofit	271	17%	46	0.00	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	12.9	3	3	1	1	1
2070	Domestic Hot Water	Low Flow Showerhead - 2.0 gpm, heat pump WH	Multifamily	MF	NC	271	17%	46	0.00	10	$10	100%	100%	100%	5%	0%	72.4%	72.4%	72.4%	12.9	2	2	1	1	1
2071	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, electric resistance WH	Home Performance	SF	Retrofit	271	61%	165	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	23.8	2,048	2,048	1,019	1,019	1,017
2072	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, electric resistance WH	Low Income	SF	Retrofit	271	61%	165	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	23.8	636	636	317	317	312
2073	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, electric resistance WH	Home Performance	SF	NC	271	61%	165	0.02	10	$10	100%	100%	100%	63%	0%	72.4%	72.4%	72.4%	23.8	464	464	279	279	279
2074	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, electric resistance WH	Multifamily	MF	Retrofit	271	61%	165	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	23.8	647	647	322	322	322
2075	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, electric resistance WH	Low Income	MF	Retrofit	271	61%	165	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	23.8	201	201	100	100	98
2076	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, electric resistance WH	Multifamily	MF	NC	271	61%	165	0.02	10	$10	100%	100%	100%	63%	0%	72.4%	72.4%	72.4%	23.8	147	147	88	88	88
2077	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, heat pump WH	Home Performance	SF	Retrofit	271	27%	74	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	20.8	68	68	34	34	34
2078	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, heat pump WH	Low Income	SF	Retrofit	271	27%	74	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	20.8	21	21	11	11	10
2079	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, heat pump WH	Home Performance	SF	NC	271	27%	74	0.01	10	$10	100%	100%	100%	5%	0%	72.4%	72.4%	72.4%	20.8	15	15	9	9	9
2080	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, heat pump WH	Multifamily	MF	Retrofit	271	27%	74	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	20.8	21	21	11	11	11
2081	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, heat pump WH	Low Income	MF	Retrofit	271	27%	74	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	20.8	7	7	3	3	3
2082	Domestic Hot Water	Low Flow Showerhead - 1.75 gpm, heat pump WH	Multifamily	MF	NC	271	27%	74	0.01	10	$10	100%	100%	100%	5%	0%	72.4%	72.4%	72.4%	20.8	5	5	3	3	3
2083	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, electric resistance WH	Home Performance	SF	Retrofit	271	84%	228	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	32.9	3,908	3,908	1,945	1,945	1,941
2084	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, electric resistance WH	Low Income	SF	Retrofit	271	84%	228	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	32.9	1,214	1,214	604	604	595
2085	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, electric resistance WH	Home Performance	SF	NC	271	84%	228	0.02	10	$10	100%	100%	100%	63%	0%	72.4%	72.4%	72.4%	32.9	886	886	533	533	533
2086	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, electric resistance WH	Multifamily	MF	Retrofit	271	84%	228	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	32.9	1,234	1,234	614	614	614
2087	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, electric resistance WH	Low Income	MF	Retrofit	271	84%	228	0.02	10	$10	100%	100%	100%	63%	60%	72.4%	72.4%	72.4%	32.9	383	383	191	191	188
2088	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, electric resistance WH	Multifamily	MF	NC	271	84%	228	0.02	10	$10	100%	100%	100%	63%	0%	72.4%	72.4%	72.4%	32.9	280	280	168	168	168
2089	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, heat pump WH	Home Performance	SF	Retrofit	271	38%	102	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	28.8	129	129	64	64	64
2090	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, heat pump WH	Low Income	SF	Retrofit	271	38%	102	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	28.8	40	40	20	20	20
2091	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, heat pump WH	Home Performance	SF	NC	271	38%	102	0.01	10	$10	100%	100%	100%	5%	0%	72.4%	72.4%	72.4%	28.8	29	29	18	18	18
2092	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, heat pump WH	Multifamily	MF	Retrofit	271	38%	102	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	28.8	41	41	20	20	20
2093	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, heat pump WH	Low Income	MF	Retrofit	271	38%	102	0.01	10	$10	100%	100%	100%	5%	60%	72.4%	72.4%	72.4%	28.8	13	13	6	6	6
2094	Domestic Hot Water	Low Flow Showerhead - 1.5 gpm, heat pump WH	Multifamily	MF	NC	271	38%	102	0.01	10	$10	100%	100%	100%	5%	0%	72.4%	72.4%	72.4%	28.8	9	9	6	6	6
2095	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Electric Resistance WH	Home Performance	SF	Retrofit	271	21%	58	0.01	10	$45	100%	22%	75%	63%	60%	72.0%	72.0%	72.0%	1.4	1,295	1,295	636	636	606
2096	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Electric Resistance WH	Low Income	SF	Retrofit	271	21%	58	0.01	10	$45	100%	100%	100%	63%	60%	72.0%	72.0%	72.0%	1.4	402	402	197	197	194
2097	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Electric Resistance WH	Home Performance	SF	NC	271	21%	58	0.01	10	$45	100%	22%	75%	63%	0%	70.3%	30.0%	52.6%	1.4	293	293	171	73	128
2098	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Electric Resistance WH	Multifamily	MF	Retrofit	271	21%	58	0.01	10	$45	100%	22%	75%	63%	60%	72.0%	72.0%	72.0%	1.4	409	409	201	201	191
2099	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Electric Resistance WH	Low Income	MF	Retrofit	271	21%	58	0.01	10	$45	100%	100%	100%	63%	60%	72.0%	72.0%	72.0%	1.4	127	127	62	62	61
2100	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Electric Resistance WH	Multifamily	MF	NC	271	21%	58	0.01	10	$45	100%	22%	75%	63%	0%	70.3%	30.0%	52.6%	1.4	93	93	54	23	41
2101	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Heat Pump WH	Home Performance	SF	Retrofit	271	10%	26	0.00	10	$45	100%	22%	75%	5%	60%	72.0%	72.0%	72.0%	1.1	49	72	35	35	34
2102	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Heat Pump WH	Low Income	SF	Retrofit	271	10%	26	0.00	10	$45	100%	100%	100%	5%	60%	72.0%	72.0%	72.0%	1.1	15	15	7	7	7
2103	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Heat Pump WH	Home Performance	SF	NC	271	10%	26	0.00	10	$45	100%	22%	75%	5%	0%	70.3%	30.0%	52.6%	1.1	11	16	9	4	7
2104	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Heat Pump WH	Multifamily	MF	Retrofit	271	10%	26	0.00	10	$45	100%	22%	75%	5%	60%	72.0%	72.0%	72.0%	1.1	15	23	11	11	11
2105	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Heat Pump WH	Low Income	MF	Retrofit	271	10%	26	0.00	10	$45	100%	100%	100%	5%	60%	72.0%	72.0%	72.0%	1.1	5	5	2	2	2

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
2106	Domestic Hot Water	Showerhead Thermostatic Restrictor Valves - Heat Pump WH	Multifamily	MF	NC	271	10%	26	0.00	10	$45	100%	22%	75%	5%	0%	70.3%	30.0%	52.6%	1.1	3	5	3	1	2
2107	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Electric Resistance WH	Home Performance	SF	Retrofit	271	86%	232	0.02	10	$111	100%	9%	75%	63%	60%	72.0%	72.0%	72.0%	0.9	3,460	3,460	1,699	1,699	1,621
2108	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Electric Resistance WH	Low Income	SF	Retrofit	271	86%	232	0.02	10	$111	100%	100%	100%	63%	60%	72.0%	72.0%	72.0%	0.9	1,075	1,075	528	528	520
2109	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Electric Resistance WH	Home Performance	SF	NC	271	86%	232	0.02	10	$111	100%	9%	75%	63%	0%	70.3%	30.0%	52.6%	0.9	784	784	458	196	343
2110	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Electric Resistance WH	Multifamily	MF	Retrofit	271	86%	232	0.02	10	$111	100%	9%	75%	63%	60%	72.0%	72.0%	72.0%	0.9	1,093	1,093	536	536	512
2111	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Electric Resistance WH	Low Income	MF	Retrofit	271	86%	232	0.02	10	$111	100%	100%	100%	63%	60%	72.0%	72.0%	72.0%	0.9	339	339	167	167	164
2112	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Electric Resistance WH	Multifamily	MF	NC	271	86%	232	0.02	10	$111	100%	9%	75%	63%	0%	70.3%	30.0%	52.6%	0.9	248	248	145	62	108
2113	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Heat Pump WH	Home Performance	SF	Retrofit	271	38%	103	0.01	10	$111	100%	9%	75%	5%	60%	72.0%	72.0%	72.0%	0.5	91	0	0	0	0
2114	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Heat Pump WH	Low Income	SF	Retrofit	271	38%	103	0.01	10	$111	100%	100%	100%	5%	60%	72.0%	72.0%	72.0%	0.5	28	28	14	14	14
2115	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Heat Pump WH	Home Performance	SF	NC	271	38%	103	0.01	10	$111	100%	9%	75%	5%	0%	70.3%	30.0%	52.6%	0.5	21	0	0	0	0
2116	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Heat Pump WH	Multifamily	MF	Retrofit	271	38%	103	0.01	10	$111	100%	9%	75%	5%	60%	72.0%	72.0%	72.0%	0.5	29	0	0	0	0
2117	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Heat Pump WH	Low Income	MF	Retrofit	271	38%	103	0.01	10	$111	100%	100%	100%	5%	60%	72.0%	72.0%	72.0%	0.5	9	9	4	4	4
2118	Domestic Hot Water	Tub Sport Diverters and Thermostatic Restrictor Valve - Heat Pump WH	Multifamily	MF	NC	271	38%	103	0.01	10	$111	100%	9%	75%	5%	0%	70.3%	30.0%	52.6%	0.5	6	0	0	0	0
2119	Domestic Hot Water	Tankless Water Heater	No program	SF	ROB	2,455	0%	0	0.00	20	$1,850	100%	22%	75%	47%	1%	82.2%	33.6%	66.5%	0.0	0	0	0	0	0
2120	Domestic Hot Water	Tankless Water Heater	No program	SF	ROB	2,455	0%	0	0.00	20	$1,850	100%	22%	75%	47%	1%	82.2%	33.6%	66.5%	0.0	0	0	0	0	0
2121	Domestic Hot Water	Tankless Water Heater	No program	SF	NC	2,455	0%	0	0.00	20	$1,850	100%	22%	75%	47%	0%	82.2%	33.6%	66.5%	0.0	0	0	0	0	0
2122	Domestic Hot Water	Tankless Water Heater	No program	MF	ROB	2,455	0%	0	0.00	20	$1,850	100%	22%	75%	47%	1%	82.2%	33.6%	66.5%	0.0	0	0	0	0	0
2123	Domestic Hot Water	Tankless Water Heater	No program	MF	ROB	2,455	0%	0	0.00	20	$1,850	100%	22%	75%	47%	1%	82.2%	33.6%	66.5%	0.0	0	0	0	0	0
2124	Domestic Hot Water	Tankless Water Heater	No program	MF	NC	2,455	0%	0	0.00	20	$1,850	100%	22%	75%	47%	0%	82.2%	33.6%	66.5%	0.0	0	0	0	0	0
3001	HVAC	Central Air Conditioner - 16 SEER	High Efficiency Tune Ups	SF	ROB	4,780	6%	299	0.22	19	$869	100%	17%	75%	81%	17%	82.2%	42.1%	66.5%	0.4	0	0	0	0	0
3002	HVAC	Central Air Conditioner - 16 SEER	High Efficiency Tune Ups	SF	ROB	4,780	6%	299	0.22	19	$869	100%	17%	75%	81%	17%	82.2%	42.1%	66.5%	0.4	959	0	0	0	0
3003	HVAC	Central Air Conditioner - 16 SEER	High Efficiency Tune Ups	SF	NC	4,780	6%	299	0.22	19	$869	100%	17%	75%	81%	0%	82.2%	31.0%	66.5%	0.4	0	0	0	0	0
3004	HVAC	Central Air Conditioner - 16 SEER	High Efficiency Tune Ups	MF	ROB	4,780	6%	299	0.22	19	$869	100%	17%	75%	81%	17%	82.2%	42.1%	66.5%	0.4	0	0	0	0	0
3005	HVAC	Central Air Conditioner - 16 SEER	High Efficiency Tune Ups	MF	ROB	4,780	6%	299	0.22	19	$869	100%	17%	75%	81%	17%	82.2%	42.1%	66.5%	0.4	303	0	0	0	0
3006	HVAC	Central Air Conditioner - 16 SEER	High Efficiency Tune Ups	MF	NC	4,780	6%	299	0.22	19	$869	100%	17%	75%	81%	0%	82.2%	31.0%	66.5%	0.4	0	0	0	0	0
3007	HVAC	Central Air Conditioner - 17 SEER	High Efficiency Tune Ups	SF	ROB	4,780	12%	562	0.40	19	$1,303	100%	13%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3008	HVAC	Central Air Conditioner - 17 SEER	High Efficiency Tune Ups	SF	ROB	4,780	12%	562	0.40	19	$1,303	100%	13%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	2,250	0	0	0	0
3009	HVAC	Central Air Conditioner - 17 SEER	High Efficiency Tune Ups	SF	NC	4,780	12%	562	0.40	19	$1,303	100%	13%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3010	HVAC	Central Air Conditioner - 17 SEER	High Efficiency Tune Ups	MF	ROB	4,780	12%	562	0.40	19	$1,303	100%	13%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3011	HVAC	Central Air Conditioner - 17 SEER	High Efficiency Tune Ups	MF	ROB	4,780	12%	562	0.40	19	$1,303	100%	13%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	710	0	0	0	0
3012	HVAC	Central Air Conditioner - 17 SEER	High Efficiency Tune Ups	MF	NC	4,780	12%	562	0.40	19	$1,303	100%	13%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3013	HVAC	Central Air Conditioner - 18 SEER	High Efficiency Tune Ups	SF	ROB	4,780	17%	797	0.56	19	$1,741	100%	11%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3014	HVAC	Central Air Conditioner - 18 SEER	High Efficiency Tune Ups	SF	ROB	4,780	17%	797	0.56	19	$1,741	100%	11%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	3,356	0	0	0	0
3015	HVAC	Central Air Conditioner - 18 SEER	High Efficiency Tune Ups	SF	NC	4,780	17%	797	0.56	19	$1,741	100%	11%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3016	HVAC	Central Air Conditioner - 18 SEER	High Efficiency Tune Ups	MF	ROB	4,780	17%	797	0.56	19	$1,741	100%	11%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3017	HVAC	Central Air Conditioner - 18 SEER	High Efficiency Tune Ups	MF	ROB	4,780	17%	797	0.56	19	$1,741	100%	11%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	1,060	0	0	0	0
3018	HVAC	Central Air Conditioner - 18 SEER	High Efficiency Tune Ups	MF	NC	4,780	17%	797	0.56	19	$1,741	100%	11%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3019	HVAC	Central Air Conditioner - 19 SEER	High Efficiency Tune Ups	SF	ROB	4,780	21%	1,006	0.70	19	$2,175	100%	9%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3020	HVAC	Central Air Conditioner - 19 SEER	High Efficiency Tune Ups	SF	ROB	4,780	21%	1,006	0.70	19	$2,175	100%	9%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	4,260	0	0	0	0
3021	HVAC	Central Air Conditioner - 19 SEER	High Efficiency Tune Ups	SF	NC	4,780	21%	1,006	0.70	19	$2,175	100%	9%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3022	HVAC	Central Air Conditioner - 19 SEER	High Efficiency Tune Ups	MF	ROB	4,780	21%	1,006	0.70	19	$2,175	100%	9%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3023	HVAC	Central Air Conditioner - 19 SEER	High Efficiency Tune Ups	MF	ROB	4,780	21%	1,006	0.70	19	$2,175	100%	9%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	1,345	0	0	0	0
3024	HVAC	Central Air Conditioner - 19 SEER	High Efficiency Tune Ups	MF	NC	4,780	21%	1,006	0.70	19	$2,175	100%	9%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3025	HVAC	Central Air Conditioner - 20 SEER	High Efficiency Tune Ups	SF	ROB	4,780	25%	1,195	0.83	19	$2,610	100%	8%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3026	HVAC	Central Air Conditioner - 20 SEER	High Efficiency Tune Ups	SF	ROB	4,780	25%	1,195	0.83	19	$2,610	100%	8%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	4,980	0	0	0	0
3027	HVAC	Central Air Conditioner - 20 SEER	High Efficiency Tune Ups	SF	NC	4,780	25%	1,195	0.83	19	$2,610	100%	8%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3028	HVAC	Central Air Conditioner - 20 SEER	High Efficiency Tune Ups	MF	ROB	4,780	25%	1,195	0.83	19	$2,610	100%	8%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	0	0	0	0	0
3029	HVAC	Central Air Conditioner - 20 SEER	High Efficiency Tune Ups	MF	ROB	4,780	25%	1,195	0.83	19	$2,610	100%	8%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	1,573	0	0	0	0
3030	HVAC	Central Air Conditioner - 20 SEER	High Efficiency Tune Ups	MF	NC	4,780	25%	1,195	0.83	19	$2,610	100%	8%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	0	0	0	0	0
3031	HVAC	Central Air Conditioner - 21 SEER	High Efficiency Tune Ups	SF	ROB	4,780	29%	1,366	0.94	19	$2,880	100%	7%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	74,239	0	0	0	0
3032	HVAC	Central Air Conditioner - 21 SEER	High Efficiency Tune Ups	SF	ROB	4,780	29%	1,366	0.94	19	$2,880	100%	7%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	5,867	0	0	0	0
3033	HVAC	Central Air Conditioner - 21 SEER	High Efficiency Tune Ups	SF	NC	4,780	29%	1,366	0.94	19	$2,880	100%	7%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	9,944	0	0	0	0
3034	HVAC	Central Air Conditioner - 21 SEER	High Efficiency Tune Ups	MF	ROB	4,780	29%	1,366	0.94	19	$2,880	100%	7%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	23,444	0	0	0	0
3035	HVAC	Central Air Conditioner - 21 SEER	High Efficiency Tune Ups	MF	ROB	4,780	29%	1,366	0.94	19	$2,880	100%	7%	75%	81%	17%	82.2%	42.1%	66.5%	0.5	1,853	0	0	0	0
3036	HVAC	Central Air Conditioner - 21 SEER	High Efficiency Tune Ups	MF	NC	4,780	29%	1,366	0.94	19	$2,880	100%	7%	75%	81%	0%	82.2%	30.0%	66.5%	0.5	3,140	0	0	0	0
3037	HVAC	Window Air Conditioner	Residential Lighting & Appliance	SF	ROB	813	9%	75	0.07	11	$50	100%	50%	75%	12%	41%	82.2%	58.8%	66.5%	1.3	806	965	793	567	642
3038	HVAC	Window Air Conditioner	Residential Lighting & Appliance	SF	ROB	813	9%	75	0.07	11	$50	100%	50%	75%	12%	41%	82.2%	58.8%	66.5%	1.3	250	300	246	176	199
3039	HVAC	Window Air Conditioner	Residential Lighting & Appliance	SF	NC	813	9%	75	0.07	11	$50	100%	50%	75%	12%	0%	82.2%	52.5%	66.5%	1.3	120	120	96	61	77
3040	HVAC	Window Air Conditioner	Residential Lighting & Appliance	MF	ROB	813	9%	75	0.07	11	$50	100%	50%	75%	12%	41%	82.2%	58.8%	66.5%	1.3	255	305	250	179	203
3041	HVAC	Window Air Conditioner	Residential Lighting & Appliance	MF	ROB	813	9%	75	0.07	11	$50	100%	50%	75%	12%	41%	82.2%	58.8%	66.5%	1.3	79	95	78	56	63
3042	HVAC	Window Air Conditioner	Residential Lighting & Appliance	MF	NC	813	9%	75	0.07	11	$50	100%	50%	75%	12%	0%	82.2%	52.5%	66.5%	1.3	38	38	30	19	24
3043	HVAC	ECM on Furnace Fan (SP motors)	No program	SF	Retrofit	3,864	30%	1,159	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	1.0	8,628	8,967	5,935	4,079	4,107
3044	HVAC	ECM on Furnace Fan (SP motors)	No program	SF	Retrofit	3,864	30%	1,159	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	1.0	2,680	2,785	1,844	1,267	1,276
3045	HVAC	ECM on Furnace Fan (SP motors)	No program	MF	Retrofit	3,864	30%	1,159	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	1.0	2,725	2,832	1,874	1,288	1,297
3046	HVAC	ECM on Furnace Fan (SP motors)	No program	MF	Retrofit	3,864	30%	1,159	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	1.0	846	880	582	400	403
3047	HVAC	ECM on Furnace Fan (PSC motors)	No program	SF	Retrofit	1,932	10%	193	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	0.2	1,438	0	0	0	0
3048	HVAC	ECM on Furnace Fan (PSC motors)	No program	SF	Retrofit	1,932	10%	193	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	0.2	447	0	0	0	0
3049	HVAC	ECM on Furnace Fan (PSC motors)	No program	MF	Retrofit	1,932	10%	193	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	0.2	454	0	0	0	0
3050	HVAC	ECM on Furnace Fan (PSC motors)	No program	MF	Retrofit	1,932	10%	193	0.00	15	$475	100%	44%	75%	83%	32%	70.3%	52.3%	52.6%	0.2	141	0	0	0	0
3051	HVAC	Heat Pump - 16 SEER	High Efficiency Tune Ups	SF	ROB	6,350	4%	246	0.12	16	$406	100%	49%	75%	58%	27%	82.2%	51.9%	66.5%	0.5	0	0	0	0	0
3052	HVAC	Heat Pump - 16 SEER	High Efficiency Tune Ups	SF	ROB	6,350	4%	246	0.12	16	$406	100%	49%	75%	58%	27%	82.2%	51.9%	66.5%	0.5	347	0	0	0	0
3053	HVAC	Heat Pump - 16 SEER	High Efficiency Tune Ups	SF	NC	6,350	4%	246	0.12	16	$406	100%	49%	75%	58%	0%	82.2%	51.9%	66.5%	0.5	0	0	0	0	0
3054	HVAC	Heat Pump - 16 SEER	High Efficiency Tune Ups	MF	ROB	6,350	4%	246	0.12	16	$406	100%	49%	75%	58%	27%	82.2%	51.9%	66.5%	0.5	0	0	0	0	0

