Final Report

Assessment of Technical and Achievable Demand-Side Resource Potentials

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I. Introduction

This report presents the results of a comprehensive assessment of electric and gas demand-side resource potentials in Puget Sound Energy (PSE) service area. The study was commissioned by PSE in an effort to examine demand-side resources, including energy-efficiency, fuel conversion, and demand-response, that may be incorporated into PSE's 2006-2025, twenty-year Least Cost Plan (LCP). The principal goals of the study were as follows:

- Investigate the "technical" and "achievable" potentials for the complete range of demand-side resources, including energy-efficiency, electric-to-gas fuel conversion, and demand response strategies, taking into account the interactions among various resource options and resource acquisition scenarios.
- Update the results of the 2004-2023 energy efficiency potentials study using more recent market data in the residential, commercial, and industrial sectors in the Company's service area; extend the analysis to the 2006-2025 planning period.[1]
- Employ simple, flexible, and transparent approaches consistent with industry-standard methods consistent with those used by the Northwest Power and Energy Efficiency Council, relying on most recent technical and local market data.
- Create discrete "bundles" of demand-side resource potentials comprised of groups of homogeneous measures and provide supply curves for each bundle that would allow the demand-side resource options to be evaluated against supply options on an equal basis in PSE's least-cost, integrated resource planning process.

Studies such as this require compilation of large amounts of data from multiple sources on existing demand management strategies, technologies, and market dynamics that affect their adoption. They also rely on assumptions concerning the future, particularly changes in demand for energy codes and standards, energy-efficiency technologies,

market conditions, and consumer behavior. It is, therefore, inevitable that the findings of this study will have to be revisited periodically to take into account the impacts of emerging technologies and the changing dynamics of the energy markets.

Demand-Side Resource Definitions

The overall approach in this study distinguishes between two distinct, yet related, definitions of resource potential that are widely used in utility resource planning: 1) "technical potential" and 2) "achievable potential." Technical potential assumes that all demand-side resource opportunities may be captured regardless of their costs or market barriers. Achievable potential, on the other hand, represents that portion of technical potential that is likely to be available over the planning horizon given resource costs, prevailing market barriers and administrative program costs that may limit the implementation of demand-side measures. For the purpose of this study, "achievable" energy-efficiency and fuel conversion potentials are defined as that portion of technical savings potentials that can be acquired under prevailing barriers that prevent a full market penetration and at a levelized per-unit cost of less than 11.5 cents per kWh for electricity and less 1.05 dollars per therm for gas inclusive of program administration and delivery costs.

General Approach

The general methodology and analytic techniques in this study conform to standard practices and methods used in the utility industry. Given the scope and analytic requirements of this study, it was necessary to devise a methodology and the necessary tools that could effectively address the complexities of evaluating long-term potentials for each of the three demand-side management resource acquisition strategies, namely gas and electric energy-efficiency, electric-to-gas- fuel conversion, and demand response, while taking into account the interactions among them.

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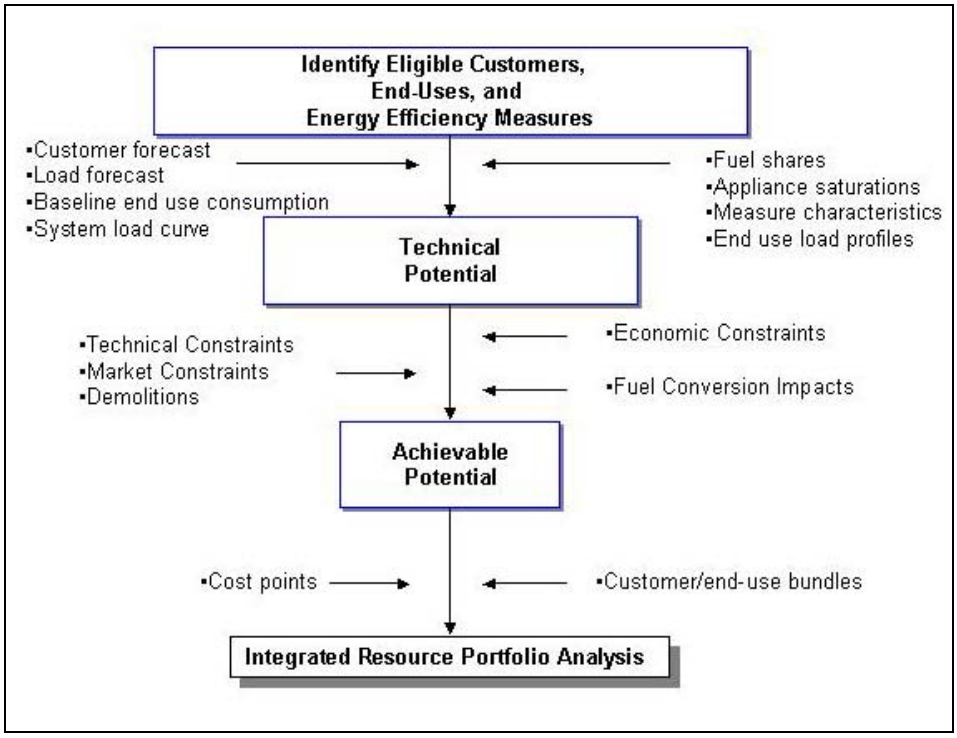
1 In 2003, PSE commissioned a study to investigate the "technical" and "achievable" electric and gas conservation potentials in its service area for the 2004-2023 planning horizon, as part of its 2003 least-cost planning process. The results of that study were filed with the Washington Utilities and Transportation Commission in the August 2003 update to PSE's Least Cost Plan, originally filed in April 2003 under Docket UE-030594.