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
3055	HVAC	Heat Pump - 16 SEER	High Efficiency Tune Ups	MF	ROB	6,350	4%	246	0.12	16	$406	100%	49%	75%	58%	27%	82.2%	51.9%	66.5%	0.5	154	0	0	0	0
3056	HVAC	Heat Pump - 16 SEER	High Efficiency Tune Ups	MF	NC	6,350	4%	246	0.12	16	$406	100%	49%	75%	58%	0%	82.2%	51.9%	66.5%	0.5	0	0	0	0	0
3057	HVAC	Heat Pump - 17 SEER	High Efficiency Tune Ups	SF	ROB	6,350	7%	464	0.22	16	$1,267	100%	18%	75%	58%	27%	82.2%	49.2%	66.5%	0.3	0	0	0	0	0
3058	HVAC	Heat Pump - 17 SEER	High Efficiency Tune Ups	SF	ROB	6,350	7%	464	0.22	16	$1,267	100%	18%	75%	58%	27%	82.2%	49.2%	66.5%	0.3	525	0	0	0	0
3059	HVAC	Heat Pump - 17 SEER	High Efficiency Tune Ups	SF	NC	6,350	7%	464	0.22	16	$1,267	100%	18%	75%	58%	0%	82.2%	31.3%	66.5%	0.3	0	0	0	0	0
3060	HVAC	Heat Pump - 17 SEER	High Efficiency Tune Ups	MF	ROB	6,350	7%	464	0.22	16	$1,267	100%	18%	75%	58%	27%	82.2%	49.2%	66.5%	0.3	0	0	0	0	0
3061	HVAC	Heat Pump - 17 SEER	High Efficiency Tune Ups	MF	ROB	6,350	7%	464	0.22	16	$1,267	100%	18%	75%	58%	27%	82.2%	49.2%	66.5%	0.3	174	0	0	0	0
3062	HVAC	Heat Pump - 17 SEER	High Efficiency Tune Ups	MF	NC	6,350	7%	464	0.22	16	$1,267	100%	18%	75%	58%	0%	82.2%	31.3%	66.5%	0.3	0	0	0	0	0
3063	HVAC	Heat Pump - 18 SEER	High Efficiency Tune Ups	SF	ROB	6,350	10%	657	0.31	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.4	0	0	0	0	0
3064	HVAC	Heat Pump - 18 SEER	High Efficiency Tune Ups	SF	ROB	6,350	10%	657	0.31	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.4	1,054	0	0	0	0
3065	HVAC	Heat Pump - 18 SEER	High Efficiency Tune Ups	SF	NC	6,350	10%	657	0.31	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.4	0	0	0	0	0
3066	HVAC	Heat Pump - 18 SEER	High Efficiency Tune Ups	MF	ROB	6,350	10%	657	0.31	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.4	0	0	0	0	0
3067	HVAC	Heat Pump - 18 SEER	High Efficiency Tune Ups	MF	ROB	6,350	10%	657	0.31	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.4	350	0	0	0	0
3068	HVAC	Heat Pump - 18 SEER	High Efficiency Tune Ups	MF	NC	6,350	10%	657	0.31	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.4	0	0	0	0	0
3069	HVAC	Heat Pump - 19 SEER	High Efficiency Tune Ups	SF	ROB	6,350	13%	830	0.39	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.5	0	0	0	0	0
3070	HVAC	Heat Pump - 19 SEER	High Efficiency Tune Ups	SF	ROB	6,350	13%	830	0.39	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.5	1,681	0	0	0	0
3071	HVAC	Heat Pump - 19 SEER	High Efficiency Tune Ups	SF	NC	6,350	13%	830	0.39	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.5	0	0	0	0	0
3072	HVAC	Heat Pump - 19 SEER	High Efficiency Tune Ups	MF	ROB	6,350	13%	830	0.39	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.5	0	0	0	0	0
3073	HVAC	Heat Pump - 19 SEER	High Efficiency Tune Ups	MF	ROB	6,350	13%	830	0.39	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.5	558	0	0	0	0
3074	HVAC	Heat Pump - 19 SEER	High Efficiency Tune Ups	MF	NC	6,350	13%	830	0.39	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.5	0	0	0	0	0
3075	HVAC	Heat Pump - 20 SEER	High Efficiency Tune Ups	SF	ROB	6,350	16%	985	0.46	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.6	0	0	0	0	0
3076	HVAC	Heat Pump - 20 SEER	High Efficiency Tune Ups	SF	ROB	6,350	16%	985	0.46	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.6	2,370	0	0	0	0
3077	HVAC	Heat Pump - 20 SEER	High Efficiency Tune Ups	SF	NC	6,350	16%	985	0.46	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.6	0	0	0	0	0
3078	HVAC	Heat Pump - 20 SEER	High Efficiency Tune Ups	MF	ROB	6,350	16%	985	0.46	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.6	0	0	0	0	0
3079	HVAC	Heat Pump - 20 SEER	High Efficiency Tune Ups	MF	ROB	6,350	16%	985	0.46	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.6	787	0	0	0	0
3080	HVAC	Heat Pump - 20 SEER	High Efficiency Tune Ups	MF	NC	6,350	16%	985	0.46	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.6	0	0	0	0	0
3081	HVAC	Heat Pump - 21 SEER	High Efficiency Tune Ups	SF	ROB	6,350	18%	1,126	0.53	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.7	0	0	0	0	0
3082	HVAC	Heat Pump - 21 SEER	High Efficiency Tune Ups	SF	ROB	6,350	18%	1,126	0.53	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.7	3,095	0	0	0	0
3083	HVAC	Heat Pump - 21 SEER	High Efficiency Tune Ups	SF	NC	6,350	18%	1,126	0.53	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.7	0	0	0	0	0
3084	HVAC	Heat Pump - 21 SEER	High Efficiency Tune Ups	MF	ROB	6,350	18%	1,126	0.53	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.7	0	0	0	0	0
3085	HVAC	Heat Pump - 21 SEER	High Efficiency Tune Ups	MF	ROB	6,350	18%	1,126	0.53	16	$1,267	100%	20%	75%	58%	27%	82.2%	49.2%	66.5%	0.7	1,027	0	0	0	0
3086	HVAC	Heat Pump - 21 SEER	High Efficiency Tune Ups	MF	NC	6,350	18%	1,126	0.53	16	$1,267	100%	20%	75%	58%	0%	82.2%	32.5%	66.5%	0.7	0	0	0	0	0
3087	HVAC	Ground Source Heat Pump	High Efficiency Tune Ups	SF	ROB	6,350	40%	2,552	1.23	25	$8,723	100%	3%	75%	58%	27%	82.2%	49.2%	66.5%	0.3	81,785	0	0	0	0
3088	HVAC	Ground Source Heat Pump	High Efficiency Tune Ups	SF	ROB	6,350	40%	2,552	1.23	25	$8,723	100%	3%	75%	58%	27%	82.2%	49.2%	66.5%	0.3	2,612	0	0	0	0
3089	HVAC	Ground Source Heat Pump	High Efficiency Tune Ups	SF	NC	6,350	40%	2,552	1.23	25	$8,723	100%	3%	75%	58%	0%	82.2%	30.0%	66.5%	0.3	14,318	0	0	0	0
3090	HVAC	Ductless Heat Pump	High Efficiency Tune Ups	SF	ROB	5,251	26%	1,366	0.14	18	$730	100%	27%	75%	58%	27%	82.2%	49.2%	66.5%	1.0	0	85,159	57,942	37,547	46,903
3091	HVAC	Ductless Heat Pump	High Efficiency Tune Ups	SF	ROB	5,251	26%	1,366	0.14	18	$730	100%	27%	75%	58%	27%	82.2%	49.2%	66.5%	1.0	5,450	26,452	17,998	11,663	14,569
3092	HVAC	Ductless Heat Pump	High Efficiency Tune Ups	SF	NC	5,251	26%	1,366	0.14	18	$730	100%	27%	75%	58%	0%	82.2%	37.1%	66.5%	1.0	0	10,618	5,652	2,556	4,575
3093	HVAC	Ductless Heat Pump	High Efficiency Tune Ups	MF	ROB	5,251	26%	1,366	0.14	18	$730	100%	27%	75%	58%	27%	82.2%	49.2%	66.5%	1.0	17,277	26,892	18,297	11,857	14,812
3094	HVAC	Ductless Heat Pump	High Efficiency Tune Ups	MF	ROB	5,251	26%	1,366	0.14	18	$730	100%	27%	75%	58%	27%	82.2%	49.2%	66.5%	1.0	1,809	8,353	5,683	3,683	4,601
3095	HVAC	Ductless Heat Pump	High Efficiency Tune Ups	MF	NC	5,251	26%	1,366	0.14	18	$730	100%	27%	75%	58%	0%	82.2%	37.1%	66.5%	1.0	2,420	3,353	1,785	807	1,445
3096	HVAC	Central AC Tune-Up	High Efficiency Tune Ups	SF	Retrofit	5,401	17%	929	0.44	10	$175	100%	86%	86%	81%	85%	89.5%	89.5%	89.5%	2.9	14,047	14,598	10,413	10,413	9,934
3097	HVAC	Central AC Tune-Up	Low Income	SF	Retrofit	5,401	17%	929	0.44	10	$175	100%	100%	100%	81%	85%	89.5%	89.5%	89.5%	2.9	4,363	4,534	3,234	3,234	3,086
3098	HVAC	Central AC Tune-Up	Multifamily	MF	Retrofit	4,052	17%	697	0.33	10	$175	100%	71%	75%	81%	85%	89.5%	89.5%	89.5%	2.2	3,328	3,459	2,467	2,467	2,354
3099	HVAC	Central AC Tune-Up	Low Income	MF	Retrofit	4,052	17%	697	0.33	10	$175	100%	100%	100%	81%	85%	89.5%	89.5%	89.5%	2.2	1,034	1,074	766	766	731
3100	HVAC	Central HP Tune-Up	High Efficiency Tune Ups	SF	Retrofit	11,500	17%	1,978	0.44	10	$175	100%	86%	86%	4%	85%	89.5%	89.5%	89.5%	4.5	1,584	1,646	1,174	1,174	1,120
3101	HVAC	Central HP Tune-Up	Low Income	SF	Retrofit	11,500	17%	1,978	0.44	10	$175	100%	100%	100%	4%	85%	89.5%	89.5%	89.5%	4.5	492	511	365	365	348
3102	HVAC	Central HP Tune-Up	Multifamily	MF	Retrofit	8,628	17%	1,484	0.33	10	$175	100%	71%	75%	4%	85%	89.5%	89.5%	89.5%	3.4	375	390	278	278	265
3103	HVAC	Central HP Tune-Up	Low Income	MF	Retrofit	8,628	17%	1,484	0.33	10	$175	100%	100%	100%	4%	85%	89.5%	89.5%	89.5%	3.4	117	121	86	86	82
3104	HVAC	Duct Sealing - AC with Gas Heat	High Efficiency Tune Ups	SF	Retrofit	6,156	40%	2,465	1.16	18	$368	100%	44%	75%	38%	89%	92.3%	92.3%	92.3%	5.9	31,997	33,254	25,659	25,659	24,752
3105	HVAC	Duct Sealing - AC with Gas Heat	Low Income	SF	Retrofit	6,156	40%	2,465	1.16	18	$368	100%	100%	100%	38%	89%	92.3%	92.3%	92.3%	5.9	9,939	10,329	7,970	7,970	7,688
3106	HVAC	Duct Sealing - AC with Gas Heat	Multifamily	MF	Retrofit	5,790	40%	2,317	1.09	18	$368	100%	44%	75%	38%	89%	92.3%	92.3%	92.3%	5.6	9,498	9,871	7,616	7,616	7,347
3107	HVAC	Duct Sealing - AC with Gas Heat	Low Income	MF	Retrofit	5,790	40%	2,317	1.09	18	$368	100%	100%	100%	38%	89%	92.3%	92.3%	92.3%	5.6	2,950	3,066	2,366	2,366	2,282
3108	HVAC	Duct Sealing - Heat Pump	High Efficiency Tune Ups	SF	Retrofit	7,192	40%	2,879	1.16	18	$368	100%	44%	75%	4%	89%	92.3%	92.3%	92.3%	6.5	4,229	4,395	3,391	3,391	3,271
3109	HVAC	Duct Sealing - Heat Pump	Low Income	SF	Retrofit	7,192	40%	2,879	1.16	18	$368	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	6.5	1,314	1,365	1,053	1,053	1,016
3110	HVAC	Duct Sealing - Heat Pump	Multifamily	MF	Retrofit	6,764	40%	2,707	1.09	18	$368	100%	44%	75%	4%	89%	92.3%	92.3%	92.3%	6.1	1,256	1,305	1,007	1,007	971
3111	HVAC	Duct Sealing - Heat Pump	Low Income	MF	Retrofit	6,764	40%	2,707	1.09	18	$368	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	6.1	390	405	313	313	302
3112	HVAC	Duct Sealing - AC with Electric Resistance Heat	High Efficiency Tune Ups	SF	Retrofit	10,260	40%	4,106	1.16	18	$369	100%	44%	75%	56%	89%	92.3%	92.3%	92.3%	8.0	78,545	81,631	62,988	62,988	60,760
3113	HVAC	Duct Sealing - AC with Electric Resistance Heat	Low Income	SF	Retrofit	10,260	40%	4,106	1.16	18	$370	100%	100%	100%	56%	89%	92.3%	92.3%	92.3%	8.0	24,397	25,356	19,565	19,565	18,873
3114	HVAC	Duct Sealing - AC with Electric Resistance Heat	Multifamily	MF	Retrofit	9,668	40%	3,869	1.09	18	$371	100%	44%	75%	56%	89%	92.3%	92.3%	92.3%	7.5	23,372	24,290	18,743	18,743	18,080
3115	HVAC	Duct Sealing - AC with Electric Resistance Heat	Low Income	MF	Retrofit	9,668	40%	3,869	1.09	18	$372	100%	100%	100%	56%	89%	92.3%	92.3%	92.3%	7.5	7,260	7,545	5,822	5,822	5,616
3116	HVAC	Duct Sealing - Electric Resistance Heat, no AC	High Efficiency Tune Ups	SF	Retrofit	4,100	40%	1,641	0.00	18	$373	100%	44%	75%	2%	89%	92.3%	92.3%	92.3%	2.0	1,121	1,165	899	899	867
3117	HVAC	Duct Sealing - Electric Resistance Heat, no AC	Low Income	SF	Retrofit	4,100	40%	1,641	0.00	18	$374	100%	100%	100%	2%	89%	92.3%	92.3%	92.3%	2.0	348	362	279	279	269
3118	HVAC	Duct Sealing - Electric Resistance Heat, no AC	Multifamily	MF	Retrofit	3,856	40%	1,543	0.00	18	$375	100%	44%	75%	2%	89%	92.3%	92.3%	92.3%	1.9	333	346	267	267	258
3119	HVAC	Duct Sealing - Electric Resistance Heat, no AC	Low Income	MF	Retrofit	3,856	40%	1,543	0.00	18	$376	100%	100%	100%	2%	89%	92.3%	92.3%	92.3%	1.9	103	107	83	83	80
3120	HVAC	Smart Thermostats	Home Performance	SF	Retrofit	12,822	3%	343	0.00	11	$394	100%	25%	75%	86%	38%	70.3%	56.6%	56.6%	0.3	22,753	0	0	0	0
3121	HVAC	Smart Thermostats	Low Income	SF	Retrofit	12,822	3%	343	0.00	11	$394	100%	100%	100%	86%	38%	70.3%	70.3%	70.3%	0.3	7,067	7,067	4,127	4,127	3,933
3122	HVAC	Smart Thermostats	Home Performance	SF	NC	12,822	3%	343	0.00	11	$199	100%	50%	75%	86%	0%	82.2%	52.6%	66.5%	0.5	3,968	0	0	0	0
3123	HVAC	Smart Thermostats	Multifamily	MF	Retrofit	12,822	3%	343	0.00	11	$394	100%	44%	75%	86%	38%	70.3%	56.6%	56.6%	0.3	7,185	0	0	0	0
3124	HVAC	Smart Thermostats	Low Income	MF	Retrofit	12,822	3%	343	0.00	11	$394	100%	100%	100%	86%	38%	70.3%	70.3%	70.3%	0.3	2,232	2,232	1,303	1,303	1,242
3125	HVAC	Smart Thermostats	Multifamily	MF	NC	12,822	3%	343	0.00	11	$199	100%	44%	75%	86%	0%	82.2%	47.9%	66.5%	0.5	1,253	0	0	0	0
4001	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2007)	Home Performance	SF	Retrofit	23	76%	17	0.00	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	3.2	712	745	539	515	493
4002	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2007)	Low Income	SF	Retrofit	23	76%	17	0.00	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	3.2	221	231	168	168	160
4003	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2007)	Multifamily	MF	Retrofit	23	76%	17	0.00	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	3.2	225	235	170	162	156
4004	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2007)	Low Income	MF	Retrofit	23	76%	17	0.00	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	3.2	70	73	53	53	51
4005	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2007)	Home Performance	SF	Retrofit	33	79%	26	0.00	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	5.0	1,101	1,151	833	795	762
4006	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2007)	Low Income	SF	Retrofit	33	79%	26	0.00	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	5.0	342	358	259	259	248
4007	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2007)	Multifamily	MF	Retrofit	33	79%	26	0.00	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	5.0	348	364	263	251	241
4008	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2007)	Low Income	MF	Retrofit	33	79%	26	0.00	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	5.0	108	113	82	82	78
4009	Lighting	ENERGY STAR Omni-Directional LED (1,050-1,489 lumens, EISA 2007)	Home Performance	SF	Retrofit	41	77%	32	0.01	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	6.0	1,328	1,389	1,005	959	919

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
4010	Lighting	ENERGY STAR Omni-Directional LED (1,050-1,489 lumens, EISA 2007)	Low Income	SF	Retrofit	41	77%	32	0.01	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	6.0	412	431	312	312	299
4011	Lighting	ENERGY STAR Omni-Directional LED (1,050-1,489 lumens, EISA 2007)	Multifamily	MF	Retrofit	41	77%	32	0.01	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	6.0	419	438	317	303	290
4012	Lighting	ENERGY STAR Omni-Directional LED (1,050-1,489 lumens, EISA 2007)	Low Income	MF	Retrofit	41	77%	32	0.01	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	6.0	130	136	99	99	94
4013	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2007)	Home Performance	SF	Retrofit	56	79%	44	0.01	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	8.4	1,846	1,930	1,397	1,333	1,277
4014	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2007)	Low Income	SF	Retrofit	56	79%	44	0.01	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	8.4	573	600	434	434	416
4015	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2007)	Multifamily	MF	Retrofit	56	79%	44	0.01	17	$3	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	8.4	583	610	441	421	403
4016	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2007)	Low Income	MF	Retrofit	56	79%	44	0.01	17	$3	100%	100%	100%	100%	0%	72.4%	72.4%	72.4%	8.4	181	189	137	137	131
4017	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2023)	Residential Lighting & Appliance	SF	ROB	9	42%	4	0.00	17	$2	100%	27%	75%	890%	60%	78.9%	72.0%	72.0%	1.2	2,660	3,660	2,888	2,635	2,635
4018	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2023)	Low Income	SF	ROB	9	42%	4	0.00	17	$2	100%	100%	100%	890%	60%	78.9%	78.9%	78.9%	1.2	826	1,137	765	731	731
4019	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2023)	Residential Lighting & Appliance	SF	NC	9	42%	4	0.00	17	$2	100%	27%	75%	990%	0%	78.9%	42.0%	66.5%	1.2	400	418	292	150	238
4020	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2023)	Residential Lighting & Appliance	MF	ROB	9	42%	4	0.00	17	$2	100%	27%	75%	465%	60%	78.9%	72.0%	72.0%	1.2	439	604	477	435	435
4021	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2023)	Low Income	MF	ROB	9	42%	4	0.00	17	$2	100%	100%	100%	465%	60%	78.9%	78.9%	78.9%	1.2	136	188	126	121	121
4022	Lighting	ENERGY STAR Omni-Directional LED (310-749 lumens, EISA 2023)	Residential Lighting & Appliance	MF	NC	9	42%	4	0.00	17	$2	100%	27%	75%	565%	0%	78.9%	42.0%	66.5%	1.2	72	75	53	27	43
4023	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2023)	Residential Lighting & Appliance	SF	ROB	16	55%	9	0.00	17	$2	100%	27%	75%	890%	60%	78.9%	72.0%	72.0%	2.7	5,852	8,052	6,354	5,797	5,797
4024	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2023)	Low Income	SF	ROB	16	55%	9	0.00	17	$2	100%	100%	100%	890%	60%	78.9%	78.9%	78.9%	2.7	1,818	2,501	1,683	1,608	1,608
4025	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2023)	Residential Lighting & Appliance	SF	NC	16	55%	9	0.00	17	$2	100%	27%	75%	990%	0%	78.9%	42.0%	66.5%	2.7	879	920	642	330	523
4026	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2023)	Residential Lighting & Appliance	MF	ROB	16	55%	9	0.00	17	$2	100%	27%	75%	465%	60%	78.9%	72.0%	72.0%	2.7	965	1,328	1,048	956	956
4027	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2023)	Low Income	MF	ROB	16	55%	9	0.00	17	$2	100%	100%	100%	465%	60%	78.9%	78.9%	78.9%	2.7	300	413	278	265	265
4028	Lighting	ENERGY STAR Omni-Directional LED (750-1,049 lumens, EISA 2023)	Residential Lighting & Appliance	MF	NC	16	55%	9	0.00	17	$2	100%	27%	75%	565%	0%	78.9%	42.0%	66.5%	2.7	158	166	116	60	94
4029	Lighting	ENERGY STAR Omni-Directional LED (1,049-1,489 lumens, EISA 2023)	Residential Lighting & Appliance	SF	ROB	22	57%	12	0.00	17	$2	100%	27%	75%	890%	60%	78.9%	72.0%	72.0%	3.9	8,511	11,712	9,243	8,432	8,432
4030	Lighting	ENERGY STAR Omni-Directional LED (1,049-1,489 lumens, EISA 2023)	Low Income	SF	ROB	22	57%	12	0.00	17	$2	100%	100%	100%	890%	60%	78.9%	78.9%	78.9%	3.9	2,644	3,638	2,448	2,338	2,338
4031	Lighting	ENERGY STAR Omni-Directional LED (1,049-1,489 lumens, EISA 2023)	Residential Lighting & Appliance	SF	NC	22	57%	12	0.00	17	$2	100%	27%	75%	990%	0%	78.9%	42.0%	66.5%	3.9	1,279	1,338	934	480	760
4032	Lighting	ENERGY STAR Omni-Directional LED (1,049-1,489 lumens, EISA 2023)	Residential Lighting & Appliance	MF	ROB	22	57%	12	0.00	17	$2	100%	27%	75%	465%	60%	78.9%	72.0%	72.0%	3.9	1,404	1,932	1,525	1,391	1,391
4033	Lighting	ENERGY STAR Omni-Directional LED (1,049-1,489 lumens, EISA 2023)	Low Income	MF	ROB	22	57%	12	0.00	17	$2	100%	100%	100%	465%	60%	78.9%	78.9%	78.9%	3.9	436	600	404	386	386
4034	Lighting	ENERGY STAR Omni-Directional LED (1,049-1,489 lumens, EISA 2023)	Residential Lighting & Appliance	MF	NC	22	57%	12	0.00	17	$2	100%	27%	75%	565%	0%	78.9%	42.0%	66.5%	3.9	231	241	168	87	137
4035	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2023)	Residential Lighting & Appliance	SF	ROB	35	67%	23	0.00	17	$2	100%	27%	75%	890%	60%	78.9%	72.0%	72.0%	7.4	15,959	21,959	17,330	15,811	15,811
4036	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2023)	Low Income	SF	ROB	35	67%	23	0.00	17	$2	100%	100%	100%	890%	60%	78.9%	78.9%	78.9%	7.4	4,957	6,821	4,590	4,384	4,384
4037	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2023)	Residential Lighting & Appliance	SF	NC	35	67%	23	0.00	17	$2	100%	27%	75%	990%	0%	78.9%	42.0%	66.5%	7.4	2,398	2,508	1,751	900	1,426
4038	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2023)	Residential Lighting & Appliance	MF	ROB	35	67%	23	0.00	17	$2	100%	27%	75%	465%	60%	78.9%	72.0%	72.0%	7.4	2,633	3,623	2,859	2,609	2,609
4039	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2023)	Low Income	MF	ROB	35	67%	23	0.00	17	$2	100%	100%	100%	465%	60%	78.9%	78.9%	78.9%	7.4	818	1,125	757	723	723
4040	Lighting	ENERGY STAR Omni-Directional LED (1,490-2,600 lumens, EISA 2023)	Residential Lighting & Appliance	MF	NC	35	67%	23	0.00	17	$2	100%	27%	75%	565%	0%	78.9%	42.0%	66.5%	7.4	432	452	316	162	257
4041	Lighting	ENERGY STAR Directional LED	Residential Lighting & Appliance	SF	ROB	43	80%	34	0.01	20	$2	100%	30%	75%	570%	60%	78.9%	72.0%	72.0%	14.0	12,345	16,987	13,397	12,222	12,222
4042	Lighting	ENERGY STAR Directional LED	Low Income	SF	ROB	43	80%	34	0.01	20	$2	100%	100%	100%	570%	60%	78.9%	78.9%	78.9%	14.0	3,835	5,276	3,195	3,021	3,021
4043	Lighting	ENERGY STAR Directional LED	Residential Lighting & Appliance	SF	NC	43	80%	34	0.01	20	$2	100%	30%	75%	570%	0%	78.9%	43.9%	66.5%	14.0	2,025	2,118	1,180	615	931
4044	Lighting	ENERGY STAR Directional LED	Residential Lighting & Appliance	MF	ROB	43	80%	34	0.01	20	$2	100%	30%	75%	330%	60%	78.9%	72.0%	72.0%	14.0	2,257	3,106	2,449	2,235	2,235
4045	Lighting	ENERGY STAR Directional LED	Low Income	MF	ROB	43	80%	34	0.01	20	$2	100%	100%	100%	330%	60%	78.9%	78.9%	78.9%	14.0	701	965	584	552	552
4046	Lighting	ENERGY STAR Directional LED	Residential Lighting & Appliance	MF	NC	43	80%	34	0.01	20	$2	100%	30%	75%	330%	0%	78.9%	43.9%	66.5%	14.0	370	387	216	112	170
4047	Lighting	ENERGY STAR Specialty LED	Residential Lighting & Appliance	SF	ROB	16	55%	9	0.00	20	$2	100%	30%	75%	530%	60%	78.9%	72.0%	72.0%	3.5	2,870	3,949	3,114	2,841	2,841
4048	Lighting	ENERGY STAR Specialty LED	Low Income	SF	ROB	16	55%	9	0.00	17	$2	100%	100%	100%	530%	60%	78.9%	78.9%	78.9%	3.0	1,082	1,489	1,002	957	957
4049	Lighting	ENERGY STAR Specialty LED	Residential Lighting & Appliance	SF	NC	16	55%	9	0.00	17	$2	100%	30%	75%	530%	0%	78.9%	43.8%	66.5%	3.0	471	492	344	184	280
4050	Lighting	ENERGY STAR Specialty LED	Residential Lighting & Appliance	MF	ROB	16	55%	9	0.00	17	$2	100%	30%	75%	300%	60%	78.9%	72.0%	72.0%	3.0	623	857	676	617	617
4051	Lighting	ENERGY STAR Specialty LED	Low Income	MF	ROB	16	55%	9	0.00	17	$2	100%	100%	100%	300%	60%	78.9%	78.9%	78.9%	3.0	193	266	179	171	171
4052	Lighting	ENERGY STAR Specialty LED	Residential Lighting & Appliance	MF	NC	16	55%	9	0.00	17	$2	100%	30%	75%	300%	0%	78.9%	43.8%	66.5%	3.0	84	88	61	33	50
4053	Lighting	Occupancy Sensor - Wall-Mounted	No program	SF	ROB	134	30%	40	0.00	10	$89	100%	92%	92%	100%	22%	78.9%	74.7%	74.7%	0.2	2,924	0	0	0	0
4054	Lighting	Occupancy Sensor - Wall-Mounted	No program	SF	ROB	134	30%	40	0.00	10	$89	100%	92%	92%	100%	22%	78.9%	74.7%	74.7%	0.2	908	0	0	0	0
4055	Lighting	Occupancy Sensor - Wall-Mounted	No program	SF	NC	134	30%	40	0.00	10	$89	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	0.2	437	0	0	0	0
4056	Lighting	Occupancy Sensor - Wall-Mounted	No program	MF	ROB	134	30%	40	0.00	10	$89	100%	92%	92%	100%	22%	78.9%	74.7%	74.7%	0.2	923	0	0	0	0
4057	Lighting	Occupancy Sensor - Wall-Mounted	No program	MF	ROB	134	30%	40	0.00	10	$89	100%	92%	92%	100%	22%	78.9%	74.7%	74.7%	0.2	287	0	0	0	0
4058	Lighting	Occupancy Sensor - Wall-Mounted	No program	MF	NC	134	30%	40	0.00	10	$89	100%	92%	92%	100%	0%	72.4%	69.1%	69.1%	0.2	138	0	0	0	0
5001	Envelope	Ceiling Insulation (AC/Gas heat)	Home Performance	SF	Retrofit	6,156	31%	1,879	9.48	20	$2,172	100%	46%	75%	38%	89%	92.3%	92.3%	92.3%	4.6	5,132	7,098	6,682	7,131	6,895
5002	Envelope	Ceiling Insulation (AC/Gas heat)	Low Income	SF	Retrofit	6,156	31%	1,879	9.48	20	$2,172	100%	100%	100%	38%	89%	92.3%	92.3%	92.3%	4.6	1,594	2,205	2,075	2,215	2,142
5003	Envelope	Ceiling Insulation (AC/Gas heat)	Multifamily	MF	Retrofit	5,790	32%	1,879	9.48	20	$2,172	100%	28%	75%	38%	89%	92.3%	92.3%	92.3%	4.6	1,621	2,242	2,110	2,252	2,177
5004	Envelope	Ceiling Insulation (AC/Gas heat)	Low Income	MF	Retrofit	5,790	32%	1,879	9.48	20	$2,172	100%	100%	100%	38%	89%	92.3%	92.3%	92.3%	4.6	503	696	655	699	676
5005	Envelope	Ceiling Insulation (AC/Electric resistance heat)	Home Performance	SF	Retrofit	10,260	47%	4,798	9.48	20	$2,172	100%	46%	75%	54%	89%	92.3%	92.3%	92.3%	5.3	18,658	25,805	24,291	25,923	25,065
5006	Envelope	Ceiling Insulation (AC/Electric resistance heat)	Low Income	SF	Retrofit	10,260	47%	4,798	9.48	20	$2,172	100%	100%	100%	54%	89%	92.3%	92.3%	92.3%	5.3	5,795	8,015	7,545	8,052	7,786
5007	Envelope	Ceiling Insulation (AC/Electric resistance heat)	Multifamily	MF	Retrofit	9,668	50%	4,798	9.48	20	$2,172	100%	28%	75%	54%	89%	92.3%	92.3%	92.3%	5.3	5,892	8,149	7,671	8,186	7,915
5008	Envelope	Ceiling Insulation (AC/Electric resistance heat)	Low Income	MF	Retrofit	9,668	50%	4,798	9.48	20	$2,172	100%	100%	100%	54%	89%	92.3%	92.3%	92.3%	5.3	1,830	2,531	2,383	2,543	2,459
5009	Envelope	Ceiling Insulation (heat pump)	Home Performance	SF	Retrofit	7,192	33%	2,393	9.48	20	$2,172	100%	46%	75%	4%	89%	92.3%	92.3%	92.3%	4.7	740	1,023	963	1,028	994
5010	Envelope	Ceiling Insulation (heat pump)	Low Income	SF	Retrofit	7,192	33%	2,393	9.48	20	$2,172	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	4.7	230	318	299	319	309
5011	Envelope	Ceiling Insulation (heat pump)	Multifamily	MF	Retrofit	6,764	35%	2,393	9.48	20	$2,172	100%	28%	75%	4%	89%	92.3%	92.3%	92.3%	4.7	234	323	304	325	314
5012	Envelope	Ceiling Insulation (heat pump)	Low Income	MF	Retrofit	6,764	35%	2,393	9.48	20	$2,172	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	4.7	73	100	94	101	97
5013	Envelope	Wall Insulation (AC/gas heat)	Home Performance	SF	Retrofit	6,156	20%	1,239	0.90	20	$1,381	100%	72%	75%	38%	89%	92.3%	92.3%	92.3%	1.1	3,385	4,682	4,407	4,704	4,548
5014	Envelope	Wall Insulation (AC/gas heat)	Low Income	SF	Retrofit	6,156	20%	1,239	0.90	20	$1,381	100%	100%	100%	38%	89%	92.3%	92.3%	92.3%	1.1	1,052	1,454	1,369	1,461	1,413
5015	Envelope	Wall Insulation (AC/gas heat)	Multifamily	MF	Retrofit	5,790	21%	1,239	0.90	20	$1,381	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	1.1	1,069	1,479	1,392	1,485	1,436
5016	Envelope	Wall Insulation (AC/gas heat)	Low Income	MF	Retrofit	5,790	21%	1,239	0.90	20	$1,381	100%	100%	100%	38%	89%	92.3%	92.3%	92.3%	1.1	332	459	432	461	446
5017	Envelope	Wall Insulation (AC/Electric resistance heat)	Home Performance	SF	Retrofit	10,260	55%	5,627	0.90	20	$1,381	100%	72%	75%	54%	89%	92.3%	92.3%	92.3%	2.7	21,882	30,264	28,488	30,402	29,396
5018	Envelope	Wall Insulation (AC/Electric resistance heat)	Low Income	SF	Retrofit	10,260	55%	5,627	0.90	20	$1,381	100%	100%	100%	54%	89%	92.3%	92.3%	92.3%	2.7	6,797	9,400	8,849	9,443	9,131
5019	Envelope	Wall Insulation (AC/Electric resistance heat)	Multifamily	MF	Retrofit	9,668	58%	5,627	0.90	20	$1,381	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	2.7	6,910	9,557	8,996	9,601	9,283