The unique characteristics of specific demand-side resources notwithstanding, the general methodology in this study is best described as a combined "top-down/bottom-up" approach that begins with the current load forecast, decomposes it into its constituent customer class and end-use components, and examines the effect of the range of energy efficiency technologies and strategies on each end use, while taking into account fuel shares, current market saturations, technical feasibility, and economic viability. These unique impacts are then aggregated to produce energy efficiency potentials at the end-use, customer class, and system levels. This general methodology is diagrammatically presented in Figure I.1.

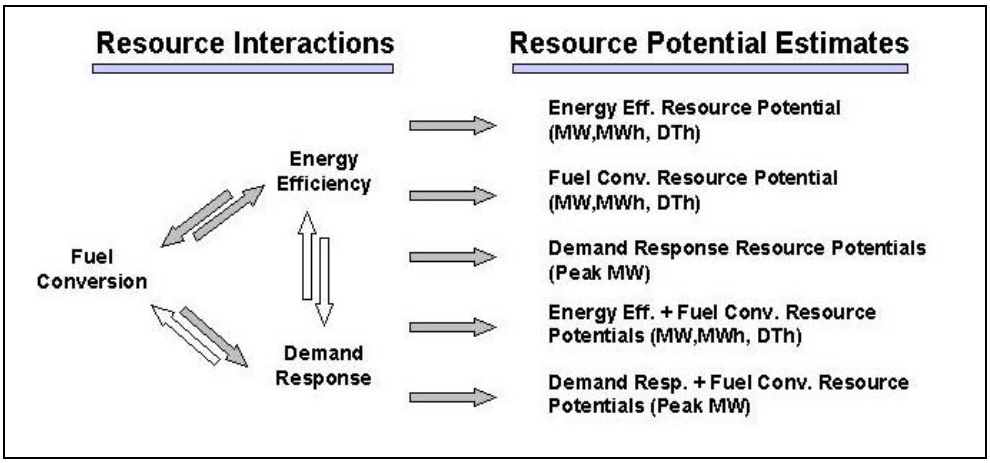
Figure I.1: General Methodology for Assessment of Demand-Side Resource Potentials



Technical interactions among the three demand-side resources, particularly energy-efficiency and fuel conversion and, to a lesser extent, energy-efficiency and demand-response, posed a further methodological challenge in this study. Due to their inherently unique characteristics and types of load impacts that they generate, analyses of energy-efficiency, fuel conversion, and demand response potentials necessarily require different methodologies and data. While capable of producing reliable estimates for each

demand-side resource individually, these methodologies must also have the capability to accurately account for interactions among these resources, particularly capturing the effects of fuel conversion on electric energy efficiency potentials.

Figure I.2: Demand-Side Resource Interactions



Organization of this Report

This document is organized in five parts. Part II describes the methodology, data sources, and results of electric and gas resource assessments. Part III is devoted to the analysis of fuel conversion potentials. Part IV presents development of the resource bundles and acquisition scenarios used in PSE's integrated resource portfolio analysis. The results of the analysis of demand-response potentials are presented in Part V. Data, assumptions, and other supporting material used in this study are presented in the Appendices A through D.

II. Energy-Efficiency Resource Potentials

Scope

The principle objective in the analysis of energy efficiency potentials was to obtain reasonable and reliable estimates of long-run opportunities for energy-efficiency opportunities throughout PSE's service area. Energy efficiency resource potentials for electricity and gas were analyzed for the residential, commercial, and industrial sectors. Six residential segments (existing and new construction single-family, multi-family, and manufactured homes) and 20 commercial segments (ten building types within the existing and new structure segments each) were considered.

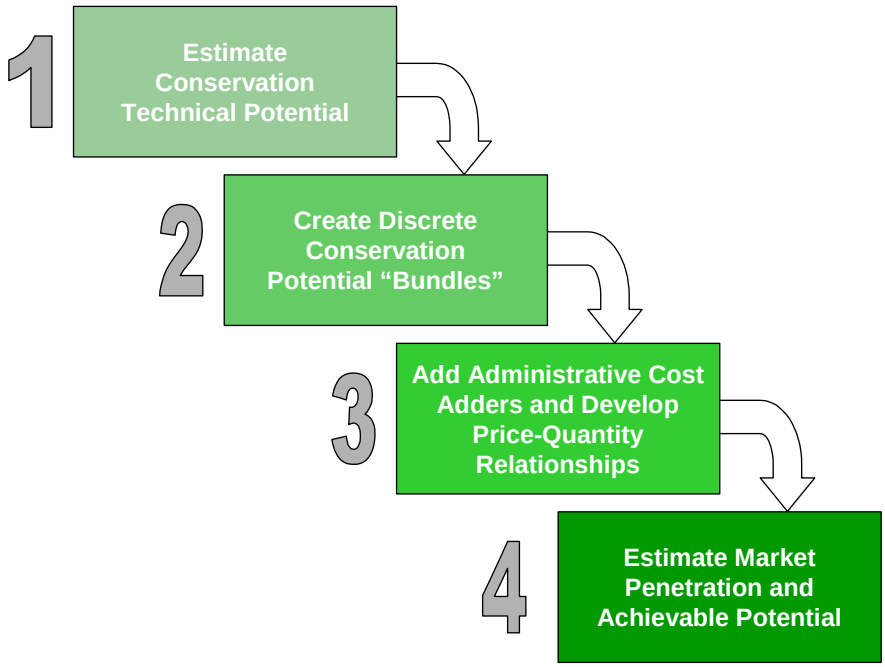
Methodology

As shown diagrammatically in Figure II.1, the general approach for derivation of energy efficiency resource potentials consisted of four sequential steps:

- Estimate technical energy efficiency potential
- Create discrete energy efficiency potential "bundles"
- Add administrative cost adders and develop price-quantity relationships
- Estimate market penetration and achievable potential

1) Estimate technical energy efficiency potential: Technical energy efficiency potentials were derived using either a "bottom-up" or a "top-down" approach. The bottom-up analysis, which was applied to the residential and commercial sectors, integrated measure-specific data (per-unit costs, absolute and relative savings, impacts by time period) with baseline building stock data (base- case fuel saturations, measure saturations, feasibility factors) and baseline energy-use data to produce estimates of levelized per-unit resource cost ($/kWh and $/therm) and total savings for each measure included in the analysis. This analysis was conducted using Quantec's ForecastPro® model, described later in this section.

Figure II.1: Methodological Approach



The top-down analysis, which was applied to the industrial sector, first disaggregates loads into end uses and industrial classification. It then applies the data on overall percentage savings at the industry/end-use level, as well as costs and measure life, to produce levelized costs and total savings.

The rate and timing of equipment replacement are important considerations in estimating energy efficiency potentials. In this study, technical energy efficiency potentials were analyzed under two scenarios depending on assumed timing of equipment replacement:

- Instantaneous technical potential (early equipment replacement) assumes savings from a total, instantaneous conversion to the most energy-efficient technologies and measures. All equipment is converted immediately in this hypothetical case regardless of the age of the equipment.
- Phase-in technical potential (normal equipment replacement) assumes savings from conversion to the most energy-efficient technologies and measures when equipment is replaced at the end of its useful life (or upon burnout). The distinction between early and normal replacement options has important implications for planning and timing of how energy efficiency resources are acquired over time, and is used in

developing the alternative energy efficiency acquisition scenarios. It is important to note, however, that in the long run, such as the 20-year plan developed by PSE, the two estimates converge.

2) Create discrete energy efficiency potential "bundles:" Measure-specific technical potentials were aggregated into unique cost-based resource "bundles" that are homogeneous with respect to customer sectors, markets segment, and end-use load shapes.[2]

Economic potential is typically viewed as a subset of technical potential, which includes only those measures that pass a certain cost threshold or economic criterion based on the utility's avoided generation costs. However, the notion of economic potential relates to resource planning efforts where energy efficiency resources are analyzed separately from supply side resources. PSE's integrated resource planning (IRP) effort obviates the need to apply such a screen. The price-quantity combinations in the bundles provide the information needed to dynamically evaluate energy efficiency resource economics within the IRP process.

3) Add administrative cost adders and develop price-quantity relationships: This step involved adjusting per/unit costs of each energy-efficiency measure reflecting program design, administration, and delivery costs. Measure-specific savings were then grouped in price-quantity combinations. The resulting "supply curves" provided discrete blocks of energy efficiency potential within each bundle. Consistent with past PSE program experience, a program administration and delivery cost adder was applied to each measure/bundle combination, resulting in minor shifts of the price-quantity relationships (supply curves) within the technical potential bundles.

4) Estimate market penetration and achievable potential: The last step in this approach consists of estimating market diffusion rates for each resource bundle taking into account potential market barriers based on data available from past program experiences with similar measures. These estimates are then applied to the price-

[2] The industrial sector has one bundle each for electric and gas savings due to the lack of data on specific load shapes for the wide variety industrial process loads.

quantity combinations to derive estimates of "achievable" potential for each resource bundle within PSE service area.

Expected market penetration rates, derived from industry literature, previous planning studies, and energy-efficiency program evaluations conducted by Quantec and PSE's previous programmatic experiences as recorded in the company's tracking system, were used to derive estimates of achievable potential. These estimates take into account the company's ability to ramp up programs and customers' willingness to adopt measures assuming incentives fully cover all incremental energy efficiency measure costs. Finally, since very high cost measures were unlikely to be selected by the IRP model, all measures with a per-unit cost of conserved energy in excess of 11.5 cents per kWh for electricity, and 1.05 dollars per therm for gas were excluded from further analysis.