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
5020	Envelope	Wall Insulation (AC/Electric resistance heat)	Low Income	MF	Retrofit	9,668	58%	5,627	0.90	20	$1,381	100%	100%	100%	54%	89%	92.3%	92.3%	92.3%	2.7	2,146	2,969	2,794	2,982	2,883
5021	Envelope	Wall Insulation (heat pump)	Home Performance	SF	Retrofit	7,192	24%	1,697	0.77	20	$1,381	100%	72%	75%	4%	89%	92.3%	92.3%	92.3%	1.2	525	725	683	729	705
5022	Envelope	Wall Insulation (heat pump)	Low Income	SF	Retrofit	7,192	24%	1,697	0.77	20	$1,381	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	1.2	163	225	212	226	219
5023	Envelope	Wall Insulation (heat pump)	Multifamily	MF	Retrofit	6,764	25%	1,697	0.77	20	$1,381	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	1.2	166	229	216	230	223
5024	Envelope	Wall Insulation (heat pump)	Low Income	MF	Retrofit	6,764	25%	1,697	0.77	20	$1,381	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	1.2	51	71	67	71	69
5025	Envelope	Floor Insulation (AC/Electric resistance heat)	Home Performance	SF	Retrofit	10,260	1%	109	0.00	20	$2,172	100%	46%	75%	54%	89%	92.3%	92.3%	92.3%	0.0	845	0	0	0	0
5026	Envelope	Floor Insulation (AC/Electric resistance heat)	Low Income	SF	Retrofit	10,260	1%	109	0.00	20	$2,172	100%	100%	100%	54%	89%	92.3%	92.3%	92.3%	0.0	262	0	0	0	0
5027	Envelope	Floor Insulation (AC/Electric resistance heat)	Multifamily	MF	Retrofit	9,668	1%	109	0.00	20	$2,172	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	0.0	267	0	0	0	0
5028	Envelope	Floor Insulation (AC/Electric resistance heat)	Low Income	MF	Retrofit	9,668	1%	109	0.00	20	$2,172	100%	100%	100%	54%	89%	92.3%	92.3%	92.3%	0.0	83	0	0	0	0
5029	Envelope	Floor Insulation (Heat pump)	Home Performance	SF	Retrofit	7,192	11%	808	0.00	20	$2,172	100%	46%	75%	4%	89%	92.3%	92.3%	92.3%	0.2	499	0	0	0	0
5030	Envelope	Floor Insulation (Heat pump)	Low Income	SF	Retrofit	7,192	11%	808	0.00	20	$2,172	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	0.2	155	214	202	215	208
5031	Envelope	Floor Insulation (Heat pump)	Multifamily	MF	Retrofit	6,764	12%	808	0.00	20	$2,172	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	0.2	158	0	0	0	0
5032	Envelope	Floor Insulation (Heat pump)	Low Income	MF	Retrofit	6,764	12%	808	0.00	20	$2,172	100%	100%	100%	4%	89%	92.3%	92.3%	92.3%	0.2	49	68	64	68	66
5033	Envelope	ENERGY STAR Window (AC/gas heat) - double pane replacement	No program	SF	Retrofit	6,156	7%	435	0.19	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	6.0	2,775	3,838	2,336	2,493	2,410
5034	Envelope	ENERGY STAR Window (AC/gas heat) - double pane replacement	No program	SF	Retrofit	6,156	7%	435	0.19	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	6.0	862	1,192	725	774	749
5035	Envelope	ENERGY STAR Window (AC/gas heat) - double pane replacement	No program	MF	Retrofit	5,790	8%	435	0.19	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	6.0	876	1,212	738	787	761
5036	Envelope	ENERGY STAR Window (AC/gas heat) - double pane replacement	No program	MF	Retrofit	5,790	8%	435	0.19	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	6.0	272	376	229	244	236
5037	Envelope	ENERGY STAR Window (AC/Electric resistance heat) - double pane replacement	No program	SF	Retrofit	10,260	4%	442	0.19	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	6.0	3,512	4,858	2,956	3,155	3,050
5038	Envelope	ENERGY STAR Window (AC/Electric resistance heat) - double pane replacement	No program	SF	Retrofit	10,260	4%	442	0.19	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	6.0	1,091	1,509	918	980	948
5039	Envelope	ENERGY STAR Window (AC/Electric resistance heat) - double pane reolacement	No program	MF	Retrofit	9,668	5%	442	0.19	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	6.0	1,109	1,534	934	996	963
5040	Envelope	ENERGY STAR Window (AC/Electric resistance heat) - double pane replacement	No program	MF	Retrofit	9,668	5%	442	0.19	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	6.0	345	477	290	309	299
5041	Envelope	ENERGY STAR Window (heat pump) - double pane replacement	No program	SF	Retrofit	7,192	6%	446	0.19	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	6.1	310	428	261	278	269
5042	Envelope	ENERGY STAR Window (heat pump) - double pane replacement	No program	SF	Retrofit	7,192	6%	446	0.19	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	6.1	96	133	81	86	84
5043	Envelope	ENERGY STAR Window (heat pump) - double pane replacement	No program	MF	Retrofit	6,764	7%	446	0.19	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	6.1	98	135	82	88	85
5044	Envelope	ENERGY STAR Window (heat pump) - double pane replacement	No program	MF	Retrofit	6,764	7%	446	0.19	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	6.1	30	42	26	27	26
5045	Envelope	ENERGY STAR Storm Window (AC/gas heat) - double pane replacement	No program	SF	Retrofit	6,156	3%	167	0.08	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	2.4	423	584	356	380	367
5046	Envelope	ENERGY STAR Storm Window (AC/gas heat) - double pane replacement	No program	SF	Retrofit	6,156	3%	167	0.08	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	2.4	131	182	110	118	114
5047	Envelope	ENERGY STAR Storm Window (AC/gas heat) - double pane replacement	No program	MF	Retrofit	5,790	3%	167	0.08	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	2.4	133	185	112	120	116
5048	Envelope	ENERGY STAR Storm Window (AC/gas heat) - double pane replacement	No program	MF	Retrofit	5,790	3%	167	0.08	20	$67	100%	90%	90%	38%	61%	72.7%	72.7%	72.7%	2.4	41	57	35	37	36
5049	Envelope	ENERGY STAR Storm Window (AC/Electric resistance heat) - double pane replacement	No program	SF	Retrofit	10,260	3%	330	0.08	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	3.6	1,565	2,164	1,317	1,406	1,359
5050	Envelope	ENERGY STAR Storm Window (AC/Electric resistance heat) - double pane replacement	No program	SF	Retrofit	10,260	3%	330	0.08	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	3.6	486	672	409	437	422
5051	Envelope	ENERGY STAR Storm Window (AC/Electric resistance heat) - double pane replacement	No program	MF	Retrofit	9,668	3%	330	0.08	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	3.6	494	683	416	444	429
5052	Envelope	ENERGY STAR Storm Window (AC/Electric resistance heat) - double pane replacement	No program	MF	Retrofit	9,668	3%	330	0.08	20	$67	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	3.6	153	212	129	138	133
5053	Envelope	ENERGY STAR Storm Window (heat pump) - double pane replacement	No program	SF	Retrofit	7,192	3%	217	0.08	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	2.8	68	94	57	61	59
5054	Envelope	ENERGY STAR Storm Window (heat pump) - double pane replacement	No program	SF	Retrofit	7,192	3%	217	0.08	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	2.8	21	29	18	19	18
5055	Envelope	ENERGY STAR Storm Window (heat pump) - double pane replacement	No program	MF	Retrofit	6,764	3%	217	0.08	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	2.8	22	30	18	19	19
5056	Envelope	ENERGY STAR Storm Window (heat pump) - double pane replacement	No program	MF	Retrofit	6,764	3%	217	0.08	20	$67	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	2.8	7	9	6	6	6
5057	Envelope	Air Infiltration (AC/gas heat)	Home Performance	SF	Retrofit	6,156	14%	840	0.68	11	$441	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	1.5	2,294	3,173	2,987	3,188	3,015
5058	Envelope	Air Infiltration (AC/gas heat)	Low Income	SF	Retrofit	6,156	14%	840	0.68	11	$441	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	1.5	713	986	928	990	937
5059	Envelope	Air Infiltration (AC/gas heat)	Multifamily	MF	Retrofit	5,790	15%	840	0.68	11	$441	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	1.5	725	1,002	943	1,007	952
5060	Envelope	Air Infiltration (AC/gas heat)	Low Income	MF	Retrofit	5,790	15%	840	0.68	11	$441	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	1.5	225	311	293	313	296
5061	Envelope	Air Infiltration (AC/Electric resistance heat)	Home Performance	SF	Retrofit	10,260	20%	2,082	0.68	11	$441	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	2.4	8,096	11,198	10,540	11,249	10,640
5062	Envelope	Air Infiltration (AC/Electric resistance heat)	Low Income	SF	Retrofit	10,260	20%	2,082	0.68	11	$441	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	2.4	2,515	3,478	3,274	3,494	3,305
5063	Envelope	Air Infiltration (AC/Electric resistance heat)	Multifamily	MF	Retrofit	9,668	22%	2,082	0.68	11	$441	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	2.4	2,557	3,536	3,329	3,552	3,360
5064	Envelope	Air Infiltration (AC/Electric resistance heat)	Low Income	MF	Retrofit	9,668	22%	2,082	0.68	11	$441	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	2.4	794	1,098	1,034	1,103	1,044
5065	Envelope	Air Infiltration (Heat pump)	Home Performance	SF	Retrofit	7,192	20%	1,474	0.68	11	$441	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	2.0	456	630	593	633	599
5066	Envelope	Air Infiltration (Heat pump)	Low Income	SF	Retrofit	7,192	20%	1,474	0.68	11	$441	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	2.0	142	196	184	197	186
5067	Envelope	Air Infiltration (Heat pump)	Multifamily	MF	Retrofit	6,764	22%	1,474	0.68	11	$441	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	2.0	144	199	187	200	189
5068	Envelope	Air Infiltration (Heat pump)	Low Income	MF	Retrofit	6,764	22%	1,474	0.68	11	$441	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	2.0	45	62	58	62	59
5069	Envelope	Window Film (AC/Electric resistance heat)(Single Pane)	No program	SF	Retrofit	10,260	-1%	-73	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.2	0	0	0	0	0
5070	Envelope	Window Film (AC/Electric resistance heat)(Single Pane)	No program	SF	Retrofit	10,260	-1%	-73	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.2	0	0	0	0	0
5071	Envelope	Window Film (AC/Electric resistance heat)(Single Pane)	No program	MF	Retrofit	9,668	-1%	-73	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.2	0	0	0	0	0
5072	Envelope	Window Film (AC/Electric resistance heat)(Single Pane)	No program	MF	Retrofit	9,668	-1%	-73	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.2	0	0	0	0	0
5073	Envelope	Window Film (AC/Electric resistance heat)(Double Pane)	No program	SF	Retrofit	10,260	0%	-25	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.3	0	0	0	0	0
5074	Envelope	Window Film (AC/Electric resistance heat)(Double Pane)	No program	SF	Retrofit	10,260	0%	-25	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.3	0	0	0	0	0
5075	Envelope	Window Film (AC/Electric resistance heat)(Double Pane)	No program	MF	Retrofit	9,668	0%	-25	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.3	0	0	0	0	0
5076	Envelope	Window Film (AC/Electric resistance heat)(Double Pane)	No program	MF	Retrofit	9,668	0%	-25	0.11	10	$220	100%	90%	90%	54%	61%	72.7%	72.7%	72.7%	0.3	0	0	0	0	0
5077	Envelope	Window Film (Heat pump)(Single Pane)	No program	SF	Retrofit	7,192	2%	178	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.5	180	0	0	0	0
5078	Envelope	Window Film (Heat pump)(Single Pane)	No program	SF	Retrofit	7,192	2%	178	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.5	56	0	0	0	0
5079	Envelope	Window Film (Heat pump)(Single Pane)	No program	MF	Retrofit	6,764	3%	178	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.5	57	0	0	0	0
5080	Envelope	Window Film (Heat pump)(Single Pane)	No program	MF	Retrofit	6,764	3%	178	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.5	18	0	0	0	0
5081	Envelope	Window Film (Heat pump)(Double Pane)	No program	SF	Retrofit	7,192	1%	91	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.4	92	0	0	0	0
5082	Envelope	Window Film (Heat pump)(Double Pane)	No program	SF	Retrofit	7,192	1%	91	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.4	29	0	0	0	0
5083	Envelope	Window Film (Heat pump)(Double Pane)	No program	MF	Retrofit	6,764	1%	91	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.4	29	0	0	0	0
5084	Envelope	Window Film (Heat pump)(Double Pane)	No program	MF	Retrofit	6,764	1%	91	0.11	10	$220	100%	90%	90%	4%	61%	72.7%	72.7%	72.7%	0.4	9	0	0	0	0
5085	Envelope	Radiant Barrier (AC/Gas heat)	No program	SF	Retrofit	6,156	4%	222	0.16	25	$450	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	0.7	1,214	0	0	0	0
5086	Envelope	Radiant Barrier (AC/Gas heat)	No program	SF	Retrofit	6,156	4%	222	0.16	25	$450	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	0.7	377	0	0	0	0
5087	Envelope	Radiant Barrier (AC/Gas heat)	No program	MF	Retrofit	5,790	4%	222	0.16	25	$450	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	0.7	383	0	0	0	0
5088	Envelope	Radiant Barrier (AC/Gas heat)	No program	MF	Retrofit	5,790	4%	222	0.16	25	$450	100%	90%	90%	38%	89%	92.3%	92.3%	92.3%	0.7	119	0	0	0	0
5089	Envelope	Radiant Barrier (AC/Electric resistance heat)	No program	SF	Retrofit	10,260	3%	303	0.16	25	$450	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	0.8	2,353	0	0	0	0

Appendix B: Residential Energy Efficiency Detail

Measure #	End-Use	Measure Name	Program	Building Type	Replacement Type	Base Annual Electric	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Incentive (%)	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	2% Adoption Rate	TRC Score	2040 TP	2040 EP	2040 HCAP	2040 RAP	2040 2% Case
5090	Envelope	Radiant Barrier (AC/Electric resistance heat)	No program	SF	Retrofit	10,260	3%	303	0.16	25	$450	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	0.8	731	0	0	0	0
5091	Envelope	Radiant Barrier (AC/Electric resistance heat)	No program	MF	Retrofit	9,668	3%	303	0.16	25	$450	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	0.8	743	0	0	0	0
5092	Envelope	Radiant Barrier (AC/Electric resistance heat)	No program	MF	Retrofit	9,668	3%	303	0.16	25	$450	100%	90%	90%	54%	89%	92.3%	92.3%	92.3%	0.8	231	0	0	0	0
5093	Envelope	Radiant Barrier (Heat pump)	No program	SF	Retrofit	7,192	2%	162	0.16	25	$450	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	0.6	100	0	0	0	0
5094	Envelope	Radiant Barrier (Heat pump)	No program	SF	Retrofit	7,192	2%	162	0.16	25	$450	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	0.6	31	0	0	0	0
5095	Envelope	Radiant Barrier (Heat pump)	No program	MF	Retrofit	6,764	2%	162	0.16	25	$450	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	0.6	32	0	0	0	0
5096	Envelope	Radiant Barrier (Heat pump)	No program	MF	Retrofit	6,764	2%	162	0.16	25	$450	100%	90%	90%	4%	89%	92.3%	92.3%	92.3%	0.6	10	0	0	0	0
6001	Behavior	Home Energy Report	Scorecard	SF	ROB	10,200	1%	102	0.01	1	$1	100%	0%	75%	100%	70%	79.0%	79.0%	79.0%	3.7	9,900	9,900	7,821	7,821	7,821
6002	Behavior	Home Energy Report	Scorecard	SF	ROB	10,200	1%	102	0.01	1	$1	100%	0%	75%	100%	70%	79.0%	79.0%	79.0%	3.7	3,075	3,075	2,429	2,429	2,429
6003	Behavior	Home Energy Report	Scorecard	SF	NC	10,200	1%	102	0.01	1	$1	100%	0%	75%	100%	70%	79.0%	79.0%	79.0%	3.7	1,371	1,371	1,083	1,083	1,083
6004	Behavior	Home Energy Report	Scorecard	MF	ROB	10,200	1%	102	0.01	1	$1	100%	0%	75%	100%	70%	79.0%	79.0%	79.0%	3.7	3,126	3,126	2,470	2,470	2,470
6005	Behavior	Home Energy Report	Scorecard	MF	ROB	10,200	1%	102	0.01	1	$1	100%	0%	75%	100%	70%	79.0%	79.0%	79.0%	3.7	971	971	767	767	767
6006	Behavior	Home Energy Report	Scorecard	MF	NC	10,200	1%	102	0.01	1	$1	100%	0%	75%	100%	70%	79.0%	79.0%	79.0%	3.7	433	433	342	342	342