Since the impacts of price-induced conservation and the impacts of previous energy-efficiency programs are implicitly captured in PSE's load forecast, no further adjustments were made to account for the effects of "naturally-occurring" energy efficiency in this study.

Residential and Commercial Sector Bottom-Up Approach

Measures Considered

In the residential and commercial sectors, energy efficiency resource potentials were derived based on an analysis of 127 *unique* electric measures and 62 *unique* gas measures. Since many of the energy efficiency measures are applied to multiple segments and building types, a total of 1,756 electric and 736 gas measure/structure combinations were included in the analysis. All major end uses in all 15 major industrial segments in PSE's service area, including wastewater treatment, were analyzed.

The Northwest Power and Conservation Council was the primary source for electric measures in the residential and commercial sectors. This list was augmented by additional measures from the California Energy Commission's Database on Energy Efficiency Resources (DEER). The list of gas measures in all sectors was compiled mainly from DEER. A complete list of measures and their sources are provided in Appendix A.

As a preliminary screening criterion, only measures that are commonly available, based on well understood technology, and applicable to the buildings and end-uses in PSE's area were included in the analysis. The residential and commercial segments and end uses considered in this study are shown in Tables II.1 and II.2, respectively.

Table II.1: Residential Dwelling Types and End Uses[3]

Segments	Electric End Uses	Gas End Uses
Single Family	Central AC	Cooking
Multifamily	Cooking	Drying
Manufactured	Drying	Space Heat
	Freezer	Water Heat
	Heat Pump	Other
	Lighting	
	Plug Loads	
	Refrigeration	
	Room AC	
	Space Heat	
	Water Heat	
	Other	

Table II.2: Commercial Building Types and End Uses[4]

Segments	Electric End Uses	Gas End Uses
Office	Cooking	Cooking
Dry Goods Retail	Cooling	Pool Heat
Restaurant	Space Heat	Space Heat
Grocery	Lighting	Water Heat
Warehouse	Plug Load	Other
School	Refrigeration	
University	Ventilation	
Hospital & Heath Care	Water Heat	
Hotel	Other	
Miscellaneous		

[3] Clothes washer and dishwasher measures are modeled within the water heat end use.

[4] The PSE model has further breakouts by type of lighting (e.g., 2 foot, 4-foot, 8-foot, outdoor) and cooling (e.g., chillers, packaged, heat pump) systems.

Data Modeling

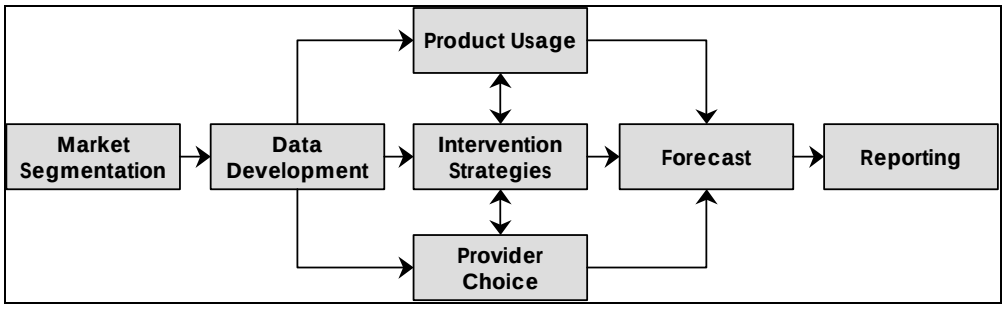
Concurrent assessment of energy-efficiency and fuel-conversion resource potentials poses significant analytic challenges. Due to their inherently unique characteristics and the types of load impacts that they generate, analyses of energy efficiency and fuel conversion necessarily require different methodologies and data. While capable of producing reliable estimates for each demand-side resource individually, these methodologies must also have the capability to accurately account for interactions among these resources, particularly capturing the effects of fuel conversion on gas and electric energy efficiency potentials.

Estimates of technical energy-efficiency and fuel conversion potential for the residential and commercial sectors were derived using Quantec's ForecastPro® model, a SAS-based proprietary electric and gas end-use forecasting and energy efficiency potentials assessment tool. The conceptual underpinnings and analytic procedures of this model are based on standard practices in the utility industry and are consistent with the methods used by the Northwest Power and Conservation Council in its assessment of regional electric conservation potentials.

For each customer class, application of the model involves three steps: 1) producing separate, end use-specific forecasts of loads over the 20-year planning horizon and calibrating the end-use forecasts to PSE's 20-year aggregate customer class forecasts to ensure consistency between the two, 2) producing a second forecast for each end use that incorporates saturations and energy impacts of all feasible energy-efficiency and fuel conversion measures, and 3) calculating technical potentials by end use and measure as the difference between the two forecasts.

Algorithms used in the model follow a standard bottom-up approach that is implemented through seven operating modules: Market Segmentation, Data Development, Product Usage, Provider Choice, Intervention Strategies, Forecasting, and Reporting (see Figure II.2).

Figure II.2: ForecastPro® Modules and Structure



Product Usage, Provider Choice, Intervention Strategies, and Forecast modules are the main analytic components of the Model. The Product Usage module tracks the unit energy consumption (UEC) by end use equipment, taking into account building type, fuel type, equipment vintage, and efficiency level. The Provider Choice module focuses on customers' choice of equipment as a nested function of fuel type and efficiency levels. The Intervention Strategies module captures the impacts of alternative energy efficiency strategies on the usage, market shares, and the resulting demand for energy by fuel type. Three general classes of impacts may be modeled:

- ***Equipment Efficiency***. These scenarios modify efficiency shares. The technical potential scenario assigns a 100% share to the most efficient equipment level for each end use, while the achievable potential scenario assigns less than a 100% share to the most efficient option.
- ***Usage Retrofit***. These scenarios reduce energy usage given the equipment customers already have (e.g., improve the efficiency of existing equipment by installing retrofit efficiency measures or through better O&M procedures).
- ***Fuel Conversion***. These scenarios modify the forecasted choices or market shares among fuel sources. Separate sets of assumptions are applied to existing and new construction buildings.[5]

Finally, the Forecast Module incorporates all the information compiled from the other modules – Usage, Choice, and Intervention Strategies – related to the overall economic

growth of the market segment and equipment lifetime (decay) functions to create final forecasts under alternative scenarios.

Application of ForecastPro®

Energy efficiency potentials in the residential and commercial sectors were estimated in four sequential steps described below.

1) Develop Base Case Forecast: The base case end-use forecast was calibrated to PSE's econometric energy sales forecasts and appliance and equipment saturations from commercial and residential surveys. This step provides an estimate of future energy consumption in the absence of new energy efficiency programs. It establishes a benchmark against which the impacts of the phase-in technical and achievable energy-efficiency potentials can be assessed. The effects of equipment standards and naturally occurring efficiency improvements, which emanate from the reduction of usage as low-efficiency equipment is retired, are also taken into account in the base case forcast.

2) Determine Measure Impacts: This step involved integrating measure-specific data (per-unit costs, savings, and measure life) with baseline building stock data (base-case fuel saturations, measure applicability factors, current measure saturations) and base case-calibrated energy usage data to produce estimates of levelized costs per unit of conserved energy.

3) Estimate Phased-In Technical Potential: Technical potential for energy efficiency was then estimated through the Intervention Strategies module, which effectively overrides the Base Case energy usage and market equipment efficiency shares. Alternative scenarios are incorporated directly into the relevant Product Usage and Provider Choice forecasts. Phased-in technical potentials were calculated by subtracting the energy forecast associated with the highest possible penetration of energy-efficiency measures from the base case forecast.

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[5] The Fuel Conversion scenarios for PSE's Residential electric sector are described in Section III of this report.

4) Estimate Achievable Potential and Create Resource Bundles: Achievable potentials were developed using the levelized cost thresholds and assumed market penetration rates. As with technical potential, alternative usage and choice forecast scenarios were developed, and the potential was calculated by subtracting this forecast from the base case forecast. The impacts are then aggregated into bundles and integrated into the LCP model for further resource screening and analysis.

Base Case Forecast Calibration

An accurate assessment of energy efficiency potential requires that base conditions closely approximate the historical sales and the load forecast. In this study calibration was achieved by reconciling end-use estimates to PSE's 2006-2025 sector-level, weather-normalized forecasts. In each market segment, end use energy consumption is calculated in each forecast year as:

$$EUSE_{ijf} = ACCTS_i \times UPA_i \times SAT_{ij} \times FSH_{ijf} \times ESH_{ijfe} \times EUI_{ijfe},$$

where,

$EUSE_{ijf}$ = total energy consumption for end use *j* in building type *i* using fuel *f*

$ACCTS_i$ = the number of accounts/customers in segment *i*

UPA_i = the units per account in segment *i* (average floorspace per account in commercial segments, number of dwellings in the residential sector)

SAT_{ij} = share of customers in segment *i* with by end use j

FSH_{ijf} = share of fuel *f* in end use *j* in segment *i*

ESH_{ijfe} = market share of the equipment with efficiency level *e* in the equipment segment *ijf*

EUI_{ijfe} = energy consumption per unit (Ft^2 floorspace for commercial, number of dwellings for residential) use by the equipment configuration *ijfe*

The formulation above is the basis for determining the effects of energy-efficiency measures at the end-use level and simply states that energy use for each end-use within customer and building type is a function of change in the above variables. Annual base case forecast is then derived as the sum of $EUSE_{ijf}$ across all segments and end uses. The total number of residential and commercial customers was obtained from PSE's

January 2005 sales and customer forecast. Net customer growth was calculated by adjusting new construction forecasts by expected demolition rates in existing structures.[6]

The share of residential customers across the single- family, multi-family, and manufactured segments were derived by applying their respective shares from PSE's 2004 Residential Appliance Saturation Survey (RASS) to the residential sector customer forecast totals. These shares are assumed to remain constant over the forecast horizon. Commercial building shares were derived from the 2002 Northwest Commercial Building Stock Assessment (CBSA), focusing on buildings in PSE's service area.[7] The RASS and CBSA data were also used to develop building-specific square footage profiles, equipment saturations, and fuel and efficiency shares.