APPENDIX D. C&I Energy Efficiency Measure Detail

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
1	Cooking	Commercial Griddles	Colleges/Universities	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	84	47	56	51
2	Cooking	Convection Ovens	Colleges/Universities	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	101	67	74	71
3	Cooking	Combination Ovens	Colleges/Universities	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	47	27	35	28
4	Cooking	Commercial Fryers	Colleges/Universities	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	202	0	0	0
5	Cooking	Commercial Steam Cookers	Colleges/Universities	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	144	90	107	97
6	Cooling	Air-Cooled Chillers	Colleges/Universities	ROB	11%	166	0.186	20	$127	100%	33%	75%	1	21%	20%	85.6%	44.0%	63.6%	2.1	1,592	454	858	616
7	Cooling	Water-Cooled Chillers	Colleges/Universities	ROB	12%	104	0.077	20	$107	100%	22%	75%	2	21%	20%	85.6%	44.0%	56.3%	1.2	1,772	505	955	638
8	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Colleges/Universities	Retro	29%	815	0.036	15	$190	100%	50%	75%	3	8%	10%	75.4%	43.2%	61.2%	1.8	2,116	833	1,580	1,157
9	Cooling	Unitary and Split System AC	Colleges/Universities	ROB	24%	410	0.228	15	$123	100%	50%	75%	4	43%	20%	85.6%	54.9%	71.0%	2.8	9,436	4,014	6,298	5,116
10	Cooling	Unitary and Split System HP	Colleges/Universities	ROB	24%	488	0.228	15	$123	100%	50%	75%	5	6%	20%	85.6%	56.1%	72.2%	3.0	1,236	539	825	642
11	Cooling	Ductless Mini-Split HP	Colleges/Universities	ROB	11%	259	0.210	18	$143	100%	50%	75%	6	6%	20%	85.6%	48.5%	64.8%	2.1	567	186	334	244
12	Cooling	PTAC Equipment	Colleges/Universities	ROB	4%	60	0.110	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	61.9%	1.0	0	0	0	0
13	Cooling	PTHP Equipment	Colleges/Universities	ROB	6%	125	0.114	10	$77	100%	41%	75%	8	0%	20%	85.6%	45.7%	64.5%	1.3	0	0	0	0
14	Cooling	Commercial AC and HP Tune Up	Colleges/Universities	Retro	4%	60	0.033	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.3	2,361	0	0	0
15	Cooling	ECM - HVAC	Colleges/Universities	Retro	78%	351	0.066	15	$177	100%	24%	75%	10	2%	5%	73.1%	33.5%	47.1%	1.1	696	247	571	332
16	Cooling	ERV	Colleges/Universities	Retro	24%	2	0.003	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	45.3%	0.8	9,847	0	0	0
17	Cooling	Window Film	Colleges/Universities	Retro	8%	7	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	53.1%	1.6	3,269	1,527	2,839	1,640
18	Cooling	Cool Roof	Colleges/Universities	Retro	3%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	1,031	0	0	0
19	Cooling	Smart Thermostats	Colleges/Universities	Retro	4%	545	0.303	11	$208	100%	50%	75%	14	100%	9%	75.4%	45.9%	62.9%	1.7	131	76	131	99
20	Ext Lighting	LED wallpack (existing W<250)	Colleges/Universities	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	12%	83.4%	38.1%	56.8%	0.7	274	0	0	0
21	Ext Lighting	LED parking lot fixture (existing W≥250)	Colleges/Universities	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	12%	83.4%	38.1%	48.0%	0.4	250	0	0	0
22	Ext Lighting	LED parking lot fixture (existing W<250)	Colleges/Universities	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	12%	83.4%	38.1%	56.8%	0.7	274	0	0	0
23	Ext Lighting	LED parking garage fixture (existing W≥250)	Colleges/Universities	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	12%	83.4%	43.4%	62.7%	0.5	251	0	0	0
24	Ext Lighting	LED parking garage fixture (existing W<250)	Colleges/Universities	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	12%	83.4%	53.6%	71.4%	1.0	276	136	226	171
25	Ext Lighting	Bi-Level Garage Lighting	Colleges/Universities	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	171	0	0	0
26	Ext Lighting	LED Traffic Signals	Colleges/Universities	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
27	Hot Water	Electric Storage Water Heater	Colleges/Universities	ROB	4%	158	0.018	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	8	0	0	0
28	Hot Water	Heat Pump Water Heater	Colleges/Universities	ROB	68%	2,917	0.333	10	$1,350	100%	23%	75%	1	95%	3%	85.6%	31.8%	57.8%	0.7	1,975	0	0	0
29	Hot Water	Electric tankless water heater	Colleges/Universities	ROB	60%	133	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.4	4	0	0	0
30	Hot Water	Water Heater Pipe Insulation	Colleges/Universities	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	1%	80%	86.0%	86.0%	86.0%	0.1	4	0	0	0
31	Hot Water	Faucet Aerator	Colleges/Universities	Retro	32%	473	0.118	10	$8	100%	75%	75%	4	34%	80%	86.0%	86.0%	86.0%	24.3	55	88	88	79
32	Hot Water	Low-Flow Showerheads	Colleges/Universities	Retro	20%	39	1.939	10	$12	100%	33%	75%	5	4%	80%	86.0%	86.0%	86.0%	94.7	5	7	7	7
33	Hot Water	PRSV	Colleges/Universities	Retro	33%	1,253	0.313	5	$93	100%	75%	75%	6	20%	50%	75.4%	67.0%	72.0%	2.9	54	62	80	66
34	Hot Water	ENERGY STAR Clothes Washers	Colleges/Universities	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	123	0	0	0
35	Int Lighting	Interior 4 ft LED	Colleges/Universities	Retro	49%	102	0.024	15	$13	100%	50%	75%	1	86%	12%	83.4%	66.3%	77.4%	4.5	14,762	9,381	12,162	10,420
36	Int Lighting	LED Screw In - Interior	Colleges/Universities	Retro	80%	121	0.029	9	$2	100%	50%	75%	2	2%	50%	83.4%	79.0%	82.8%	27.0	384	255	282	252
37	Int Lighting	LED Fixture - Interior	Colleges/Universities	Retro	69%	130	0.031	15	$27	100%	60%	75%	3	10%	12%	83.4%	62.4%	73.7%	2.8	2,373	1,406	1,955	1,584
38	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Colleges/Universities	Retro	52%	423	0.098	15	$201	100%	50%	75%	4	1%	12%	83.4%	42.7%	62.0%	1.2	203	76	167	111
39	Int Lighting	Interior LED High Bay | Replacing HID	Colleges/Universities	Retro	73%	2,047	0.475	15	$458	100%	50%	75%	5	1%	12%	83.4%	56.7%	72.8%	2.6	284	151	234	187
40	Int Lighting	Advanced Lighting Controls	Colleges/Universities	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	502	0	0	0
41	Int Lighting	Controls Cont Dimming	Colleges/Universities	Retro	30%	62	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	51.8%	70.5%	1.2	2,142	1,846	2,771	2,189
42	Int Lighting	Controls Photocells	Colleges/Universities	Retro	10%	21	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	42.6%	61.9%	0.7	428	0	0	0
43	Int Lighting	Controls Occ Sensor	Colleges/Universities	Retro	30%	62	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	51.8%	70.5%	1.2	2,142	1,846	2,771	2,189
44	Int Lighting	Custom Lighting	Colleges/Universities	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	4,713	1,896	3,623	2,326
45	Misc	Vend Machine Ctrls	Colleges/Universities	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	71	0	0	0
46	Misc	Vend Machine Ctrls -refrigerated	Colleges/Universities	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	295	177	177	160
47	Misc	Power Distribution Equipment Upgrades	Colleges/Universities	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	49%	20%	73.1%	44.0%	44.0%	0.9	202	69	138	71
48	Misc	Custom Miscellaneous	Colleges/Universities	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	10,887	3,891	7,984	5,009
49	Plug Loads Office	Plug Load Occupancy Sensors	Colleges/Universities	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	2,971	0	0	0
50	Plug Loads Office	Advanced Power Strips	Colleges/Universities	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	2,602	1,039	2,213	1,503
51	Plug Loads Office	Computer Power Management	Colleges/Universities	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	1,041	0	0	0
52	Refrigeration	Solid Door Commercial Refrigeration Equipment	Colleges/Universities	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	32%	56%	85.6%	69.2%	73.1%	2.6	3,017	1,804	2,417	1,954
53	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Colleges/Universities	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	8%	54%	85.6%	67.8%	67.8%	0.8	246	0	0	0
54	Refrigeration	Door Heater Controls	Colleges/Universities	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	28	0	0	0
55	Refrigeration	Zero Energy Doors	Colleges/Universities	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	507	214	410	287
56	Refrigeration	Night Covers	Colleges/Universities	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	160	0	0	0
57	Refrigeration	Strip Curtain	Colleges/Universities	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	12%	36%	75.4%	55.2%	61.0%	0.7	2,143	0	0	0
58	Refrigeration	Evap Fan Ctrls	Colleges/Universities	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	2%	33%	73.1%	53.1%	53.1%	2.3	443	167	284	162
59	Refrigeration	Refrigeration ECMs	Colleges/Universities	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	12%	20%	75.4%	48.9%	63.2%	2.2	1,167	465	827	616
60	Refrigeration	Refrigerated Case Lighting	Colleges/Universities	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	732	0	0	0
61	Refrigeration	Ice Maker	Colleges/Universities	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	4%	50%	85.6%	65.0%	65.0%	0.4	185	0	0	0
62	Refrigeration	Custom Refrigeration	Colleges/Universities	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	3,435	1,759	2,526	1,750
63	Ventilation	VFDs of Supply and Return Fans	Colleges/Universities	Retro	59%	25,845	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	54.1%	2.3	11,434	4,042	7,623	4,660
64	Whole Building_HVAC	Variable Air Volume HVAC	Colleges/Universities	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	43%	25%	73.1%	65.2%	71.7%	33.6	13,910	10,385	11,881	11,002
65	Whole Building_HVAC	Demand Controlled Ventilation	Colleges/Universities	Retro	3%	45	0.032	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	41.2%	0.5	1,618	0	0	0
66	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Colleges/Universities	Retro	15%	3,460	0.428	15	$1,778	100%	50%	75%	3	11%	24%	73.1%	46.8%	46.8%	1.0	1,238	567	1,062	530
67	Whole Building_HVAC	GREM Controls	Colleges/Universities	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
68	Whole Building_HVAC	Custom Whole Building HVAC	Colleges/Universities	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	16,609	7,363	14,445	7,330
69	Whole Buildings	Whole Building Retrofit	Colleges/Universities	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	60.2%	66.2%	6.1	5,463	4,368	5,116	4,600
70	Whole Buildings	Custom Whole Building Controls (BAS)	Colleges/Universities	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	22,405	10,925	19,777	10,522
71	Whole Buildings	Commercial Behavior	Colleges/Universities	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	3,757	1,587	1,525	1,635
72	Cooking	Commercial Griddles	Healthcare	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	68	38	45	41
73	Cooking	Convection Ovens	Healthcare	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	81	54	60	57
74	Cooking	Combination Ovens	Healthcare	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	38	22	28	23
75	Cooking	Commercial Fryers	Healthcare	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	163	0	0	0
76	Cooking	Commercial Steam Cookers	Healthcare	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	116	72	86	78

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
77	Cooling	Air-Cooled Chillers	Healthcare	ROB	11%	219	0.188	20	$127	100%	33%	75%	1	24%	20%	85.6%	44.0%	64.6%	2.3	926	264	499	365
78	Cooling	Water-Cooled Chillers	Healthcare	ROB	12%	137	0.077	20	$107	100%	22%	75%	2	24%	20%	85.6%	44.0%	58.1%	1.3	1,032	294	556	359
79	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Healthcare	Retro	29%	1,288	0.036	15	$190	100%	50%	75%	3	10%	10%	75.4%	50.8%	65.9%	2.8	1,228	588	919	733
80	Cooling	Unitary and Split System AC	Healthcare	ROB	24%	540	0.231	15	$123	100%	50%	75%	4	50%	20%	85.6%	56.9%	73.0%	3.2	5,605	2,357	3,741	2,946
81	Cooling	Unitary and Split System HP	Healthcare	ROB	24%	555	0.231	15	$123	100%	50%	75%	5	0%	20%	85.6%	57.1%	73.2%	3.3	0	0	0	0
82	Cooling	Ductless Mini-Split HP	Healthcare	ROB	13%	307	0.216	18	$143	100%	50%	75%	6	0%	20%	85.6%	49.6%	65.6%	2.3	0	0	0	0
83	Cooling	PTAC Equipment	Healthcare	ROB	4%	78	0.111	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	62.7%	1.1	0	0	0	0
84	Cooling	PTHP Equipment	Healthcare	ROB	5%	114	0.121	10	$77	100%	41%	75%	8	0%	20%	85.6%	45.8%	64.5%	1.3	0	0	0	0
85	Cooling	Commercial AC and HP Tune Up	Healthcare	Retro	4%	79	0.034	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	1,180	0	0	0
86	Cooling	ECM - HVAC	Healthcare	Retro	78%	351	0.072	15	$177	100%	24%	75%	10	3%	5%	73.1%	33.5%	47.3%	1.1	411	147	339	198
87	Cooling	ERV	Healthcare	Retro	24%	2	0.004	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	47.0%	1.1	4,924	1,772	4,080	2,375
88	Cooling	Window Film	Healthcare	Retro	8%	9	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	55.8%	1.8	1,632	755	1,361	867
89	Cooling	Cool Roof	Healthcare	Retro	3%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	563	0	0	0
90	Cooling	Smart Thermostats	Healthcare	Retro	4%	718	0.307	11	$208	100%	50%	75%	14	100%	9%	75.4%	48.7%	64.6%	1.9	66	40	63	50
91	Ext Lighting	LED wallpack (existing W<250)	Healthcare	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	14%	83.4%	39.8%	56.8%	0.7	217	0	0	0
92	Ext Lighting	LED parking lot fixture (existing W≥250)	Healthcare	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	14%	83.4%	39.8%	48.0%	0.4	198	0	0	0
93	Ext Lighting	LED parking lot fixture (existing W<250)	Healthcare	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	14%	83.4%	39.8%	56.8%	0.7	217	0	0	0
94	Ext Lighting	LED parking garage fixture (existing W≥250)	Healthcare	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	14%	83.4%	43.4%	62.7%	0.5	199	0	0	0
95	Ext Lighting	LED parking garage fixture (existing W<250)	Healthcare	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	14%	83.4%	53.6%	71.4%	1.0	218	105	178	134
96	Ext Lighting	Bi-Level Garage Lighting	Healthcare	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	138	0	0	0
97	Ext Lighting	LED Traffic Signals	Healthcare	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
98	Hot Water	Electric Storage Water Heater	Healthcare	ROB	4%	220	0.025	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	6	0	0	0
99	Hot Water	Heat Pump Water Heater	Healthcare	ROB	68%	4,048	0.462	10	$1,350	100%	23%	75%	1	95%	3%	85.6%	36.8%	62.3%	1.0	1,590	504	1,197	867
100	Hot Water	Electric tankless water heater	Healthcare	ROB	60%	185	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.6	3	0	0	0
101	Hot Water	Water Heater Pipe Insulation	Healthcare	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	1%	80%	86.0%	86.0%	86.0%	0.1	3	0	0	0
102	Hot Water	Faucet Aerator	Healthcare	Retro	32%	86	0.007	10	$8	100%	75%	75%	4	4%	80%	86.0%	86.0%	86.0%	3.4	6	9	9	8
103	Hot Water	Low-Flow Showerheads	Healthcare	Retro	20%	26	0.784	10	$12	100%	33%	75%	5	2%	80%	86.0%	86.0%	86.0%	38.5	2	3	3	2
104	Hot Water	PRSV	Healthcare	Retro	33%	4,574	0.376	5	$93	100%	75%	75%	6	20%	50%	75.4%	69.6%	74.2%	8.1	44	50	51	48
105	Hot Water	ENERGY STAR Clothes Washers	Healthcare	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	100	0	0	0
106	Int Lighting	Interior 4 ft LED	Healthcare	Retro	49%	114	0.027	15	$13	100%	50%	75%	1	79%	14%	83.4%	67.9%	78.1%	5.1	6,958	4,489	5,708	4,919
107	Int Lighting	LED Screw In - Interior	Healthcare	Retro	80%	136	0.032	9	$2	100%	50%	75%	2	3%	50%	83.4%	79.2%	82.9%	30.2	336	224	247	221
108	Int Lighting	LED Fixture - Interior	Healthcare	Retro	69%	146	0.035	15	$27	100%	60%	75%	3	17%	14%	83.4%	64.2%	74.7%	3.1	2,035	1,229	1,669	1,368
109	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Healthcare	Retro	52%	475	0.125	15	$201	100%	50%	75%	4	1%	14%	83.4%	45.5%	64.9%	1.4	51	20	42	29
110	Int Lighting	Interior LED High Bay | Replacing HID	Healthcare	Retro	73%	2,300	0.603	15	$458	100%	50%	75%	5	1%	14%	83.4%	59.8%	74.4%	3.0	72	40	59	48
111	Int Lighting	Advanced Lighting Controls	Healthcare	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	243	0	0	0
112	Int Lighting	Controls Cont Dimming	Healthcare	Retro	30%	70	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	53.8%	71.4%	1.3	1,118	999	1,444	1,154
113	Int Lighting	Controls Photocells	Healthcare	Retro	10%	23	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	43.4%	62.8%	0.8	215	0	0	0
114	Int Lighting	Controls Occ Sensor	Healthcare	Retro	30%	70	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	53.8%	71.4%	1.3	1,118	999	1,444	1,154
115	Int Lighting	Custom Lighting	Healthcare	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	2,463	991	1,894	1,216
116	Misc	Vend Machine Ctrls	Healthcare	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	54	0	0	0
117	Misc	Vend Machine Ctrls -refrigerated	Healthcare	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	221	133	133	120
118	Misc	Power Distribution Equipment Upgrades	Healthcare	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	66%	20%	73.1%	44.0%	44.0%	0.9	203	70	139	72
119	Misc	Custom Miscellaneous	Healthcare	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	8,159	2,917	5,986	3,756
120	Plug Loads Office	Plug Load Occupancy Sensors	Healthcare	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	1,066	0	0	0
121	Plug Loads Office	Advanced Power Strips	Healthcare	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	934	373	794	540
122	Plug Loads Office	Computer Power Management	Healthcare	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	374	0	0	0
123	Refrigeration	Solid Door Commercial Refrigeration Equipment	Healthcare	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	36%	56%	85.6%	69.2%	73.1%	2.6	1,028	615	823	666
124	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Healthcare	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	9%	54%	85.6%	67.8%	67.8%	0.8	84	0	0	0
125	Refrigeration	Door Heater Controls	Healthcare	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	9	0	0	0
126	Refrigeration	Zero Energy Doors	Healthcare	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	154	65	124	87
127	Refrigeration	Night Covers	Healthcare	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	48	0	0	0
128	Refrigeration	Strip Curtain	Healthcare	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	6%	39%	75.4%	57.3%	61.0%	0.7	312	0	0	0
129	Refrigeration	Evap Fan Ctrls	Healthcare	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	1%	33%	73.1%	53.1%	53.1%	2.3	67	25	43	25
130	Refrigeration	Refrigeration ECMs	Healthcare	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	12%	20%	75.4%	48.9%	63.2%	2.2	354	141	251	187
131	Refrigeration	Refrigerated Case Lighting	Healthcare	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	222	0	0	0
132	Refrigeration	Ice Maker	Healthcare	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	6%	50%	85.6%	65.0%	65.0%	0.4	84	0	0	0
133	Refrigeration	Custom Refrigeration	Healthcare	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	1,067	532	764	529
134	Ventilation	VFDs of Supply and Return Fans	Healthcare	Retro	59%	30,976	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	57.2%	2.8	9,235	3,264	6,157	4,098
135	Whole Building_HVAC	Variable Air Volume HVAC	Healthcare	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	50%	39%	73.1%	65.2%	71.7%	33.6	8,299	5,501	6,396	6,035
136	Whole Building_HVAC	Demand Controlled Ventilation	Healthcare	Retro	3%	55	0.039	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	43.1%	0.6	880	0	0	0
137	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Healthcare	Retro	0%	0	0.000	15	$1,778	100%	50%	75%	3	4%	24%	73.1%	68.3%	73.1%	0.0	0	0	0	0
138	Whole Building_HVAC	GREM Controls	Healthcare	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
139	Whole Building_HVAC	Custom Whole Building HVAC	Healthcare	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	9,756	4,290	8,302	4,242
140	Whole Buildings	Whole Building Retrofit	Healthcare	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	60.3%	66.3%	6.1	3,155	2,501	2,908	2,623
141	Whole Buildings	Custom Whole Building Controls (BAS)	Healthcare	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	13,007	6,247	11,216	5,986
142	Whole Buildings	Commercial Behavior	Healthcare	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	2,205	906	856	925
143	Cooking	Commercial Griddles	Warehouses	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	0	0	0	0
144	Cooking	Convection Ovens	Warehouses	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	0	0	0	0
145	Cooking	Combination Ovens	Warehouses	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	0	0	0	0
146	Cooking	Commercial Fryers	Warehouses	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	0	0	0	0
147	Cooking	Commercial Steam Cookers	Warehouses	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	0	0	0	0
148	Cooling	Air-Cooled Chillers	Warehouses	ROB	11%	147	0.167	20	$127	100%	33%	75%	1	0%	20%	85.6%	44.0%	62.4%	1.8	0	0	0	0
149	Cooling	Water-Cooled Chillers	Warehouses	ROB	12%	92	0.069	20	$107	100%	22%	75%	2	0%	20%	85.6%	44.0%	55.0%	1.0	0	0	0	0
150	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Warehouses	Retro	29%	640	0.036	15	$190	100%	50%	75%	3	0%	10%	75.4%	39.6%	58.7%	1.5	0	0	0	0
151	Cooling	Unitary and Split System AC	Warehouses	ROB	24%	363	0.205	15	$123	100%	50%	75%	4	91%	20%	85.6%	53.1%	69.2%	2.5	2,281	934	1,522	1,202
152	Cooling	Unitary and Split System HP	Warehouses	ROB	24%	597	0.224	15	$123	100%	50%	75%	5	0%	20%	85.6%	57.4%	73.5%	3.3	0	0	0	0