The calibration process resulted in average adjustments of +0.1% for electricity and +8.9% for gas EUI's in the residential sector and +4.4% and –10.6%for electricity and gas, respectively, in the commercial sector.

Calculation of Retrofit and Replacement Measure Savings

The basic equation for estimating retrofit energy efficiency measure savings follows industry standards and is unchanged from PSE's 2003 Least Cost Plan:

$$SAVE_{ijfm} = EUI_{ijfe} \times PCTSAV_{ijfem} \times APPFACTOR_{ijfem} \times INCFACTOR_{ijfem} ,$$

where:

$SAVE_{ijfm}$ = annual energy savings for measure m for end-use j in building type i using fuel f

EUI_{ijfe} = calibrated annual end-use energy consumption for the equipment configuration ijfe

$PCTSAV_{ijfem}$ = is the percentage savings of measure m relative to the base usage for the equipment configuration ijfe, taking into account measure interactions such as lighting and HVAC

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6 Annual residential building demolitions are estimated at 0.8%, while commercial demolitions are estimated at 0.37%.

7 2002 Commercial Building Stock Assessment, Northwest Energy Efficiency Alliance report.

$APPFACTOR_{ijfem}$ = is the fraction of the floor space or households that is applicable to install measure m. For non-competing measures, which are primarily non-lighting, this estimate is generally close to 100%, with lesser amounts due to engineering limitations (for example, the share of buildings with enough room in the wall cavities to install additional insulation). For competing measures within an end use, such as various types of lighting retrofits, this factor is used to represent the share of the end use associated with the measure.

$INCFACTOR_{ijfem}$ = fraction of the applicable end-use, floorspace or households that has not yet been converted to measure m.

Measure Stacking and Interaction Effects

Stacking effects occur as a result of sequential ordering of *complementary* retrofit measures such as wall, ceiling, and floor insulation are applied to a single end use. Since measure savings are always calculated in terms of reductions in end use consumption, clearly, installation of one measure will reduce the savings potentials of subsequent measures. To incorporate stacking effects it is necessary to establish a rolling, reduced baseline as each new measure is added. This is shown in equations 3 through 5, where measures 1, 2, and 3 are applied to end use ijfe:

(1)

$$SAVE_{ijf\,1} = EUI_{ijfe} \times PCTSAV_{ijfe1} \times APPFACTOR_{ijfe1} \times INCFACTOR_{ijfe1}$$

(2)

$$SAVE_{ijf\,2} = (EUI_{ijfe} - SAVE_{ijf\,1}) \times PCTSAV_{ijfe2} \times APPFACTOR_{ijfe2} \times INCFACTOR_{ijfe2}$$

(3)

$$SAVE_{ijf\,3} = (EUI_{ijfe} - SAVE_{ijf\,1} - SAVE_{ijf\,2}) \times PCTSAV_{ijfe3} \times APPFACTOR_{ijfe3} \times INCFACTOR_{ijfe3}$$

A similar effect occurs when different measures compete for the same end use (e.g. retrofit and replacement opportunities). As with the stacking effect, if retrofit opportunities are captured first, replacement of existing equipment with high-efficiency equipment can be expected to have a smaller impact on EUI than it would have had the replacement

take place first. Clearly, the ordering of complementary measures and retrofit versus replacement decisions depend on practical considerations concerning energy-efficiency program design and implementation. For the purposes of this study, it was assumed that measures with the highest savings opportunities would be implemented first and retrofits will always precede equipment replacement.

Industrial Sector Top-Down Approach

Due to the more complex nature of the industrial market, end uses, and equipment on the one hand, and the lack of reliable information on measure-specific saturations on the other, energy efficiency potential in the industrial sector was analyzed using an alternative, top-down approach involving two steps. First, total firm industrial loads were disaggregated into standard SIC classes based on PSE's 2003 sales data. PSE's total industrial loads were further broken into major end uses within each class using data from the U.S. Department of Energy, Energy Information Administration.[8] Table II.3 shows the SICs and the electric and gas end uses considered in the analysis. Second, for each end use, we estimated potential savings and per-unit cost of the potential savings, relying on available data from a large number of industrial energy-efficiency programs in the Northwest and California, and market information on PSE's customers available from industrial accounts representatives.

[8] See Us Department of Energy, Energy Information Administration, Manufacturing Energy Consumption Survey.

Table II.3: Industrial Segments and End Uses

Segments	Electric End Uses	Gas End Uses
Food/kindred products	HVAC	HVAC
Lumber/wood products	Indirect boiler	Process boiler (upgrade/controls/ht recovery)
Paper/allied products	Lighting	Process boiler O&M
Printing/publishing	Motors (excluding compressed air O&M)	Process heat
Chemical/allied products	Motors compressed air O&M	Process other
Petroleum related	Electrochemical Process	Steam distribution systems
Rubber/plastics products	Process heat	Other
Stone/clay/glass/concrete products	Process other	
Primary metal industries	Refrigeration/process cooling	
Fabricated metal products	Other	
Machinery, except electrical		
Electric/electronic equipment		
Transportation equipment		
Instruments/related products		
Water and Wastewater		
Miscellaneous		

Measure Aggregation

Equal treatment of demand-side and supply options is a fundamental principle of integrated resource planning. Since individual energy-efficiency measures produce relatively small savings, they cannot compete effectively with large supply-side options. To create an even playing field, these measures must be combined into large-enough blocks that they are comparable in size to supply options. For the purposes of this analysis, all energy-efficiency measures were aggregated into six bundles with similar end-use and load shape characteristics Table II.4 shows the bundle assignments for the residential and commercial sectors. All industrial measures were assigned to a single bundle.