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
153	Cooling	Ductless Mini-Split HP	Warehouses	ROB	13%	207	0.192	18	$143	100%	50%	75%	6	0%	20%	85.6%	46.5%	63.4%	1.9	0	0	0	0
154	Cooling	PTAC Equipment	Warehouses	ROB	4%	53	0.099	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	60.5%	0.9	0	0	0	0
155	Cooling	PTHP Equipment	Warehouses	ROB	5%	79	0.108	10	$77	100%	41%	75%	8	0%	20%	85.6%	44.0%	62.5%	1.1	0	0	0	0
156	Cooling	Commercial AC and HP Tune Up	Warehouses	Retro	4%	53	0.030	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.3	257	0	0	0
157	Cooling	ECM - HVAC	Warehouses	Retro	78%	351	0.066	15	$177	100%	24%	75%	10	5%	5%	73.1%	33.5%	47.1%	1.1	162	60	137	80
158	Cooling	ERV	Warehouses	Retro	24%	1	0.002	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	42.6%	0.5	1,073	0	0	0
159	Cooling	Window Film	Warehouses	Retro	8%	6	0.003	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	50.7%	1.4	352	173	320	172
160	Cooling	Cool Roof	Warehouses	Retro	2%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	87	0	0	0
161	Cooling	Smart Thermostats	Warehouses	Retro	4%	482	0.273	11	$208	100%	50%	75%	14	100%	9%	75.4%	43.8%	61.6%	1.5	14	8	15	11
162	Ext Lighting	LED wallpack (existing W<250)	Warehouses	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	13%	83.4%	39.4%	56.8%	0.7	258	0	0	0
163	Ext Lighting	LED parking lot fixture (existing W≥250)	Warehouses	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	13%	83.4%	39.4%	48.0%	0.4	235	0	0	0
164	Ext Lighting	LED parking lot fixture (existing W<250)	Warehouses	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	13%	83.4%	39.4%	56.8%	0.7	258	0	0	0
165	Ext Lighting	LED parking garage fixture (existing W≥250)	Warehouses	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	13%	83.4%	43.4%	62.7%	0.5	237	0	0	0
166	Ext Lighting	LED parking garage fixture (existing W<250)	Warehouses	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	13%	83.4%	53.6%	71.4%	1.0	260	126	212	160
167	Ext Lighting	Bi-Level Garage Lighting	Warehouses	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	163	0	0	0
168	Ext Lighting	LED Traffic Signals	Warehouses	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
169	Hot Water	Electric Storage Water Heater	Warehouses	ROB	4%	95	0.011	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	0	0	0	0
170	Hot Water	Heat Pump Water Heater	Warehouses	ROB	68%	1,752	0.200	10	$1,350	100%	23%	75%	1	95%	0%	85.6%	30.0%	51.2%	0.4	0	0	0	0
171	Hot Water	Electric tankless water heater	Warehouses	ROB	60%	80	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.3	0	0	0	0
172	Hot Water	Water Heater Pipe Insulation	Warehouses	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	2%	80%	86.0%	86.0%	86.0%	0.1	0	0	0	0
173	Hot Water	Faucet Aerator	Warehouses	Retro	32%	591	0.189	10	$8	100%	75%	75%	4	70%	80%	86.0%	86.0%	86.0%	33.4	0	0	0	0
174	Hot Water	Low-Flow Showerheads	Warehouses	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	5%	80%	86.0%	86.0%	86.0%	111.0	0	0	0	0
175	Hot Water	PRSV	Warehouses	Retro	0%	0	0.000	5	$93	100%	75%	75%	6	0%	50%	75.4%	71.0%	75.4%	0.0	0	0	0	0
176	Hot Water	ENERGY STAR Clothes Washers	Warehouses	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	0	0	0	0
177	Int Lighting	Interior 4 ft LED	Warehouses	Retro	49%	69	0.027	15	$13	100%	50%	75%	1	77%	13%	83.4%	63.3%	76.0%	3.7	5,153	3,068	4,228	3,540
178	Int Lighting	LED Screw In - Interior	Warehouses	Retro	80%	82	0.032	9	$2	100%	50%	75%	2	2%	50%	83.4%	78.6%	82.6%	22.3	158	104	116	104
179	Int Lighting	LED Fixture - Interior	Warehouses	Retro	68%	88	0.034	15	$27	100%	60%	75%	3	14%	13%	83.4%	58.6%	71.3%	2.3	1,282	697	1,052	818
180	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Warehouses	Retro	52%	286	0.074	15	$201	100%	50%	75%	4	3%	13%	83.4%	39.4%	56.0%	0.8	243	0	0	0
181	Int Lighting	Interior LED High Bay | Replacing HID	Warehouses	Retro	73%	1,383	0.358	15	$458	100%	50%	75%	5	3%	13%	83.4%	49.1%	68.5%	1.8	342	149	280	208
182	Int Lighting	Advanced Lighting Controls	Warehouses	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	233	0	0	0
183	Int Lighting	Controls Cont Dimming	Warehouses	Retro	30%	42	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	48.0%	67.4%	1.0	798	688	1,108	840
184	Int Lighting	Controls Photocells	Warehouses	Retro	10%	14	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	39.9%	59.2%	0.6	177	0	0	0
185	Int Lighting	Controls Occ Sensor	Warehouses	Retro	30%	42	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	48.0%	67.4%	1.0	798	688	1,108	840
186	Int Lighting	Custom Lighting	Warehouses	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	1,856	747	1,427	916
187	Misc	Vend Machine Ctrls	Warehouses	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	29	0	0	0
188	Misc	Vend Machine Ctrls -refrigerated	Warehouses	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	121	73	73	66
189	Misc	Power Distribution Equipment Upgrades	Warehouses	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	30%	20%	73.1%	44.0%	44.0%	0.9	51	17	35	18
190	Misc	Custom Miscellaneous	Warehouses	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	4,467	1,595	3,274	2,054
191	Plug Loads Office	Plug Load Occupancy Sensors	Warehouses	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	316	0	0	0
192	Plug Loads Office	Advanced Power Strips	Warehouses	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	277	110	235	160
193	Plug Loads Office	Computer Power Management	Warehouses	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	111	0	0	0
194	Refrigeration	Solid Door Commercial Refrigeration Equipment	Warehouses	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	26%	56%	85.6%	69.2%	73.1%	2.6	866	518	693	561
195	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Warehouses	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	6%	54%	85.6%	67.8%	67.8%	0.8	71	0	0	0
196	Refrigeration	Door Heater Controls	Warehouses	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	10	0	0	0
197	Refrigeration	Zero Energy Doors	Warehouses	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	182	77	147	103
198	Refrigeration	Night Covers	Warehouses	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	57	0	0	0
199	Refrigeration	Strip Curtain	Warehouses	Retro	53%	423	0.048	5	$10	100%	50%	75%	5	17%	75%	82.5%	82.5%	82.5%	7.2	572	343	343	310
200	Refrigeration	Evap Fan Ctrls	Warehouses	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	3%	33%	73.1%	53.1%	53.1%	2.3	231	87	148	84
201	Refrigeration	Refrigeration ECMs	Warehouses	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	12%	20%	75.4%	48.9%	63.2%	2.2	419	167	297	221
202	Refrigeration	Refrigerated Case Lighting	Warehouses	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	263	0	0	0
203	Refrigeration	Ice Maker	Warehouses	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	0%	50%	85.6%	65.0%	65.0%	0.4	0	0	0	0
204	Refrigeration	Custom Refrigeration	Warehouses	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	1,271	620	890	617
205	Ventilation	VFDs of Supply and Return Fans	Warehouses	Retro	59%	36,512	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	59.6%	3.3	781	276	521	367
206	Whole Building_HVAC	Variable Air Volume HVAC	Warehouses	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	50%	17%	73.1%	65.2%	71.7%	33.6	1,709	1,381	1,555	1,435
207	Whole Building_HVAC	Demand Controlled Ventilation	Warehouses	Retro	10%	149	0.033	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	46.2%	0.9	596	248	566	326
208	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Warehouses	Retro	0%	0	0.000	15	$1,778	100%	50%	75%	3	0%	24%	73.1%	68.3%	73.1%	0.0	0	0	0	0
209	Whole Building_HVAC	GREM Controls	Warehouses	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
210	Whole Building_HVAC	Custom Whole Building HVAC	Warehouses	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	1,620	742	1,457	738
211	Whole Buildings	Whole Building Retrofit	Warehouses	Retro	15%	1	0.001	20	$0	100%	82%	82%	6	100%	0%	73.1%	61.2%	67.0%	6.9	1,407	1,079	1,233	1,123
212	Whole Buildings	Custom Whole Building Controls (BAS)	Warehouses	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	5,814	2,659	4,772	2,537
213	Whole Buildings	Commercial Behavior	Warehouses	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	982	389	373	398
214	Cooking	Commercial Griddles	Lodging	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	316	177	209	190
215	Cooking	Convection Ovens	Lodging	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	378	251	279	266
216	Cooking	Combination Ovens	Lodging	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	177	102	130	105
217	Cooking	Commercial Fryers	Lodging	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	760	0	0	0
218	Cooking	Commercial Steam Cookers	Lodging	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	540	337	400	364
219	Cooling	Air-Cooled Chillers	Lodging	ROB	11%	230	0.171	20	$127	100%	33%	75%	1	19%	20%	85.6%	44.0%	64.3%	2.2	964	275	520	377
220	Cooling	Water-Cooled Chillers	Lodging	ROB	12%	145	0.070	20	$107	100%	22%	75%	2	19%	20%	85.6%	44.0%	57.7%	1.3	1,073	306	579	371
221	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Lodging	Retro	29%	723	0.036	15	$190	100%	50%	75%	3	8%	10%	75.4%	41.5%	60.0%	1.7	1,284	480	957	686
222	Cooling	Unitary and Split System AC	Lodging	ROB	24%	569	0.209	15	$123	100%	50%	75%	4	34%	20%	85.6%	56.7%	72.8%	3.2	4,934	2,180	3,293	2,587
223	Cooling	Unitary and Split System HP	Lodging	ROB	24%	622	0.209	15	$123	100%	50%	75%	5	0%	20%	85.6%	57.4%	73.5%	3.3	0	0	0	0
224	Cooling	Ductless Mini-Split HP	Lodging	ROB	12%	338	0.194	18	$143	100%	50%	75%	6	0%	20%	85.6%	49.3%	65.4%	2.3	0	0	0	0
225	Cooling	PTAC Equipment	Lodging	ROB	4%	82	0.101	10	$77	100%	41%	75%	7	8%	20%	85.6%	44.0%	62.1%	1.0	172	65	135	94
226	Cooling	PTHP Equipment	Lodging	ROB	5%	142	0.108	10	$77	100%	41%	75%	8	8%	20%	85.6%	45.9%	64.5%	1.3	248	99	194	141
227	Cooling	Commercial AC and HP Tune Up	Lodging	Retro	4%	83	0.031	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	1,616	0	0	0
228	Cooling	ECM - HVAC	Lodging	Retro	78%	351	0.067	15	$177	100%	24%	75%	10	2%	5%	73.1%	33.5%	47.1%	1.1	538	187	432	251

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Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
229	Cooling	ERV	Lodging	Retro	24%	2	0.002	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	43.7%	0.6	6,653	0	0	0
230	Cooling	Window Film	Lodging	Retro	8%	9	0.003	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	55.6%	1.8	2,227	1,008	1,880	1,166
231	Cooling	Cool Roof	Lodging	Retro	3%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	723	0	0	0
232	Cooling	Smart Thermostats	Lodging	Retro	4%	756	0.278	11	$208	100%	50%	75%	14	100%	9%	75.4%	48.5%	64.5%	1.9	90	54	87	67
233	Ext Lighting	LED wallpack (existing W<250)	Lodging	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	13%	83.4%	38.9%	56.8%	0.7	340	0	0	0
234	Ext Lighting	LED parking lot fixture (existing W≥250)	Lodging	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	13%	83.4%	38.9%	48.0%	0.4	310	0	0	0
235	Ext Lighting	LED parking lot fixture (existing W<250)	Lodging	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	13%	83.4%	38.9%	56.8%	0.7	340	0	0	0
236	Ext Lighting	LED parking garage fixture (existing W≥250)	Lodging	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	13%	83.4%	43.4%	62.7%	0.5	312	0	0	0
237	Ext Lighting	LED parking garage fixture (existing W<250)	Lodging	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	13%	83.4%	53.6%	71.4%	1.0	342	167	279	212
238	Ext Lighting	Bi-Level Garage Lighting	Lodging	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	214	0	0	0
239	Ext Lighting	LED Traffic Signals	Lodging	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
240	Hot Water	Electric Storage Water Heater	Lodging	ROB	4%	200	0.023	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	10	0	0	0
241	Hot Water	Heat Pump Water Heater	Lodging	ROB	68%	3,677	0.420	10	$1,350	100%	23%	75%	1	95%	3%	85.6%	35.5%	61.2%	0.9	2,467	753	1,858	1,320
242	Hot Water	Electric tankless water heater	Lodging	ROB	60%	168	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.6	5	0	0	0
243	Hot Water	Water Heater Pipe Insulation	Lodging	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	1%	80%	86.0%	86.0%	86.0%	0.1	4	0	0	0
244	Hot Water	Faucet Aerator	Lodging	Retro	32%	86	0.005	10	$8	100%	75%	75%	4	5%	80%	86.0%	86.0%	86.0%	3.2	10	15	15	13
245	Hot Water	Low-Flow Showerheads	Lodging	Retro	20%	37	0.734	10	$12	100%	33%	75%	5	3%	80%	86.0%	86.0%	86.0%	36.3	4	7	6	6
246	Hot Water	PRSV	Lodging	Retro	33%	3,434	0.501	5	$93	100%	75%	75%	6	20%	50%	75.4%	69.3%	73.9%	6.8	68	77	80	74
247	Hot Water	ENERGY STAR Clothes Washers	Lodging	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	155	0	0	0
248	Int Lighting	Interior 4 ft LED	Lodging	Retro	49%	117	0.029	15	$13	100%	50%	75%	1	48%	13%	83.4%	68.4%	78.3%	5.3	6,020	3,940	4,946	4,287
249	Int Lighting	LED Screw In - Interior	Lodging	Retro	80%	140	0.034	9	$2	100%	50%	75%	2	10%	50%	83.4%	79.2%	82.9%	31.4	1,456	974	1,072	960
250	Int Lighting	LED Fixture - Interior	Lodging	Retro	68%	150	0.036	15	$27	100%	60%	75%	3	41%	13%	83.4%	64.6%	75.0%	3.2	7,139	4,370	5,865	4,835
251	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Lodging	Retro	52%	488	0.134	15	$201	100%	50%	75%	4	1%	13%	83.4%	46.2%	65.6%	1.5	68	28	56	39
252	Int Lighting	Interior LED High Bay | Replacing HID	Lodging	Retro	73%	2,362	0.651	15	$458	100%	50%	75%	5	1%	13%	83.4%	60.6%	74.7%	3.1	95	54	78	64
253	Int Lighting	Advanced Lighting Controls	Lodging	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	307	0	0	0
254	Int Lighting	Controls Cont Dimming	Lodging	Retro	30%	72	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	54.2%	71.7%	1.3	1,434	1,363	1,920	1,553
255	Int Lighting	Controls Photocells	Lodging	Retro	10%	24	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	43.7%	63.0%	0.8	275	0	0	0
256	Int Lighting	Controls Occ Sensor	Lodging	Retro	30%	72	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	54.2%	71.7%	1.3	1,434	1,363	1,920	1,553
257	Int Lighting	Custom Lighting	Lodging	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	3,473	1,397	2,670	1,714
258	Misc	Vend Machine Ctrls	Lodging	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	121	0	0	0
259	Misc	Vend Machine Ctrls -refrigerated	Lodging	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	501	301	301	272
260	Misc	Power Distribution Equipment Upgrades	Lodging	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	68%	20%	73.1%	44.0%	44.0%	0.9	478	163	328	168
261	Misc	Custom Miscellaneous	Lodging	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	18,496	6,614	13,570	8,516
262	Plug Loads Office	Plug Load Occupancy Sensors	Lodging	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	2,378	0	0	0
263	Plug Loads Office	Advanced Power Strips	Lodging	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	2,082	832	1,771	1,203
264	Plug Loads Office	Computer Power Management	Lodging	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	833	0	0	0
265	Refrigeration	Solid Door Commercial Refrigeration Equipment	Lodging	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	18%	56%	85.6%	69.2%	73.1%	2.6	2,126	1,271	1,703	1,377
266	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Lodging	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	18%	54%	85.6%	67.8%	67.8%	0.8	693	0	0	0
267	Refrigeration	Door Heater Controls	Lodging	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	35	0	0	0
268	Refrigeration	Zero Energy Doors	Lodging	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	636	269	513	360
269	Refrigeration	Night Covers	Lodging	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	200	0	0	0
270	Refrigeration	Strip Curtain	Lodging	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	12%	39%	75.4%	57.3%	61.0%	0.7	2,602	0	0	0
271	Refrigeration	Evap Fan Ctrls	Lodging	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	2%	33%	73.1%	53.1%	53.1%	2.3	556	209	356	203
272	Refrigeration	Refrigeration ECMs	Lodging	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	7%	20%	75.4%	48.9%	63.2%	2.2	914	364	648	483
273	Refrigeration	Refrigerated Case Lighting	Lodging	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	917	0	0	0
274	Refrigeration	Ice Maker	Lodging	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	6%	50%	85.6%	65.0%	65.0%	0.4	347	0	0	0
275	Refrigeration	Custom Refrigeration	Lodging	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	4,478	2,233	3,221	2,225
276	Ventilation	VFDs of Supply and Return Fans	Lodging	Retro	59%	19,581	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	50.2%	1.8	11,256	3,979	7,504	4,081
277	Whole Building_HVAC	Variable Air Volume HVAC	Lodging	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	49%	24%	73.1%	65.2%	71.7%	33.6	12,293	9,051	10,322	9,599
278	Whole Building_HVAC	Demand Controlled Ventilation	Lodging	Retro	2%	57	0.039	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	43.3%	0.6	1,145	0	0	0
279	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Lodging	Retro	20%	5,771	0.540	15	$1,778	100%	50%	75%	3	13%	24%	73.1%	46.8%	49.4%	1.5	1,564	702	1,313	718
280	Whole Building_HVAC	GREM Controls	Lodging	Retro	15%	355	0.109	8	$260	100%	50%	75%	4	100%	33%	73.1%	53.1%	53.1%	0.5	7,899	0	0	0
281	Whole Building_HVAC	Custom Whole Building HVAC	Lodging	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	12,693	5,518	10,811	5,510
282	Whole Buildings	Whole Building Retrofit	Lodging	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	59.4%	65.5%	5.5	6,245	4,753	5,690	5,034
283	Whole Buildings	Custom Whole Building Controls (BAS)	Lodging	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	25,914	12,115	22,114	11,703
284	Whole Buildings	Commercial Behavior	Lodging	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	4,428	1,783	1,748	1,853
285	Cooking	Commercial Griddles	Office - Large	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	0	0	0	0
286	Cooking	Convection Ovens	Office - Large	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	0	0	0	0
287	Cooking	Combination Ovens	Office - Large	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	0	0	0	0
288	Cooking	Commercial Fryers	Office - Large	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	0	0	0	0
289	Cooking	Commercial Steam Cookers	Office - Large	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	0	0	0	0
290	Cooling	Air-Cooled Chillers	Office - Large	ROB	11%	163	0.186	20	$127	100%	33%	75%	1	20%	20%	85.6%	44.0%	63.6%	2.0	870	248	469	336
291	Cooling	Water-Cooled Chillers	Office - Large	ROB	12%	102	0.077	20	$107	100%	22%	75%	2	20%	20%	85.6%	44.0%	56.2%	1.2	969	276	523	348
292	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Office - Large	Retro	29%	785	0.036	15	$190	100%	50%	75%	3	8%	10%	75.4%	42.7%	60.8%	1.8	1,158	449	864	629
293	Cooling	Unitary and Split System AC	Office - Large	ROB	24%	403	0.228	15	$123	100%	50%	75%	4	55%	20%	85.6%	54.8%	70.9%	2.7	6,932	2,941	4,626	3,751
294	Cooling	Unitary and Split System HP	Office - Large	ROB	24%	454	0.228	15	$123	100%	50%	75%	5	0%	20%	85.6%	55.6%	71.7%	2.9	0	0	0	0
295	Cooling	Ductless Mini-Split HP	Office - Large	ROB	12%	244	0.211	18	$143	100%	50%	75%	6	0%	20%	85.6%	48.2%	64.6%	2.1	0	0	0	0
296	Cooling	PTAC Equipment	Office - Large	ROB	4%	58	0.110	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	61.8%	1.0	0	0	0	0
297	Cooling	PTHP Equipment	Office - Large	ROB	5%	108	0.116	10	$77	100%	41%	75%	8	0%	20%	85.6%	45.1%	64.1%	1.2	0	0	0	0
298	Cooling	Commercial AC and HP Tune Up	Office - Large	Retro	4%	59	0.033	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.3	1,337	0	0	0
299	Cooling	ECM - HVAC	Office - Large	Retro	78%	351	0.068	15	$177	100%	24%	75%	10	3%	5%	73.1%	33.5%	47.2%	1.1	507	181	419	244
300	Cooling	ERV	Office - Large	Retro	24%	1	0.006	15	$4	100%	50%	75%	11	100%	5%	73.1%	34.5%	48.7%	1.4	5,574	2,070	4,624	2,791
301	Cooling	Window Film	Office - Large	Retro	8%	7	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	52.9%	1.6	1,846	854	1,543	902
302	Cooling	Cool Roof	Office - Large	Retro	5%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	1,035	0	0	0
303	Cooling	Smart Thermostats	Office - Large	Retro	4%	535	0.303	11	$208	100%	50%	75%	14	100%	9%	75.4%	45.8%	62.8%	1.7	73	43	71	54
304	Ext Lighting	LED wallpack (existing W<250)	Office - Large	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	10%	83.4%	37.2%	56.8%	0.7	389	0	0	0

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
305	Ext Lighting	LED parking lot fixture (existing W≥250)	Office - Large	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	10%	83.4%	37.2%	48.0%	0.4	355	0	0	0
306	Ext Lighting	LED parking lot fixture (existing W<250)	Office - Large	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	10%	83.4%	37.2%	56.8%	0.7	389	0	0	0
307	Ext Lighting	LED parking garage fixture (existing W≥250)	Office - Large	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	10%	83.4%	43.4%	62.7%	0.5	357	0	0	0
308	Ext Lighting	LED parking garage fixture (existing W<250)	Office - Large	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	10%	83.4%	53.6%	71.4%	1.0	392	195	321	244
309	Ext Lighting	Bi-Level Garage Lighting	Office - Large	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	240	0	0	0
310	Ext Lighting	LED Traffic Signals	Office - Large	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
311	Hot Water	Electric Storage Water Heater	Office - Large	ROB	4%	143	0.016	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	0	0	0	0
312	Hot Water	Heat Pump Water Heater	Office - Large	ROB	68%	2,629	0.300	10	$1,350	100%	23%	75%	1	95%	0%	85.6%	30.0%	56.4%	0.6	0	0	0	0
313	Hot Water	Electric tankless water heater	Office - Large	ROB	60%	120	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.4	0	0	0	0
314	Hot Water	Water Heater Pipe Insulation	Office - Large	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	2%	80%	86.0%	86.0%	86.0%	0.1	0	0	0	0
315	Hot Water	Faucet Aerator	Office - Large	Retro	32%	591	0.189	10	$8	100%	75%	75%	4	47%	80%	86.0%	86.0%	86.0%	33.4	0	0	0	0
316	Hot Water	Low-Flow Showerheads	Office - Large	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	4%	80%	86.0%	86.0%	86.0%	111.0	0	0	0	0
317	Hot Water	PRSV	Office - Large	Retro	0%	0	0.000	5	$93	100%	75%	75%	6	0%	50%	75.4%	71.0%	75.4%	0.0	0	0	0	0
318	Hot Water	ENERGY STAR Clothes Washers	Office - Large	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	0	0	0	0
319	Int Lighting	Interior 4 ft LED	Office - Large	Retro	49%	147	0.027	15	$13	100%	50%	75%	1	79%	10%	83.4%	70.0%	78.9%	6.1	10,150	6,883	8,373	7,347
320	Int Lighting	LED Screw In - Interior	Office - Large	Retro	80%	174	0.032	9	$2	100%	50%	75%	2	4%	50%	83.4%	79.4%	82.9%	35.8	554	372	408	365
321	Int Lighting	LED Fixture - Interior	Office - Large	Retro	69%	187	0.034	15	$27	100%	60%	75%	3	17%	10%	83.4%	66.7%	76.1%	3.7	3,081	1,981	2,541	2,141
322	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Office - Large	Retro	52%	610	0.158	15	$201	100%	50%	75%	4	0%	10%	83.4%	49.1%	68.5%	1.8	29	13	24	18
323	Int Lighting	Interior LED High Bay | Replacing HID	Office - Large	Retro	73%	2,953	0.764	15	$458	100%	50%	75%	5	0%	10%	83.4%	63.9%	76.3%	3.8	41	25	34	29
324	Int Lighting	Advanced Lighting Controls	Office - Large	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	296	0	0	0
325	Int Lighting	Controls Cont Dimming	Office - Large	Retro	30%	90	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	57.7%	73.4%	1.5	1,601	1,499	2,034	1,652
326	Int Lighting	Controls Photocells	Office - Large	Retro	10%	30	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	45.4%	64.7%	0.8	289	0	0	0
327	Int Lighting	Controls Occ Sensor	Office - Large	Retro	30%	90	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	57.7%	73.4%	1.5	1,601	1,499	2,034	1,652
328	Int Lighting	Custom Lighting	Office - Large	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	3,507	1,411	2,697	1,731
329	Misc	Vend Machine Ctrls	Office - Large	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	57	0	0	0
330	Misc	Vend Machine Ctrls -refrigerated	Office - Large	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	237	142	142	129
331	Misc	Power Distribution Equipment Upgrades	Office - Large	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	49%	20%	73.1%	44.0%	44.0%	0.9	162	55	111	57
332	Misc	Custom Miscellaneous	Office - Large	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	8,746	3,125	6,413	4,024
333	Plug Loads Office	Plug Load Occupancy Sensors	Office - Large	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	2,320	0	0	0
334	Plug Loads Office	Advanced Power Strips	Office - Large	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	2,032	811	1,728	1,174
335	Plug Loads Office	Computer Power Management	Office - Large	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	813	0	0	0
336	Refrigeration	Solid Door Commercial Refrigeration Equipment	Office - Large	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	10%	56%	85.6%	69.2%	73.1%	2.6	338	202	271	219
337	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Office - Large	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	41%	54%	85.6%	67.8%	67.8%	0.8	441	0	0	0
338	Refrigeration	Door Heater Controls	Office - Large	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	10	0	0	0
339	Refrigeration	Zero Energy Doors	Office - Large	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	178	75	144	101
340	Refrigeration	Night Covers	Office - Large	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	56	0	0	0
341	Refrigeration	Strip Curtain	Office - Large	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	1%	39%	75.4%	57.3%	61.0%	0.7	74	0	0	0
342	Refrigeration	Evap Fan Ctrls	Office - Large	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	0%	33%	73.1%	53.1%	53.1%	2.3	16	6	10	6
343	Refrigeration	Refrigeration ECMs	Office - Large	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	3%	20%	75.4%	48.9%	63.2%	2.2	103	41	73	54
344	Refrigeration	Refrigerated Case Lighting	Office - Large	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	257	0	0	0
345	Refrigeration	Ice Maker	Office - Large	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	8%	50%	85.6%	65.0%	65.0%	0.4	130	0	0	0
346	Refrigeration	Custom Refrigeration	Office - Large	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	1,353	633	918	632
347	Ventilation	VFDs of Supply and Return Fans	Office - Large	Retro	59%	15,497	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	48.9%	1.4	13,778	4,870	9,185	4,797
348	Whole Building_HVAC	Variable Air Volume HVAC	Office - Large	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	55%	59%	73.1%	71.3%	71.7%	33.6	8,968	5,682	5,731	5,352
349	Whole Building_HVAC	Demand Controlled Ventilation	Office - Large	Retro	3%	41	0.039	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	42.1%	0.5	1,115	0	0	0
350	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Office - Large	Retro	0%	0	0.000	15	$1,778	100%	50%	75%	3	0%	24%	73.1%	68.3%	73.1%	0.0	0	0	0	0
351	Whole Building_HVAC	GREM Controls	Office - Large	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
352	Whole Building_HVAC	Custom Whole Building HVAC	Office - Large	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	12,373	5,446	10,545	5,424
353	Whole Buildings	Whole Building Retrofit	Office - Large	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	60.7%	66.6%	6.4	3,907	3,092	3,593	3,252
354	Whole Buildings	Custom Whole Building Controls (BAS)	Office - Large	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	16,099	7,682	13,864	7,401
355	Whole Buildings	Commercial Behavior	Office - Large	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	2,724	1,118	1,066	1,156
356	Cooking	Commercial Griddles	Office - Small	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	0	0	0	0
357	Cooking	Convection Ovens	Office - Small	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	0	0	0	0
358	Cooking	Combination Ovens	Office - Small	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	0	0	0	0
359	Cooking	Commercial Fryers	Office - Small	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	0	0	0	0
360	Cooking	Commercial Steam Cookers	Office - Small	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	0	0	0	0
361	Cooling	Air-Cooled Chillers	Office - Small	ROB	11%	227	0.186	20	$127	100%	33%	75%	1	7%	20%	85.6%	44.0%	64.7%	2.3	684	195	369	269
362	Cooling	Water-Cooled Chillers	Office - Small	ROB	12%	142	0.077	20	$107	100%	22%	75%	2	7%	20%	85.6%	44.0%	58.2%	1.4	761	217	411	266
363	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Office - Small	Retro	29%	711	0.036	15	$190	100%	50%	75%	3	3%	10%	75.4%	41.3%	59.9%	1.6	922	339	680	486
364	Cooling	Unitary and Split System AC	Office - Small	ROB	24%	559	0.228	15	$123	100%	50%	75%	4	63%	20%	85.6%	57.0%	73.2%	3.2	17,909	7,558	11,952	9,439
365	Cooling	Unitary and Split System HP	Office - Small	ROB	24%	592	0.228	15	$123	100%	50%	75%	5	7%	20%	85.6%	57.4%	73.6%	3.4	1,865	794	1,245	989
366	Cooling	Ductless Mini-Split HP	Office - Small	ROB	13%	325	0.213	18	$143	100%	50%	75%	6	7%	20%	85.6%	49.9%	65.9%	2.4	1,008	341	593	443
367	Cooling	PTAC Equipment	Office - Small	ROB	4%	82	0.110	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	62.8%	1.1	0	0	0	0
368	Cooling	PTHP Equipment	Office - Small	ROB	5%	129	0.119	10	$77	100%	41%	75%	8	0%	20%	85.6%	46.2%	64.8%	1.3	0	0	0	0
369	Cooling	Commercial AC and HP Tune Up	Office - Small	Retro	4%	82	0.033	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	3,026	0	0	0
370	Cooling	ECM - HVAC	Office - Small	Retro	78%	351	0.068	15	$177	100%	24%	75%	10	2%	5%	73.1%	33.5%	47.2%	1.1	979	353	813	475
371	Cooling	ERV	Office - Small	Retro	24%	2	0.006	15	$4	100%	50%	75%	11	100%	5%	73.1%	34.6%	48.8%	1.4	12,629	4,750	10,538	6,393
372	Cooling	Window Film	Office - Small	Retro	8%	9	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	56.1%	1.9	4,177	1,948	3,517	2,254
373	Cooling	Cool Roof	Office - Small	Retro	2%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	805	0	0	0
374	Cooling	Smart Thermostats	Office - Small	Retro	4%	744	0.303	11	$208	100%	50%	75%	14	100%	9%	75.4%	49.0%	64.8%	2.0	1,689	1,051	1,624	1,286
375	Ext Lighting	LED wallpack (existing W<250)	Office - Small	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	11%	83.4%	37.6%	56.8%	0.7	613	0	0	0
376	Ext Lighting	LED parking lot fixture (existing W≥250)	Office - Small	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	11%	83.4%	37.6%	48.0%	0.4	559	0	0	0
377	Ext Lighting	LED parking lot fixture (existing W<250)	Office - Small	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	11%	83.4%	37.6%	56.8%	0.7	613	0	0	0
378	Ext Lighting	LED parking garage fixture (existing W≥250)	Office - Small	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	11%	83.4%	43.4%	62.7%	0.5	562	0	0	0
379	Ext Lighting	LED parking garage fixture (existing W<250)	Office - Small	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	11%	83.4%	53.6%	71.4%	1.0	617	306	506	384
380	Ext Lighting	Bi-Level Garage Lighting	Office - Small	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	380	0	0	0

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
381	Ext Lighting	LED Traffic Signals	Office - Small	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
382	Hot Water	Electric Storage Water Heater	Office - Small	ROB	4%	143	0.016	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	18	0	0	0
383	Hot Water	Heat Pump Water Heater	Office - Small	ROB	68%	2,629	0.300	10	$1,350	100%	23%	75%	1	95%	0%	85.6%	30.0%	56.4%	0.6	4,441	0	0	0
384	Hot Water	Electric tankless water heater	Office - Small	ROB	60%	120	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.4	9	0	0	0
385	Hot Water	Water Heater Pipe Insulation	Office - Small	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	2%	80%	86.0%	86.0%	86.0%	0.1	11	0	0	0
386	Hot Water	Faucet Aerator	Office - Small	Retro	32%	591	0.189	10	$8	100%	75%	75%	4	47%	80%	86.0%	86.0%	86.0%	33.4	168	271	270	245
387	Hot Water	Low-Flow Showerheads	Office - Small	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	4%	80%	86.0%	86.0%	86.0%	111.0	6	10	10	9
388	Hot Water	PRSV	Office - Small	Retro	0%	0	0.000	5	$93	100%	75%	75%	6	0%	50%	75.4%	71.0%	75.4%	0.0	0	0	0	0
389	Hot Water	ENERGY STAR Clothes Washers	Office - Small	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	269	0	0	0
390	Int Lighting	Interior 4 ft LED	Office - Small	Retro	49%	134	0.027	15	$13	100%	50%	75%	1	79%	11%	83.4%	69.3%	78.6%	5.7	23,126	15,473	19,076	16,647
391	Int Lighting	LED Screw In - Interior	Office - Small	Retro	80%	160	0.032	9	$2	100%	50%	75%	2	4%	50%	83.4%	79.3%	82.9%	33.7	1,200	804	884	790
392	Int Lighting	LED Fixture - Interior	Office - Small	Retro	69%	171	0.034	15	$27	100%	60%	75%	3	16%	11%	83.4%	65.8%	75.6%	3.5	6,637	4,190	5,475	4,572
393	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Office - Small	Retro	52%	559	0.145	15	$201	100%	50%	75%	4	1%	11%	83.4%	47.9%	67.3%	1.7	252	110	208	152
394	Int Lighting	Interior LED High Bay | Replacing HID	Office - Small	Retro	73%	2,706	0.700	15	$458	100%	50%	75%	5	1%	11%	83.4%	62.6%	75.7%	3.5	354	211	292	244
395	Int Lighting	Advanced Lighting Controls	Office - Small	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	713	0	0	0
396	Int Lighting	Controls Cont Dimming	Office - Small	Retro	30%	82	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	56.4%	72.7%	1.4	3,641	3,362	4,631	3,758
397	Int Lighting	Controls Photocells	Office - Small	Retro	10%	27	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	44.7%	64.0%	0.8	672	0	0	0
398	Int Lighting	Controls Occ Sensor	Office - Small	Retro	30%	82	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	56.4%	72.7%	1.4	3,641	3,362	4,631	3,758
399	Int Lighting	Custom Lighting	Office - Small	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	8,017	3,225	6,164	3,957
400	Misc	Vend Machine Ctrls	Office - Small	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	136	0	0	0
401	Misc	Vend Machine Ctrls -refrigerated	Office - Small	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	562	337	337	305
402	Misc	Power Distribution Equipment Upgrades	Office - Small	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	41%	20%	73.1%	44.0%	44.0%	0.9	320	109	219	113
403	Misc	Custom Miscellaneous	Office - Small	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	20,765	7,418	15,224	9,552
404	Plug Loads Office	Plug Load Occupancy Sensors	Office - Small	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	5,874	0	0	0
405	Plug Loads Office	Advanced Power Strips	Office - Small	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	5,144	2,054	4,375	2,972
406	Plug Loads Office	Computer Power Management	Office - Small	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	2,059	0	0	0
407	Refrigeration	Solid Door Commercial Refrigeration Equipment	Office - Small	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	9%	56%	85.6%	69.2%	73.1%	2.6	472	282	378	306
408	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Office - Small	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	36%	54%	85.6%	67.8%	67.8%	0.8	616	0	0	0
409	Refrigeration	Door Heater Controls	Office - Small	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	16	0	0	0
410	Refrigeration	Zero Energy Doors	Office - Small	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	282	119	228	160
411	Refrigeration	Night Covers	Office - Small	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	89	0	0	0
412	Refrigeration	Strip Curtain	Office - Small	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	0%	39%	75.4%	57.3%	61.0%	0.7	0	0	0	0
413	Refrigeration	Evap Fan Ctrls	Office - Small	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	0%	33%	73.1%	53.1%	53.1%	2.3	25	9	16	9
414	Refrigeration	Refrigeration ECMs	Office - Small	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	3%	20%	75.4%	48.9%	63.2%	2.2	162	65	115	86
415	Refrigeration	Refrigerated Case Lighting	Office - Small	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	407	0	0	0
416	Refrigeration	Ice Maker	Office - Small	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	8%	50%	85.6%	65.0%	65.0%	0.4	206	0	0	0
417	Refrigeration	Custom Refrigeration	Office - Small	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	2,165	1,003	1,454	1,001
418	Ventilation	VFDs of Supply and Return Fans	Office - Small	Retro	59%	26,147	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	54.3%	2.4	32,702	11,559	21,801	13,409
419	Whole Building_HVAC	Variable Air Volume HVAC	Office - Small	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	26%	21%	73.1%	65.2%	71.7%	33.6	15,165	11,523	12,869	12,064
420	Whole Building_HVAC	Demand Controlled Ventilation	Office - Small	Retro	3%	57	0.039	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	43.2%	0.6	2,597	0	0	0
421	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Office - Small	Retro	0%	0	0.000	15	$1,778	100%	50%	75%	3	0%	24%	73.1%	68.3%	73.1%	0.0	0	0	0	0
422	Whole Building_HVAC	GREM Controls	Office - Small	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
423	Whole Building_HVAC	Custom Whole Building HVAC	Office - Small	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	28,627	12,626	24,417	12,513
424	Whole Buildings	Whole Building Retrofit	Office - Small	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	59.9%	65.9%	5.8	9,301	7,199	8,444	7,572
425	Whole Buildings	Custom Whole Building Controls (BAS)	Office - Small	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	22,340	10,558	19,014	10,141
426	Whole Buildings	Commercial Behavior	Office - Small	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	6,448	2,629	2,499	2,699
427	Cooking	Commercial Griddles	Other Commercial	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	0	0	0	0
428	Cooking	Convection Ovens	Other Commercial	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	0	0	0	0
429	Cooking	Combination Ovens	Other Commercial	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	0	0	0	0
430	Cooking	Commercial Fryers	Other Commercial	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	0	0	0	0
431	Cooking	Commercial Steam Cookers	Other Commercial	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	0	0	0	0
432	Cooling	Air-Cooled Chillers	Other Commercial	ROB	11%	218	0.200	20	$127	100%	33%	75%	1	14%	20%	85.6%	44.5%	65.0%	2.4	1,474	426	795	584
433	Cooling	Water-Cooled Chillers	Other Commercial	ROB	12%	137	0.082	20	$107	100%	22%	75%	2	14%	20%	85.6%	44.0%	58.5%	1.4	1,642	468	885	576
434	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Other Commercial	Retro	29%	1,018	0.036	15	$190	100%	50%	75%	3	6%	10%	75.4%	47.0%	63.6%	2.3	1,991	861	1,478	1,130
435	Cooling	Unitary and Split System AC	Other Commercial	ROB	25%	558	0.224	15	$123	100%	50%	75%	4	58%	20%	85.6%	56.9%	73.1%	3.2	18,862	7,944	12,589	9,925
436	Cooling	Unitary and Split System HP	Other Commercial	ROB	25%	597	0.224	15	$123	100%	50%	75%	5	4%	20%	85.6%	57.4%	73.5%	3.3	1,241	528	828	658
437	Cooling	Ductless Mini-Split HP	Other Commercial	ROB	13%	314	0.210	18	$143	100%	50%	75%	6	4%	20%	85.6%	49.4%	65.5%	2.3	637	213	374	278
438	Cooling	PTAC Equipment	Other Commercial	ROB	4%	88	0.108	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	62.9%	1.1	0	0	0	0
439	Cooling	PTHP Equipment	Other Commercial	ROB	6%	136	0.120	10	$77	100%	41%	75%	8	0%	20%	85.6%	46.7%	65.0%	1.4	0	0	0	0
440	Cooling	Commercial AC and HP Tune Up	Other Commercial	Retro	4%	79	0.033	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	3,279	0	0	0
441	Cooling	ECM - HVAC	Other Commercial	Retro	78%	351	0.070	15	$177	100%	24%	75%	10	3%	5%	73.1%	33.5%	47.2%	1.1	1,319	476	1,098	641
442	Cooling	ERV	Other Commercial	Retro	24%	2	0.002	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	43.5%	0.6	13,689	0	0	0
443	Cooling	Window Film	Other Commercial	Retro	8%	9	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	55.6%	1.8	4,522	2,159	4,001	2,489
444	Cooling	Cool Roof	Other Commercial	Retro	3%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	1,518	0	0	0
445	Cooling	Smart Thermostats	Other Commercial	Retro	4%	718	0.301	11	$208	100%	50%	75%	14	100%	9%	75.4%	48.6%	64.5%	1.9	1,817	1,154	1,845	1,432
446	Ext Lighting	LED wallpack (existing W<250)	Other Commercial	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	13%	83.4%	39.2%	56.8%	0.7	684	0	0	0
447	Ext Lighting	LED parking lot fixture (existing W≥250)	Other Commercial	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	13%	83.4%	39.2%	48.0%	0.4	624	0	0	0
448	Ext Lighting	LED parking lot fixture (existing W<250)	Other Commercial	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	13%	83.4%	39.2%	56.8%	0.7	684	0	0	0
449	Ext Lighting	LED parking garage fixture (existing W≥250)	Other Commercial	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	13%	83.4%	43.4%	62.7%	0.5	628	0	0	0
450	Ext Lighting	LED parking garage fixture (existing W<250)	Other Commercial	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	13%	83.4%	53.6%	71.4%	1.0	689	335	562	425
451	Ext Lighting	Bi-Level Garage Lighting	Other Commercial	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	432	0	0	0
452	Ext Lighting	LED Traffic Signals	Other Commercial	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
453	Hot Water	Electric Storage Water Heater	Other Commercial	ROB	4%	95	0.011	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	0	0	0	0
454	Hot Water	Heat Pump Water Heater	Other Commercial	ROB	68%	1,752	0.200	10	$1,350	100%	23%	75%	1	95%	8%	85.6%	35.8%	51.2%	0.4	0	0	0	0
455	Hot Water	Electric tankless water heater	Other Commercial	ROB	60%	80	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.3	0	0	0	0
456	Hot Water	Water Heater Pipe Insulation	Other Commercial	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	2%	80%	86.0%	86.0%	86.0%	0.1	0	0	0	0

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
457	Hot Water	Faucet Aerator	Other Commercial	Retro	32%	406	0.070	10	$8	100%	75%	75%	4	48%	80%	86.0%	86.0%	86.0%	18.6	0	0	0	0
458	Hot Water	Low-Flow Showerheads	Other Commercial	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	5%	80%	86.0%	86.0%	86.0%	111.0	0	0	0	0
459	Hot Water	PRSV	Other Commercial	Retro	33%	2,287	0.251	5	$93	100%	75%	75%	6	5%	50%	75.4%	68.3%	73.1%	4.3	0	0	0	0
460	Hot Water	ENERGY STAR Clothes Washers	Other Commercial	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	0	0	0	0
461	Int Lighting	Interior 4 ft LED	Other Commercial	Retro	49%	118	0.027	15	$13	100%	50%	75%	1	74%	13%	83.4%	68.2%	78.2%	5.2	17,741	11,548	14,566	12,594
462	Int Lighting	LED Screw In - Interior	Other Commercial	Retro	80%	140	0.033	9	$2	100%	50%	75%	2	3%	50%	83.4%	79.2%	82.9%	31.1	925	619	681	610
463	Int Lighting	LED Fixture - Interior	Other Commercial	Retro	69%	151	0.035	15	$27	100%	60%	75%	3	19%	13%	83.4%	64.5%	74.9%	3.2	6,468	3,947	5,311	4,374
464	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Other Commercial	Retro	52%	491	0.127	15	$201	100%	50%	75%	4	2%	13%	83.4%	45.9%	65.3%	1.5	429	173	353	247
465	Int Lighting	Interior LED High Bay | Replacing HID	Other Commercial	Retro	73%	2,375	0.614	15	$458	100%	50%	75%	5	2%	13%	83.4%	60.3%	74.6%	3.1	603	340	495	406
466	Int Lighting	Advanced Lighting Controls	Other Commercial	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	626	0	0	0
467	Int Lighting	Controls Cont Dimming	Other Commercial	Retro	31%	73	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	54.6%	71.8%	1.3	3,023	2,776	3,935	3,161
468	Int Lighting	Controls Photocells	Other Commercial	Retro	11%	25	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	44.1%	63.4%	0.8	604	0	0	0
469	Int Lighting	Controls Occ Sensor	Other Commercial	Retro	31%	73	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	54.6%	71.8%	1.3	3,023	2,776	3,935	3,161
470	Int Lighting	Custom Lighting	Other Commercial	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	6,660	2,680	5,121	3,288
471	Misc	Vend Machine Ctrls	Other Commercial	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	193	0	0	0
472	Misc	Vend Machine Ctrls -refrigerated	Other Commercial	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	799	479	479	434
473	Misc	Power Distribution Equipment Upgrades	Other Commercial	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	38%	20%	73.1%	44.0%	44.0%	0.9	420	143	288	148
474	Misc	Custom Miscellaneous	Other Commercial	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	29,513	10,543	21,636	13,575
475	Plug Loads Office	Plug Load Occupancy Sensors	Other Commercial	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	2,296	0	0	0
476	Plug Loads Office	Advanced Power Strips	Other Commercial	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	2,010	803	1,710	1,162
477	Plug Loads Office	Computer Power Management	Other Commercial	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	805	0	0	0
478	Refrigeration	Solid Door Commercial Refrigeration Equipment	Other Commercial	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	27%	56%	85.6%	69.2%	73.1%	2.6	2,414	1,444	1,934	1,563
479	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Other Commercial	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	27%	54%	85.6%	67.8%	67.8%	0.8	787	0	0	0
480	Refrigeration	Door Heater Controls	Other Commercial	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	27	0	0	0
481	Refrigeration	Zero Energy Doors	Other Commercial	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	481	203	389	272
482	Refrigeration	Night Covers	Other Commercial	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	152	0	0	0
483	Refrigeration	Strip Curtain	Other Commercial	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	12%	39%	75.4%	57.3%	61.0%	0.7	1,970	0	0	0
484	Refrigeration	Evap Fan Ctrls	Other Commercial	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	2%	33%	73.1%	53.1%	53.1%	2.3	421	158	269	154
485	Refrigeration	Refrigeration ECMs	Other Commercial	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	7%	20%	75.4%	48.9%	63.2%	2.2	692	276	490	365
486	Refrigeration	Refrigerated Case Lighting	Other Commercial	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	694	0	0	0
487	Refrigeration	Ice Maker	Other Commercial	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	5%	50%	85.6%	65.0%	65.0%	0.4	219	0	0	0
488	Refrigeration	Custom Refrigeration	Other Commercial	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	3,297	1,679	2,417	1,672
489	Ventilation	VFDs of Supply and Return Fans	Other Commercial	Retro	59%	33,354	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	58.4%	3.0	10,327	3,650	6,885	4,702
490	Whole Building_HVAC	Variable Air Volume HVAC	Other Commercial	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	40%	20%	73.1%	65.2%	71.7%	33.6	16,804	13,260	14,992	13,829
491	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Other Commercial	Retro	11%	228	0.033	15	$90	100%	50%	75%	2	100%	5%	73.1%	34.1%	48.4%	1.3	7,788	3,291	7,339	4,448
492	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Other Commercial	Retro	0%	0	0.000	15	$1,778	100%	50%	75%	3	12%	24%	73.1%	68.3%	73.1%	0.0	0	0	0	0
493	Whole Building_HVAC	GREM Controls	Other Commercial	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
494	Whole Building_HVAC	Custom Whole Building HVAC	Other Commercial	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	20,540	9,351	18,325	9,295
495	Whole Buildings	Whole Building Retrofit	Other Commercial	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	60.0%	66.0%	5.9	8,871	6,775	7,985	7,134
496	Whole Buildings	Custom Whole Building Controls (BAS)	Other Commercial	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	36,592	17,046	30,905	16,396
497	Whole Buildings	Commercial Behavior	Other Commercial	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	6,160	2,485	2,394	2,557
498	Cooking	Commercial Griddles	Food Service	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	585	327	387	352
499	Cooking	Convection Ovens	Food Service	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	701	464	516	492
500	Cooking	Combination Ovens	Food Service	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	328	189	241	195
501	Cooking	Commercial Fryers	Food Service	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	1,408	0	0	0
502	Cooking	Commercial Steam Cookers	Food Service	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	999	624	741	674
503	Cooling	Air-Cooled Chillers	Food Service	ROB	11%	240	0.181	20	$127	100%	33%	75%	1	0%	20%	85.6%	44.1%	64.8%	2.3	0	0	0	0
504	Cooling	Water-Cooled Chillers	Food Service	ROB	12%	151	0.074	20	$107	100%	22%	75%	2	0%	20%	85.6%	44.0%	58.5%	1.4	0	0	0	0
505	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Food Service	Retro	29%	1,063	0.036	15	$190	100%	50%	75%	3	0%	10%	75.4%	47.7%	64.0%	2.4	0	0	0	0
506	Cooling	Unitary and Split System AC	Food Service	ROB	24%	594	0.221	15	$123	100%	50%	75%	4	86%	20%	85.6%	57.3%	73.4%	3.3	4,463	1,894	2,979	2,362
507	Cooling	Unitary and Split System HP	Food Service	ROB	24%	622	0.221	15	$123	100%	50%	75%	5	5%	20%	85.6%	57.6%	73.8%	3.4	268	114	179	142
508	Cooling	Ductless Mini-Split HP	Food Service	ROB	13%	342	0.207	18	$143	100%	50%	75%	6	5%	20%	85.6%	50.0%	66.1%	2.4	147	50	87	65
509	Cooling	PTAC Equipment	Food Service	ROB	4%	87	0.107	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	62.7%	1.1	0	0	0	0
510	Cooling	PTHP Equipment	Food Service	ROB	5%	133	0.116	10	$77	100%	41%	75%	8	0%	20%	85.6%	46.2%	64.7%	1.3	0	0	0	0
511	Cooling	Commercial AC and HP Tune Up	Food Service	Retro	4%	87	0.032	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	529	0	0	0
512	Cooling	ECM - HVAC	Food Service	Retro	78%	351	0.070	15	$177	100%	24%	75%	10	3%	5%	73.1%	33.5%	47.2%	1.1	228	84	194	113
513	Cooling	ERV	Food Service	Retro	24%	2	0.002	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	43.9%	0.6	2,221	0	0	0
514	Cooling	Window Film	Food Service	Retro	8%	10	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	56.4%	1.9	729	358	663	423
515	Cooling	Cool Roof	Food Service	Retro	2%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	149	0	0	0
516	Cooling	Smart Thermostats	Food Service	Retro	4%	789	0.294	11	$208	100%	50%	75%	14	100%	9%	75.4%	49.3%	65.0%	2.0	294	195	306	240
517	Ext Lighting	LED wallpack (existing W<250)	Food Service	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	16%	83.4%	41.2%	56.8%	0.7	0	0	0	0
518	Ext Lighting	LED parking lot fixture (existing W≥250)	Food Service	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	16%	83.4%	41.2%	48.0%	0.4	0	0	0	0
519	Ext Lighting	LED parking lot fixture (existing W<250)	Food Service	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	16%	83.4%	41.2%	56.8%	0.7	0	0	0	0
520	Ext Lighting	LED parking garage fixture (existing W≥250)	Food Service	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	16%	83.4%	43.4%	62.7%	0.5	0	0	0	0
521	Ext Lighting	LED parking garage fixture (existing W<250)	Food Service	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	16%	83.4%	53.6%	71.4%	1.0	0	0	0	0
522	Ext Lighting	Bi-Level Garage Lighting	Food Service	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	0	0	0	0
523	Ext Lighting	LED Traffic Signals	Food Service	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
524	Hot Water	Electric Storage Water Heater	Food Service	ROB	4%	174	0.020	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	5	0	0	0
525	Hot Water	Heat Pump Water Heater	Food Service	ROB	68%	3,200	0.365	10	$1,350	100%	23%	75%	1	95%	7%	85.6%	34.7%	59.3%	0.8	1,127	0	0	0
526	Hot Water	Electric tankless water heater	Food Service	ROB	60%	146	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.5	2	0	0	0
527	Hot Water	Water Heater Pipe Insulation	Food Service	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	1%	80%	86.0%	86.0%	86.0%	0.1	2	0	0	0
528	Hot Water	Faucet Aerator	Food Service	Retro	32%	591	0.189	10	$8	100%	75%	75%	4	38%	80%	86.0%	86.0%	86.0%	33.4	37	58	58	52
529	Hot Water	Low-Flow Showerheads	Food Service	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	3%	80%	86.0%	86.0%	86.0%	111.0	1	2	2	2
530	Hot Water	PRSV	Food Service	Retro	33%	980	0.134	5	$93	100%	75%	75%	6	20%	50%	75.4%	65.0%	70.3%	1.9	32	34	46	36
531	Hot Water	ENERGY STAR Clothes Washers	Food Service	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	73	0	0	0
532	Int Lighting	Interior 4 ft LED	Food Service	Retro	49%	159	0.028	15	$13	100%	50%	75%	1	52%	16%	83.4%	70.7%	79.2%	6.5	1,178	791	962	843