Table II.4: Residential and Commercial Bundles

Bundle	End-Uses	
	Electric	Gas
HVAC	Space Heat, Heat Pumps, Central and Room Air Conditioners	NA
Lighting	Lighting	NA
Water Heating	Water Heat	NA
Appliances & Plug Loads	Cooking, Drying, Freezer, Refrigerator, Plug Loads	NA
Space Heat	NA	Furnaces
Base Load	NA	Cooking, Drying, Water Heat

Each bundle is comprised of multiple price-quantity points. The price component of each bundle represents the levelized cost of conserved energy inclusive of incremental measure costs (material & installation), program administration and implementation costs, and quantifiable avoided non-energy O&M costs or savings. Electric and gas energy-efficiency measures were respectively aggregated into nine electric and eight gas cost categories shown in Tables II.5 and II.6.

Table II.5: Electric Price-Quantity Combinations

Block (Price-Quantity Combination)	Measure Levelized Cost Thresholds
Cost Level A	≤ $0.045/kWh
Cost Level B	$0.045 to $0.055/kWh
Cost Level C	$0.055 to $0.065/kWh
Cost Level D	$0.065 to $0.075/kWh
Cost Level E	$0.075 to $0.085/kWh
Cost Level F	$0.085 to $0.095/kWh
Cost Level G	$0.095 to $0.105/kWh
Cost Level H	$0.105 to $0.115/kWh
Cost Level I	> $0.115/kWh

Table II.6: Gas Price-Quantity Combinations

Block (Price-Quantity Combination)	**Measure Levelized Cost Thresholds**
Cost Level A	≤ $0.45/therm
Cost Level B	$0.45 to $0.55/therm
Cost Level C	$0.55 to $0.65/therm
Cost Level D	$0.65 to $0.75/therm
Cost Level E	$0.75 to $0.85/therm
Cost Level F	$0.85 to $0.95/therm
Cost Level G	$0.95 to $1.05/therm
Cost Level H	> $1.05/therm

Determination of Achievable Potentials

A variety of factors affect market penetration of energy-efficiency measures, including inherent market barriers resulting from the customers' tendency to avoid the potential administrative and financial burdens, program marketing strategies, and delivery mechanisms. This is why some energy-efficiency programs, even with full incremental cost incentives, can have a wide range of penetration rates, seldom achieving full market saturation. The available information suggests that, although incentive levels do play a significant role in determining program success, other, non-financial factors may play an equal, if not more important, role.

Estimates of market penetration in this study were based on the expectation of what full incremental cost rebates, consistent with a 10% administrative cost adder, are likely achieve on average. The penetration rates for electric and gas potential across end-use bundles are reported in Tables II.7 and II.8, respectively. All of the rates range from 30% to 60%, with the great majority set equal to 50% of technical potential.

Table II.7: Penetration Rates for Electric Bundles

Sector/Vintage	Appliances	HVAC	Lighting	Water Heat
Commercial				
Existing	50%	50%	50%	50%
New Construction	50%	50%	50%	50%
Residential				
Existing	60%	60%	30%	60%
New Construction	50%	50%	50%	50%
Industrial				
All	50%	50%	50%	50%

Table II.8: Penetration Rates for Gas Bundles

Sector/Vintage	Appliances	HVAC	Lighting	Water Heat
Commercial				
Existing	50%	50%	50%	50%
New Construction	50%	50%	50%	50%
Residential				
Existing	60%	60%	60%	60%
New Construction	50%	50%	50%	50%
Industrial				
All	50%	50%	50%	50%

Data Sources

The full assessment of energy efficiency resource potentials required compilation of a large database of measure-specific technical, economic, and market data from a large number of primary and secondary sources. The main sources of data used in this study included, but were not limited to, the following.

1. ***Puget Sound Energy*****:** Latest load forecasts, load shapes, economic assumptions, historical energy efficiency and load management program activities, 2004 residential appliance saturation survey (RASS) designed with a particular emphasis on obtaining market to support this study, and the Commercial Building Stock Assessment (CBSA) - a study of the Northwest's commercial building characteristics sponsored jointly by the Bonneville Power Administration, the Northwest Energy

Efficiency Alliance, and PSE. A complete list of data elements provided by PSE is shown in Table II.9.