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
533	Int Lighting	LED Screw In - Interior	Food Service	Retro	80%	189	0.034	9	$2	100%	50%	75%	2	2%	50%	83.4%	79.5%	83.0%	38.6	40	27	29	26
534	Int Lighting	LED Fixture - Interior	Food Service	Retro	69%	203	0.036	15	$27	100%	60%	75%	3	11%	16%	83.4%	67.7%	76.6%	4.0	334	213	273	230
535	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Food Service	Retro	52%	662	0.180	15	$201	100%	50%	75%	4	1%	16%	83.4%	50.4%	69.8%	2.0	18	8	15	11
536	Int Lighting	Interior LED High Bay | Replacing HID	Food Service	Retro	73%	3,206	0.873	15	$458	100%	50%	75%	5	1%	16%	83.4%	65.4%	77.0%	4.3	25	16	21	18
537	Int Lighting	Advanced Lighting Controls	Food Service	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	68	0	0	0
538	Int Lighting	Controls Cont Dimming	Food Service	Retro	30%	97	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	59.0%	73.9%	1.6	390	259	361	292
539	Int Lighting	Controls Photocells	Food Service	Retro	10%	32	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	46.0%	65.4%	0.9	69	34	64	45
540	Int Lighting	Controls Occ Sensor	Food Service	Retro	30%	97	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	59.0%	73.9%	1.6	390	259	361	292
541	Int Lighting	Custom Lighting	Food Service	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	643	259	494	317
542	Misc	Vend Machine Ctrls	Food Service	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	15	0	0	0
543	Misc	Vend Machine Ctrls -refrigerated	Food Service	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	61	37	37	33
544	Misc	Power Distribution Equipment Upgrades	Food Service	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	76%	20%	73.1%	44.0%	44.0%	0.9	65	22	44	23
545	Misc	Custom Miscellaneous	Food Service	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	2,253	806	1,653	1,037
546	Plug Loads Office	Plug Load Occupancy Sensors	Food Service	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	191	0	0	0
547	Plug Loads Office	Advanced Power Strips	Food Service	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	168	67	143	97
548	Plug Loads Office	Computer Power Management	Food Service	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	67	0	0	0
549	Refrigeration	Solid Door Commercial Refrigeration Equipment	Food Service	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	32%	56%	85.6%	69.2%	73.1%	2.6	5,249	3,139	4,205	3,400
550	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Food Service	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	8%	54%	85.6%	67.8%	67.8%	0.8	428	0	0	0
551	Refrigeration	Door Heater Controls	Food Service	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	49	0	0	0
552	Refrigeration	Zero Energy Doors	Food Service	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	883	373	713	499
553	Refrigeration	Night Covers	Food Service	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	278	0	0	0
554	Refrigeration	Strip Curtain	Food Service	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	6%	36%	75.4%	55.2%	61.0%	0.7	1,849	0	0	0
555	Refrigeration	Evap Fan Ctrls	Food Service	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	1%	33%	73.1%	53.1%	53.1%	2.3	386	145	247	141
556	Refrigeration	Refrigeration ECMs	Food Service	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	12%	20%	75.4%	48.9%	63.2%	2.2	2,031	810	1,440	1,072
557	Refrigeration	Refrigerated Case Lighting	Food Service	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	1,273	0	0	0
558	Refrigeration	Ice Maker	Food Service	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	5%	50%	85.6%	65.0%	65.0%	0.4	402	0	0	0
559	Refrigeration	Custom Refrigeration	Food Service	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	6,198	3,066	4,406	3,050
560	Ventilation	VFDs of Supply and Return Fans	Food Service	Retro	59%	39,024	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	60.5%	3.5	3,316	1,172	2,211	1,591
561	Whole Building_HVAC	Variable Air Volume HVAC	Food Service	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	34%	19%	73.1%	65.2%	71.7%	33.6	2,870	2,286	2,572	2,376
562	Whole Building_HVAC	Demand Controlled Ventilation	Food Service	Retro	7%	167	0.013	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	45.7%	0.8	1,009	0	0	0
563	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Food Service	Retro	20%	3,952	0.570	15	$1,778	100%	50%	75%	3	16%	24%	73.1%	46.8%	47.5%	1.1	609	288	537	274
564	Whole Building_HVAC	GREM Controls	Food Service	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
565	Whole Building_HVAC	Custom Whole Building HVAC	Food Service	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	4,023	1,837	3,591	1,824
566	Whole Buildings	Whole Building Retrofit	Food Service	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	59.7%	65.7%	5.7	2,635	1,994	2,395	2,116
567	Whole Buildings	Custom Whole Building Controls (BAS)	Food Service	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	1,832	843	1,556	818
568	Whole Buildings	Commercial Behavior	Food Service	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	1,893	743	742	777
569	Cooking	Commercial Griddles	Food Sales	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	90	51	60	54
570	Cooking	Convection Ovens	Food Sales	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	108	72	80	76
571	Cooking	Combination Ovens	Food Sales	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	51	29	37	30
572	Cooking	Commercial Fryers	Food Sales	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	218	0	0	0
573	Cooking	Commercial Steam Cookers	Food Sales	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	155	97	115	104
574	Cooling	Air-Cooled Chillers	Food Sales	ROB	11%	168	0.200	20	$127	100%	33%	75%	1	0%	20%	85.6%	44.0%	64.2%	2.2	0	0	0	0
575	Cooling	Water-Cooled Chillers	Food Sales	ROB	12%	105	0.082	20	$107	100%	22%	75%	2	0%	20%	85.6%	44.0%	56.8%	1.2	0	0	0	0
576	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Food Sales	Retro	29%	1,136	0.036	15	$190	100%	50%	75%	3	0%	10%	75.4%	48.9%	64.7%	2.5	0	0	0	0
577	Cooling	Unitary and Split System AC	Food Sales	ROB	24%	414	0.244	15	$123	100%	50%	75%	4	82%	20%	85.6%	55.5%	71.6%	2.9	1,353	583	903	696
578	Cooling	Unitary and Split System HP	Food Sales	ROB	24%	680	0.244	15	$123	100%	50%	75%	5	6%	20%	85.6%	58.7%	74.8%	3.7	101	44	68	55
579	Cooling	Ductless Mini-Split HP	Food Sales	ROB	13%	239	0.228	18	$143	100%	50%	75%	6	6%	20%	85.6%	48.7%	65.0%	2.2	56	18	33	24
580	Cooling	PTAC Equipment	Food Sales	ROB	4%	60	0.118	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	62.6%	1.1	0	0	0	0
581	Cooling	PTHP Equipment	Food Sales	ROB	5%	93	0.128	10	$77	100%	41%	75%	8	0%	20%	85.6%	45.4%	64.3%	1.3	0	0	0	0
582	Cooling	Commercial AC and HP Tune Up	Food Sales	Retro	4%	61	0.036	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	169	0	0	0
583	Cooling	ECM - HVAC	Food Sales	Retro	78%	351	0.068	15	$177	100%	24%	75%	10	3%	5%	73.1%	33.5%	47.2%	1.1	64	24	54	32
584	Cooling	ERV	Food Sales	Retro	24%	1	0.002	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	42.1%	0.5	708	0	0	0
585	Cooling	Window Film	Food Sales	Retro	8%	7	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	53.9%	1.7	233	113	211	125
586	Cooling	Cool Roof	Food Sales	Retro	6%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	166	0	0	0
587	Cooling	Smart Thermostats	Food Sales	Retro	4%	551	0.325	11	$208	100%	50%	75%	14	100%	9%	75.4%	46.8%	63.4%	1.8	9	6	10	7
588	Ext Lighting	LED wallpack (existing W<250)	Food Sales	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	11%	83.4%	37.4%	56.8%	0.7	0	0	0	0
589	Ext Lighting	LED parking lot fixture (existing W≥250)	Food Sales	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	11%	83.4%	37.4%	48.0%	0.4	0	0	0	0
590	Ext Lighting	LED parking lot fixture (existing W<250)	Food Sales	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	11%	83.4%	37.4%	56.8%	0.7	0	0	0	0
591	Ext Lighting	LED parking garage fixture (existing W≥250)	Food Sales	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	11%	83.4%	43.4%	62.7%	0.5	0	0	0	0
592	Ext Lighting	LED parking garage fixture (existing W<250)	Food Sales	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	11%	83.4%	53.6%	71.4%	1.0	0	0	0	0
593	Ext Lighting	Bi-Level Garage Lighting	Food Sales	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	0	0	0	0
594	Ext Lighting	LED Traffic Signals	Food Sales	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
595	Hot Water	Electric Storage Water Heater	Food Sales	ROB	4%	147	0.017	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	4	0	0	0
596	Hot Water	Heat Pump Water Heater	Food Sales	ROB	68%	2,712	0.310	10	$1,350	100%	23%	75%	1	95%	0%	85.6%	30.1%	56.8%	0.7	1,074	0	0	0
597	Hot Water	Electric tankless water heater	Food Sales	ROB	60%	124	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.4	2	0	0	0
598	Hot Water	Water Heater Pipe Insulation	Food Sales	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	2%	80%	86.0%	86.0%	86.0%	0.1	2	0	0	0
599	Hot Water	Faucet Aerator	Food Sales	Retro	32%	591	0.189	10	$8	100%	75%	75%	4	45%	80%	86.0%	86.0%	86.0%	33.4	39	63	63	57
600	Hot Water	Low-Flow Showerheads	Food Sales	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	3%	80%	86.0%	86.0%	86.0%	111.0	1	2	2	2
601	Hot Water	PRSV	Food Sales	Retro	0%	0	0.000	5	$93	100%	75%	75%	6	0%	50%	75.4%	71.0%	75.4%	0.0	0	0	0	0
602	Hot Water	ENERGY STAR Clothes Washers	Food Sales	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	65	0	0	0
603	Int Lighting	Interior 4 ft LED	Food Sales	Retro	49%	59	0.033	15	$13	100%	50%	75%	1	86%	11%	83.4%	63.5%	76.1%	3.8	1,423	864	1,174	988
604	Int Lighting	LED Screw In - Interior	Food Sales	Retro	80%	70	0.039	9	$2	100%	50%	75%	2	6%	50%	83.4%	78.7%	82.6%	22.8	115	76	85	75
605	Int Lighting	LED Fixture - Interior	Food Sales	Retro	69%	75	0.042	15	$27	100%	60%	75%	3	42%	11%	83.4%	58.9%	71.5%	2.3	956	533	789	620
606	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Food Sales	Retro	52%	243	0.078	15	$201	100%	50%	75%	4	0%	11%	83.4%	37.4%	54.9%	0.8	0	0	0	0
607	Int Lighting	Interior LED High Bay | Replacing HID	Food Sales	Retro	73%	1,178	0.376	15	$458	100%	50%	75%	5	0%	11%	83.4%	47.9%	67.3%	1.7	0	0	0	0
608	Int Lighting	Advanced Lighting Controls	Food Sales	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	38	0	0	0

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
609	Int Lighting	Controls Cont Dimming	Food Sales	Retro	30%	36	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	46.8%	66.1%	0.9	121	132	193	153
610	Int Lighting	Controls Photocells	Food Sales	Retro	10%	12	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	38.9%	58.2%	0.6	28	0	0	0
611	Int Lighting	Controls Occ Sensor	Food Sales	Retro	30%	36	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	46.8%	66.1%	0.9	121	132	193	153
612	Int Lighting	Custom Lighting	Food Sales	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	448	180	344	221
613	Misc	Vend Machine Ctrls	Food Sales	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	5	0	0	0
614	Misc	Vend Machine Ctrls -refrigerated	Food Sales	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	23	14	14	12
615	Misc	Power Distribution Equipment Upgrades	Food Sales	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	80%	20%	73.1%	44.0%	44.0%	0.9	25	9	17	9
616	Misc	Custom Miscellaneous	Food Sales	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	836	299	614	385
617	Plug Loads Office	Plug Load Occupancy Sensors	Food Sales	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	89	0	0	0
618	Plug Loads Office	Advanced Power Strips	Food Sales	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	78	31	66	45
619	Plug Loads Office	Computer Power Management	Food Sales	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	31	0	0	0
620	Refrigeration	Solid Door Commercial Refrigeration Equipment	Food Sales	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	2%	56%	85.6%	69.2%	73.1%	2.6	365	219	293	237
621	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Food Sales	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	1%	54%	85.6%	67.8%	67.8%	0.8	30	0	0	0
622	Refrigeration	Door Heater Controls	Food Sales	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	45	0	0	0
623	Refrigeration	Zero Energy Doors	Food Sales	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	819	346	662	463
624	Refrigeration	Night Covers	Food Sales	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	258	0	0	0
625	Refrigeration	Strip Curtain	Food Sales	Retro	65%	111	0.013	5	$10	100%	50%	75%	5	16%	61%	75.4%	72.7%	72.7%	1.9	3,718	1,848	2,029	1,671
626	Refrigeration	Evap Fan Ctrls	Food Sales	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	3%	33%	73.1%	53.1%	53.1%	2.3	988	372	633	362
627	Refrigeration	Refrigeration ECMs	Food Sales	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	12%	20%	75.4%	48.9%	63.2%	2.2	1,885	752	1,336	996
628	Refrigeration	Refrigerated Case Lighting	Food Sales	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	1,182	0	0	0
629	Refrigeration	Ice Maker	Food Sales	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	1%	50%	85.6%	65.0%	65.0%	0.4	37	0	0	0
630	Refrigeration	Custom Refrigeration	Food Sales	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	5,964	2,833	4,079	2,824
631	Ventilation	VFDs of Supply and Return Fans	Food Sales	Retro	59%	45,657	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	62.3%	4.1	879	311	586	440
632	Whole Building_HVAC	Variable Air Volume HVAC	Food Sales	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	27%	20%	73.1%	65.2%	71.7%	33.6	680	540	611	563
633	Whole Building_HVAC	Demand Controlled Ventilation	Food Sales	Retro	5%	75	0.027	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	42.9%	0.6	196	0	0	0
634	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Food Sales	Retro	20%	3,404	0.630	15	$1,778	100%	50%	75%	3	7%	24%	73.1%	46.8%	46.8%	1.0	80	38	71	35
635	Whole Building_HVAC	GREM Controls	Food Sales	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
636	Whole Building_HVAC	Custom Whole Building HVAC	Food Sales	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	1,207	553	1,084	550
637	Whole Buildings	Whole Building Retrofit	Food Sales	Retro	15%	1	0.001	20	$0	100%	82%	82%	6	100%	0%	73.1%	61.3%	67.1%	6.9	1,575	1,186	1,386	1,251
638	Whole Buildings	Custom Whole Building Controls (BAS)	Food Sales	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	7,157	3,181	5,866	3,085
639	Whole Buildings	Commercial Behavior	Food Sales	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	1,149	435	439	457
640	Cooking	Commercial Griddles	Retail	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	49	27	32	29
641	Cooking	Convection Ovens	Retail	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	59	39	43	41
642	Cooking	Combination Ovens	Retail	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	27	16	20	16
643	Cooking	Commercial Fryers	Retail	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	118	0	0	0
644	Cooking	Commercial Steam Cookers	Retail	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	84	52	62	56
645	Cooling	Air-Cooled Chillers	Retail	ROB	11%	351	0.195	20	$127	100%	33%	75%	1	14%	20%	85.6%	47.4%	67.9%	2.9	369	108	199	154
646	Cooling	Water-Cooled Chillers	Retail	ROB	12%	220	0.080	20	$107	100%	22%	75%	2	14%	20%	85.6%	44.0%	61.8%	1.8	411	117	221	154
647	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Retail	Retro	29%	985	0.036	15	$190	100%	50%	75%	3	5%	10%	75.4%	46.4%	63.2%	2.2	494	210	366	278
648	Cooling	Unitary and Split System AC	Retail	ROB	24%	866	0.239	15	$123	100%	50%	75%	4	56%	20%	85.6%	61.1%	76.2%	4.3	4,399	2,009	2,936	2,427
649	Cooling	Unitary and Split System HP	Retail	ROB	24%	933	0.239	15	$123	100%	50%	75%	5	7%	20%	85.6%	62.1%	76.7%	4.5	533	248	356	296
650	Cooling	Ductless Mini-Split HP	Retail	ROB	13%	509	0.223	18	$143	100%	50%	75%	6	7%	20%	85.6%	54.1%	70.2%	3.0	281	105	165	133
651	Cooling	PTAC Equipment	Retail	ROB	4%	126	0.115	10	$77	100%	41%	75%	7	0%	20%	85.6%	45.8%	64.5%	1.3	0	0	0	0
652	Cooling	PTHP Equipment	Retail	ROB	5%	208	0.124	10	$77	100%	41%	75%	8	0%	20%	85.6%	49.2%	68.2%	1.7	0	0	0	0
653	Cooling	Commercial AC and HP Tune Up	Retail	Retro	4%	127	0.035	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.5	831	0	0	0
654	Cooling	ECM - HVAC	Retail	Retro	78%	351	0.066	15	$177	100%	24%	75%	10	2%	5%	73.1%	33.5%	47.1%	1.1	252	91	210	122
655	Cooling	ERV	Retail	Retro	24%	3	0.002	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	44.9%	0.8	3,475	0	0	0
656	Cooling	Window Film	Retail	Retro	8%	14	0.004	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	60.3%	2.4	1,149	546	1,014	709
657	Cooling	Cool Roof	Retail	Retro	2%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	235	0	0	0
658	Cooling	Smart Thermostats	Retail	Retro	4%	1,152	0.318	11	$208	100%	50%	75%	14	100%	9%	75.4%	53.2%	67.4%	2.6	464	324	467	380
659	Ext Lighting	LED wallpack (existing W<250)	Retail	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	15%	83.4%	40.3%	56.8%	0.7	156	0	0	0
660	Ext Lighting	LED parking lot fixture (existing W≥250)	Retail	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	15%	83.4%	40.3%	48.0%	0.4	142	0	0	0
661	Ext Lighting	LED parking lot fixture (existing W<250)	Retail	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	15%	83.4%	40.3%	56.8%	0.7	156	0	0	0
662	Ext Lighting	LED parking garage fixture (existing W≥250)	Retail	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	15%	83.4%	43.4%	62.7%	0.5	143	0	0	0
663	Ext Lighting	LED parking garage fixture (existing W<250)	Retail	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	15%	83.4%	53.6%	71.4%	1.0	157	75	127	96
664	Ext Lighting	Bi-Level Garage Lighting	Retail	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	100	0	0	0
665	Ext Lighting	LED Traffic Signals	Retail	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
666	Hot Water	Electric Storage Water Heater	Retail	ROB	4%	147	0.017	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	5	0	0	0
667	Hot Water	Heat Pump Water Heater	Retail	ROB	68%	2,712	0.310	10	$1,350	100%	23%	75%	1	95%	0%	85.6%	30.1%	56.8%	0.7	1,163	0	0	0
668	Hot Water	Electric tankless water heater	Retail	ROB	60%	124	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.4	2	0	0	0
669	Hot Water	Water Heater Pipe Insulation	Retail	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	2%	80%	86.0%	86.0%	86.0%	0.1	3	0	0	0
670	Hot Water	Faucet Aerator	Retail	Retro	32%	591	0.189	10	$8	100%	75%	75%	4	45%	80%	86.0%	86.0%	86.0%	33.4	43	69	69	62
671	Hot Water	Low-Flow Showerheads	Retail	Retro	20%	29	2.280	10	$12	100%	33%	75%	5	3%	80%	86.0%	86.0%	86.0%	111.0	2	2	2	2
672	Hot Water	PRSV	Retail	Retro	0%	0	0.000	5	$93	100%	75%	75%	6	0%	50%	75.4%	71.0%	75.4%	0.0	0	0	0	0
673	Hot Water	ENERGY STAR Clothes Washers	Retail	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	71	0	0	0
674	Int Lighting	Interior 4 ft LED	Retail	Retro	49%	100	0.031	15	$13	100%	50%	75%	1	77%	15%	83.4%	67.4%	77.8%	4.9	7,534	4,803	6,172	5,298
675	Int Lighting	LED Screw In - Interior	Retail	Retro	80%	119	0.037	9	$2	100%	50%	75%	2	0%	50%	83.4%	79.1%	82.8%	29.3	21	14	16	14
676	Int Lighting	LED Fixture - Interior	Retail	Retro	68%	127	0.040	15	$27	100%	60%	75%	3	19%	15%	83.4%	63.6%	74.4%	3.0	2,573	1,530	2,108	1,715
677	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Retail	Retro	52%	416	0.126	15	$201	100%	50%	75%	4	2%	15%	83.4%	44.0%	63.4%	1.3	195	73	160	108
678	Int Lighting	Interior LED High Bay | Replacing HID	Retail	Retro	73%	2,012	0.608	15	$458	100%	50%	75%	5	2%	15%	83.4%	58.2%	73.6%	2.8	274	146	225	180
679	Int Lighting	Advanced Lighting Controls	Retail	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	290	0	0	0
680	Int Lighting	Controls Cont Dimming	Retail	Retro	30%	61	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	51.6%	70.3%	1.2	1,228	1,068	1,605	1,270
681	Int Lighting	Controls Photocells	Retail	Retro	10%	20	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	42.4%	61.8%	0.7	245	0	0	0
682	Int Lighting	Controls Occ Sensor	Retail	Retro	30%	61	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	51.6%	70.3%	1.2	1,228	1,068	1,605	1,270
683	Int Lighting	Custom Lighting	Retail	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	2,747	1,105	2,112	1,356
684	Misc	Vend Machine Ctrls	Retail	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	36	0	0	0

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
685	Misc	Vend Machine Ctrls -refrigerated	Retail	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	147	88	88	80
686	Misc	Power Distribution Equipment Upgrades	Retail	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	56%	20%	73.1%	44.0%	44.0%	0.9	116	39	79	41
687	Misc	Custom Miscellaneous	Retail	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	5,438	1,944	3,988	2,503
688	Plug Loads Office	Plug Load Occupancy Sensors	Retail	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	385	0	0	0
689	Plug Loads Office	Advanced Power Strips	Retail	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	337	135	287	195
690	Plug Loads Office	Computer Power Management	Retail	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	135	0	0	0
691	Refrigeration	Solid Door Commercial Refrigeration Equipment	Retail	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	25%	56%	85.6%	69.2%	73.1%	2.6	3,534	2,114	2,831	2,289
692	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Retail	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	25%	54%	85.6%	67.8%	67.8%	0.8	1,153	0	0	0
693	Refrigeration	Door Heater Controls	Retail	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	43	0	0	0
694	Refrigeration	Zero Energy Doors	Retail	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	776	328	627	439
695	Refrigeration	Night Covers	Retail	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	245	0	0	0
696	Refrigeration	Strip Curtain	Retail	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	6%	39%	75.4%	57.3%	61.0%	0.7	1,575	0	0	0
697	Refrigeration	Evap Fan Ctrls	Retail	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	1%	33%	73.1%	53.1%	53.1%	2.3	339	128	217	124
698	Refrigeration	Refrigeration ECMs	Retail	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	7%	20%	75.4%	48.9%	63.2%	2.2	1,116	445	791	589
699	Refrigeration	Refrigerated Case Lighting	Retail	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	1,120	0	0	0
700	Refrigeration	Ice Maker	Retail	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	3%	50%	85.6%	65.0%	65.0%	0.4	212	0	0	0
701	Refrigeration	Custom Refrigeration	Retail	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	5,574	2,718	3,919	2,707
702	Ventilation	VFDs of Supply and Return Fans	Retail	Retro	59%	37,613	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	60.0%	3.4	6,665	2,356	4,443	3,162
703	Whole Building_HVAC	Variable Air Volume HVAC	Retail	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	25%	39%	73.1%	65.2%	71.7%	33.6	2,948	1,986	2,341	2,186
704	Whole Building_HVAC	Demand Controlled Ventilation	Retail	Retro	5%	163	0.027	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	46.3%	1.0	1,159	471	1,069	617
705	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Retail	Retro	0%	0	0.000	15	$1,778	100%	50%	75%	3	4%	24%	73.1%	68.3%	73.1%	0.0	0	0	0	0
706	Whole Building_HVAC	GREM Controls	Retail	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
707	Whole Building_HVAC	Custom Whole Building HVAC	Retail	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	6,907	3,084	6,030	3,060
708	Whole Buildings	Whole Building Retrofit	Retail	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	58.5%	64.8%	5.0	3,176	2,387	2,879	2,526
709	Whole Buildings	Custom Whole Building Controls (BAS)	Retail	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	1,095	513	930	493
710	Whole Buildings	Commercial Behavior	Retail	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	2,232	903	876	930
711	Cooking	Commercial Griddles	Schools	ROB	13%	758	0.145	12	$60	100%	75%	75%	1	19%	17%	80.2%	68.9%	73.6%	5.6	22	12	14	13
712	Cooking	Convection Ovens	Schools	ROB	18%	1,988	0.381	12	$50	100%	75%	75%	2	23%	53%	80.2%	74.2%	78.1%	17.8	26	17	19	18
713	Cooking	Combination Ovens	Schools	ROB	48%	6,368	0.740	12	$800	100%	75%	75%	2	23%	53%	80.2%	67.1%	68.4%	3.2	12	7	9	7
714	Cooking	Commercial Fryers	Schools	ROB	17%	1,858	0.355	12	$1,200	100%	19%	75%	3	36%	23%	80.2%	46.1%	51.5%	0.7	52	0	0	0
715	Cooking	Commercial Steam Cookers	Schools	ROB	57%	43,015	8.250	12	$2,490	100%	75%	75%	4	8%	42%	80.2%	71.0%	75.3%	7.7	37	23	27	25
716	Cooling	Air-Cooled Chillers	Schools	ROB	11%	256	0.158	20	$127	100%	33%	75%	1	21%	20%	85.6%	44.0%	64.3%	2.2	408	116	220	160
717	Cooling	Water-Cooled Chillers	Schools	ROB	12%	161	0.065	20	$107	100%	22%	75%	2	21%	20%	85.6%	44.0%	58.0%	1.3	455	130	245	158
718	Cooling	VFDs for HVAC Pumps and Cooling Tower Fans	Schools	Retro	29%	741	0.036	15	$190	100%	50%	75%	3	8%	10%	75.4%	41.9%	60.3%	1.7	543	206	406	292
719	Cooling	Unitary and Split System AC	Schools	ROB	24%	632	0.193	15	$123	100%	50%	75%	4	43%	20%	85.6%	57.1%	73.2%	3.3	2,420	1,023	1,615	1,277
720	Cooling	Unitary and Split System HP	Schools	ROB	24%	650	0.193	15	$123	100%	50%	75%	5	6%	20%	85.6%	57.3%	73.5%	3.3	317	135	212	168
721	Cooling	Ductless Mini-Split HP	Schools	ROB	13%	360	0.180	18	$143	100%	50%	75%	6	6%	20%	85.6%	49.2%	65.3%	2.3	179	60	106	78
722	Cooling	PTAC Equipment	Schools	ROB	4%	92	0.093	10	$77	100%	41%	75%	7	0%	20%	85.6%	44.0%	61.9%	1.0	0	0	0	0
723	Cooling	PTHP Equipment	Schools	ROB	5%	135	0.102	10	$77	100%	41%	75%	8	0%	20%	85.6%	45.0%	64.0%	1.2	0	0	0	0
724	Cooling	Commercial AC and HP Tune Up	Schools	Retro	4%	92	0.028	3	$35	100%	75%	75%	9	100%	50%	75.4%	65.0%	65.0%	0.4	605	0	0	0
725	Cooling	ECM - HVAC	Schools	Retro	78%	351	0.066	15	$177	100%	24%	75%	10	2%	5%	73.1%	33.5%	47.1%	1.1	178	64	147	85
726	Cooling	ERV	Schools	Retro	24%	2	0.003	15	$4	100%	50%	75%	11	100%	5%	73.1%	33.5%	45.5%	0.8	2,525	0	0	0
727	Cooling	Window Film	Schools	Retro	8%	10	0.003	10	$3	100%	36%	75%	12	100%	25%	73.1%	47.5%	56.2%	1.9	838	393	729	460
728	Cooling	Cool Roof	Schools	Retro	1%	0	0.000	15	$8	100%	50%	75%	13	100%	5%	73.1%	33.5%	33.5%	0.0	131	0	0	0
729	Cooling	Smart Thermostats	Schools	Retro	4%	841	0.256	11	$208	100%	50%	75%	14	100%	9%	75.4%	49.0%	64.8%	2.0	34	21	34	26
730	Ext Lighting	LED wallpack (existing W<250)	Schools	Retro	66%	567	0.000	12	$248	100%	50%	75%	1	20%	12%	83.4%	38.1%	56.8%	0.7	70	0	0	0
731	Ext Lighting	LED parking lot fixture (existing W≥250)	Schools	Retro	60%	959	0.000	12	$756	100%	50%	75%	2	20%	12%	83.4%	38.1%	48.0%	0.4	64	0	0	0
732	Ext Lighting	LED parking lot fixture (existing W<250)	Schools	Retro	66%	567	0.000	12	$248	100%	50%	75%	3	20%	12%	83.4%	38.1%	56.8%	0.7	70	0	0	0
733	Ext Lighting	LED parking garage fixture (existing W≥250)	Schools	Retro	60%	1,953	0.223	6	$756	100%	50%	75%	4	20%	12%	83.4%	43.4%	62.7%	0.5	65	0	0	0
734	Ext Lighting	LED parking garage fixture (existing W<250)	Schools	Retro	66%	1,154	0.132	6	$248	100%	50%	75%	5	20%	12%	83.4%	53.6%	71.4%	1.0	71	35	58	44
735	Ext Lighting	Bi-Level Garage Lighting	Schools	Retro	15%	75	0.036	8	$161	100%	50%	75%	6	60%	5%	83.4%	33.5%	42.5%	0.2	44	0	0	0
736	Ext Lighting	LED Traffic Signals	Schools	Retro	31%	405	0.046	6	$254	100%	50%	75%	7	0%	80%	86.0%	86.0%	86.0%	0.3	0	0	0	0
737	Hot Water	Electric Storage Water Heater	Schools	ROB	4%	158	0.018	15	$916	100%	28%	75%	1	95%	25%	85.6%	47.5%	47.5%	0.1	2	0	0	0
738	Hot Water	Heat Pump Water Heater	Schools	ROB	68%	2,917	0.333	10	$1,350	100%	23%	75%	1	95%	3%	85.6%	31.8%	57.8%	0.7	507	0	0	0
739	Hot Water	Electric tankless water heater	Schools	ROB	60%	133	0.000	20	$155	100%	50%	75%	2	5%	50%	85.6%	65.0%	65.0%	0.4	1	0	0	0
740	Hot Water	Water Heater Pipe Insulation	Schools	Retro	59%	35	0.004	4	$36	100%	50%	75%	3	1%	80%	86.0%	86.0%	86.0%	0.1	1	0	0	0
741	Hot Water	Faucet Aerator	Schools	Retro	32%	473	0.118	10	$8	100%	75%	75%	4	34%	80%	86.0%	86.0%	86.0%	24.3	14	23	22	20
742	Hot Water	Low-Flow Showerheads	Schools	Retro	20%	39	1.939	10	$12	100%	33%	75%	5	4%	80%	86.0%	86.0%	86.0%	94.7	1	2	2	2
743	Hot Water	PRSV	Schools	Retro	33%	1,253	0.313	5	$93	100%	75%	75%	6	20%	50%	75.4%	67.0%	72.0%	2.9	14	16	21	17
744	Hot Water	ENERGY STAR Clothes Washers	Schools	ROB	43%	671	0.017	7	$250	100%	50%	75%	7	25%	35%	85.6%	54.5%	58.9%	0.5	32	0	0	0
745	Int Lighting	Interior 4 ft LED	Schools	Retro	49%	66	0.016	15	$13	100%	50%	75%	1	86%	12%	83.4%	59.6%	74.3%	3.0	3,790	2,128	3,122	2,553
746	Int Lighting	LED Screw In - Interior	Schools	Retro	80%	79	0.019	9	$2	100%	50%	75%	2	2%	50%	83.4%	78.2%	82.4%	17.7	98	64	72	64
747	Int Lighting	LED Fixture - Interior	Schools	Retro	69%	85	0.021	15	$27	100%	60%	75%	3	10%	12%	83.4%	54.1%	68.8%	1.8	609	305	502	375
748	Int Lighting	Interior LED High Bay | Replacing T8HO HB	Schools	Retro	52%	276	0.044	15	$201	100%	50%	75%	4	1%	12%	83.4%	38.1%	53.8%	0.7	52	0	0	0
749	Int Lighting	Interior LED High Bay | Replacing HID	Schools	Retro	73%	1,335	0.211	15	$458	100%	50%	75%	5	1%	12%	83.4%	46.6%	66.0%	1.5	73	31	60	43
750	Int Lighting	Advanced Lighting Controls	Schools	Retro	47%	7,650	2.857	8	$16,800	100%	50%	75%	6	100%	10%	73.1%	37.0%	37.0%	0.2	107	0	0	0
751	Int Lighting	Controls Cont Dimming	Schools	Retro	70%	94	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	58.5%	73.7%	1.6	1,401	1,335	1,670	1,419
752	Int Lighting	Controls Photocells	Schools	Retro	10%	14	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	39.7%	59.0%	0.6	80	0	0	0
753	Int Lighting	Controls Occ Sensor	Schools	Retro	70%	94	0.018	8	$18	100%	50%	75%	6	100%	10%	83.4%	58.5%	73.7%	1.6	1,401	1,335	1,670	1,419
754	Int Lighting	Custom Lighting	Schools	Retro	50%	1	0.000	15	$0	100%	50%	75%	7	100%	40%	83.4%	58.0%	67.9%	1.7	1,210	487	930	597
755	Misc	Vend Machine Ctrls	Schools	Retro	46%	343	0.006	5	$80	100%	50%	75%	1	0%	75%	82.5%	82.5%	82.5%	0.6	18	0	0	0
756	Misc	Vend Machine Ctrls -refrigerated	Schools	Retro	38%	1,411	0.033	5	$180	100%	50%	75%	2	2%	75%	82.5%	82.5%	82.5%	1.1	76	45	45	41
757	Misc	Power Distribution Equipment Upgrades	Schools	Retro	1%	6	0.002	30	$8	100%	50%	75%	3	49%	20%	73.1%	44.0%	44.0%	0.9	52	18	36	18
758	Misc	Custom Miscellaneous	Schools	Retro	17%	1	0.000	15	$0	100%	50%	75%	4	100%	0%	73.1%	35.6%	49.6%	1.6	2,794	998	2,049	1,286
759	Plug Loads Office	Plug Load Occupancy Sensors	Schools	Retro	59%	129	0.000	8	$70	100%	50%	75%	1	45%	5%	75.4%	33.5%	48.5%	0.4	762	0	0	0
760	Plug Loads Office	Advanced Power Strips	Schools	Retro	27%	71	0.000	10	$21	100%	49%	75%	1	45%	5%	75.4%	37.4%	57.5%	0.9	668	267	568	386

Appendix D: C&I Measure Assumption Detail

																			MWH	MWH	MWH	MWH
Measure #	End-Use	Measure Name	Building Type	Replacement Type	% Elec Savings	Per Unit Elec Savings	Per Unit Summer kW	EE EUL	Measure Cost	HCAP Incentive (%)	RAP Incentive (%)	2% Case Incentive (%)	End Use Measure Group	Base Saturation	EE Saturation	HCAP Adoption Rate	RAP Adoption Rate	PP Adoption Rate	TRC Score	Tech Potential in 2040	RAP Potential in 2040	HCAP Potential in 2040	2% Potential in 2040
761	Plug Loads Office	Computer Power Management	Schools	Retro	81%	198	0.010	4	$29	100%	75%	75%	2	5%	33%	75.4%	60.4%	66.4%	0.8	267	0	0	0
762	Refrigeration	Solid Door Commercial Refrigeration Equipment	Schools	ROB	31%	1,105	0.118	12	$165	100%	50%	75%	1	32%	56%	85.6%	69.2%	73.1%	2.6	774	463	620	501
763	Refrigeration	ENERGY STAR Residential-size Refrigerator in Commerical Buildings	Schools	ROB	10%	56	0.008	17	$40	100%	50%	75%	2	8%	54%	85.6%	67.8%	67.8%	0.8	63	0	0	0
764	Refrigeration	Door Heater Controls	Schools	Retro	60%	254	0.005	12	$300	100%	10%	75%	3	2%	36%	75.4%	55.2%	55.2%	0.3	7	0	0	0
765	Refrigeration	Zero Energy Doors	Schools	Retro	100%	1,701	0.193	12	$290	100%	50%	75%	3	2%	5%	73.1%	40.0%	57.4%	2.3	130	55	105	74
766	Refrigeration	Night Covers	Schools	Retro	7%	145	0.000	4	$42	100%	41%	75%	4	9%	25%	75.4%	47.5%	57.7%	0.4	41	0	0	0
767	Refrigeration	Strip Curtain	Schools	Retro	62%	38	0.004	5	$10	100%	50%	75%	5	12%	36%	75.4%	55.2%	61.0%	0.7	550	0	0	0
768	Refrigeration	Evap Fan Ctrls	Schools	Retro	72%	502	0.573	16	$291	100%	19%	75%	6	2%	33%	73.1%	53.1%	53.1%	2.3	114	43	73	42
769	Refrigeration	Refrigeration ECMs	Schools	Retro	60%	804	0.092	15	$177	100%	56%	75%	7	12%	20%	75.4%	48.9%	63.2%	2.2	300	119	212	158
770	Refrigeration	Refrigerated Case Lighting	Schools	Retro	53%	264	0.042	8	$250	100%	50%	75%	8	5%	35%	83.4%	54.5%	54.5%	0.3	188	0	0	0
771	Refrigeration	Ice Maker	Schools	ROB	15%	1,214	0.139	10	$981	100%	7%	75%	9	4%	50%	85.6%	65.0%	65.0%	0.4	47	0	0	0
772	Refrigeration	Custom Refrigeration	Schools	ROB	17%	1	0.000	15	$0	100%	50%	75%	10	100%	33%	73.1%	53.1%	53.1%	2.2	882	451	648	449
773	Ventilation	VFDs of Supply and Return Fans	Schools	Retro	59%	19,306	0.000	15	$4,386	100%	50%	75%	1	100%	25%	73.1%	47.5%	50.1%	1.7	2,935	1,037	1,956	1,062
774	Whole Building_HVAC	Variable Air Volume HVAC	Schools	Retro	51%	5	0.000	15	$0	100%	50%	75%	1	43%	25%	73.1%	65.2%	71.7%	33.6	3,581	2,667	3,049	2,831
775	Whole Building_HVAC	Demand Controlled Ventilation	Schools	Retro	3%	68	0.032	15	$90	100%	50%	75%	2	100%	5%	73.1%	33.5%	43.1%	0.6	410	0	0	0
776	Whole Building_HVAC	Demand Controlled Ventilation (DCV) Exhaust Hood	Schools	Retro	20%	1,995	0.498	15	$1,778	100%	50%	75%	3	11%	24%	73.1%	46.8%	46.8%	0.7	439	0	0	0
777	Whole Building_HVAC	GREM Controls	Schools	Retro	0%	0	0.000	8	$0	100%	0%	75%	4	100%	0%	73.1%	68.3%	73.1%	0.0	0	0	0	0
778	Whole Building_HVAC	Custom Whole Building HVAC	Schools	Retro	25%	1	0.000	15	$0	100%	50%	75%	5	100%	20%	73.1%	44.0%	45.9%	0.9	4,275	1,891	3,707	1,886
779	Whole Buildings	Whole Building Retrofit	Schools	Retro	15%	1	0.000	20	$0	100%	82%	82%	6	100%	0%	73.1%	59.2%	65.3%	5.4	1,369	1,092	1,297	1,152
780	Whole Buildings	Custom Whole Building Controls (BAS)	Schools	Retro	20%	1	0.000	15	$0	100%	50%	75%	7	100%	25%	73.1%	47.5%	48.6%	1.3	5,594	2,777	5,003	2,668
781	Whole Buildings	Commercial Behavior	Schools	Retro	2%	37	0.001	1	$1	100%	50%	75%	8	100%	0%	32.0%	30.0%	32.0%	1.1	934	401	382	411
782	Compressed Air	Efficient Air Compressor Equipment	Industrial	ROB	11%	1	0.000	13	$0	100%	50%	75%	1	100%	25%	80.2%	47.5%	53.3%	1.1	6,262	2,808	4,470	3,070
783	Compressed Air	Efficient Air Compressor Controls	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	25%	75.4%	54.2%	68.0%	1.0	1,138	480	815	639
784	HVAC	Efficient HVAC Equipment	Industrial	ROB	13%	1	0.000	15	$0	100%	50%	75%	1	100%	25%	85.6%	52.3%	68.4%	2.7	5,275	2,410	3,775	3,017
785	HVAC	Efficient HVAC O&M	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	25%	75.4%	57.7%	69.7%	1.2	822	395	597	485
786	Lighting	Efficient Lighting Equipment	Industrial	Retro	42%	1	0.000	15	$0	100%	50%	75%	1	100%	25%	83.4%	56.8%	72.9%	3.0	11,780	6,003	9,590	7,573
787	Lighting	Efficient Lighting O&M	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	25%	75.4%	61.3%	71.2%	1.7	472	294	356	312
788	Machine Drive	Efficient MachDr Equipment	Industrial	ROB	12%	1	0.000	15	$0	100%	50%	75%	1	100%	25%	80.2%	47.5%	62.8%	3.1	34,696	14,918	23,275	18,233
789	Machine Drive	Efficient MachDr O&M	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	25%	75.4%	57.7%	69.7%	1.2	5,923	2,820	4,285	3,477
790	Process Heat	Efficient ProcHeat Equipment	Industrial	ROB	3%	1	0.000	15	$0	100%	50%	75%	1	100%	25%	80.2%	47.5%	62.5%	3.0	1,313	564	880	686
791	Process Heat	Efficient ProcHeat O&M	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	25%	75.4%	60.2%	70.8%	1.5	984	472	673	554
792	Process Ref	Efficient ProcRefrig Equipment	Industrial	ROB	16%	1	0.000	15	$0	100%	50%	75%	1	100%	25%	80.2%	47.5%	62.1%	3.0	12,543	5,393	8,414	6,517
793	Process Ref	Efficient ProcRefrig O&M	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	25%	75.4%	56.1%	69.0%	1.1	1,570	734	1,166	936
794	Other Process	Efficient Other Facility Process Equipment	Industrial	ROB	26%	1	0.000	11	$0	100%	50%	75%	1	100%	25%	80.2%	47.5%	54.6%	1.1	18,680	8,620	13,984	9,744
795	Other Process	Efficient Other Facility Process O&M	Industrial	Retro	7%	1	0.000	11	$0	100%	50%	75%	2	100%	25%	75.4%	47.5%	58.7%	1.3	2,879	1,081	2,369	1,462
796	Whole Buildings	Power Distribution (Transformers)	Industrial	Retro	1%	1	0.000	30	$1	100%	50%	75%	1	100%	25%	80.2%	47.5%	47.5%	0.8	2,384	0	0	0
797	Whole Buildings	Strategic Energy Management	Industrial	Retro	3%	1	0.000	3	$0	100%	50%	75%	2	100%	10%	75.4%	58.7%	70.1%	1.3	7,414	4,503	5,880	4,981
798	WaterWasteWater	Water Supply & Wastewater treatment pumps and process efficiency	Industrial	Retro	19%	1	0.000	11	$0	100%	50%	75%	1	100%	10%	80.2%	38.6%	52.4%	0.9	0	0	0	0
810	Exterior Lighting	LED Streetlighting	StreetLight	Retro	45%	577	0.000	20	$506	100%	50%	75%	1	100%	80%	86.0%	86.0%	86.0%	0.6	0	0	0	0

CITY COUNCIL OF NEW ORLEANS

2021 DSM Market Potential Study

FINAL REPORT

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