Table II.9: PSE Data Sources

PSE Data Source	Key Variables	Use in This Study
2005 Load Forecasts: Gas and Electric; Commercial, Residential and Industrial	Energy and Peak Forecasts, Customer Counts, Employment and Population Forecasts	Base Case Calibration, Energy efficiency Potential Share of Forecast, Per Customer Use for Calibration, New Construction Forecast
Energy efficiency Tracking Database	Energy efficiency Measures Installed Between 1990 and 2004	Incomplete Factors
2004 Residential Energy Study (RASS)	Dwelling Characteristics, Equipment Saturations, and Fuel Shares	Dwelling Type Breakouts, Square Footage per Dwelling, Applicability Factors, Incomplete Factors, Forecast Calibration
2003 Commercial Building Stock Assessment (CBSA)	Building Characteristics, Equipment Saturations, and Fuel Shares	Building Type Breakouts, Square Footage per Dwelling, Applicability Factors, Incomplete Factors, Forecast Calibration
2003 Least Cost Plan	Equipment Usage, Measure Characteristics	Starting Values for Residential (UEC) and Commercial (EUI) End Use Consumption Estimates, Starting Values for Measure Characteristics (savings, cost, life)

2. ***Pacific Northwest Energy Studies*:** Several entities in Northwest provided data critical to this study, including the Northwest Power and Conservation Council (NWPCC), the Regional Technical Forum (RTF), the Northwest Energy Efficiency Alliance (the Alliance), and Tacoma Public Utilities (TPU). This information included technical information on measure savings, costs and lives, hourly end-use load shapes, and commercial building and energy characteristics. Details are provided in Table II.10.

Table II.10: Pacific Northwest Data Sources

Pacific Northwest Data Source	Key Variables	Use in This Study
NWPCC 2004 Power Plan	Measure Data, Energy efficiency Potential Estimates	Measure Savings, Costs and Lives, and Cross-Check of PSE Potential Estimates
NWPPP Hourly Electric Load Model (HELM)	Hourly Load Shapes	Hourly End-Use Load Shapes for Residential, Commercial, and Industrial Sectors
RTF Web Site	Measure Data	Measure Savings, Costs and Lives
TPU Hourly Electric Load Model (HELM)	Hourly Load Shapes	Hourly End-Use Load Shapes for the Residential Sector
Alliance 2004 Commercial buildings Stock Assessment (in progress)	Building Characteristics, Equipment Saturations, and Fuel Shares	Building Type Breakouts, Square Footage per Building, Applicability Factors, Incomplete Factors, Forecast Calibration
2002 Clean Electricity Options for the Pacific Northwest: An Assessment of Efficiency and Renewable Potentials through the Year 2020 (Tellus Institute report prepared for the NW Energy Coalition	Conservation Program Market Penetration Estimates	Energy efficiency Bundle Market Penetration Estimates

3. ***California Energy Commission*****:** This study relied heavily on information available through DEER. These data included information on energy-efficiency measure costs and savings, measure applicability factors, and technical feasibility factors. The list of gas measures in all sectors was compiled mainly from DEER.

4. ***Equipment Vendors:*** Cost data for various measures were compiled from the original sources and, where necessary, updated based on most recent information available from regional equipment suppliers.

5. ***Ancillary Sources:*** Other data sources consisted primarily of available information from past energy efficiency market studies, energy efficiency potential studies and evaluations of energy-efficiency programs in the Northwest and elsewhere in the country. The U.S. Department of Energy, Energy Information Administration Office of Industrial Technologies was a primary source for information on the industrial sector.

Summary of the Results

Based on the results of this study, cumulative 20-year technical energy efficiency potentials in PSE's service area are estimated at 895.5 aMW (average megaWatts) of electricity and 38,223,912 decatherms of natural gas savings, of which 297 aMW (33%) and 10,788,029 decatherms (28%) are expected to be achievable. Achievable savings represent 9.3% of the electric load and 8.6% of projected gas use over the 2006-2025, 20-year planning period.

As shown in Table II.11, the commercial sector accounts for the largest share of achievable electricity savings (147.6 aMW), followed by the residential sector (133.4 aMW) over 20 years. The industrial sector accounts for 15.9 aMW of electricity savings during the same period.

Table II.11: 2006 - 2025 Electric Technical and Achievable Potential

Sector	2025 Total Load (aMW)	20-Year Cumulative Potential (aMW/% of Baseline)	
		Technical	Achievable
Residential	1,450	375.8	133.4
		26%	9%
Commercial	1,578	503.7	147.6
		32%	9%
Industrial	158	15.9	15.9
		10%	10%
Total	***3,186***	***895.4***	***296.9***

The largest share of achievable natural gas potential is expected to be in the residential sector, which accounts for nearly 60% of total achievable natural gas savings. The commercial and industrial sectors respectively account for 37% and 3% of the achievable gas energy efficiency potential, respectively (see Table II.12).

The estimated amount of achievable electric energy efficiency potential in PSE service area is largely consistent with regional estimates provided in the Northwest Power and Conservation Council's 5th Northwest Regional Electric Power and Conservation Plan. Based on the Council's "medium-case" forecast, 2,797 aMW of achievable electric

energy efficiency potential is likely to be available regionally by the year 2025. The 297 aMW of achievable potential by PSE resulting from this assessment represents nearly 11% of the 2,797 aMW regional potential.

Table II.12: 2006 – 2025 Natural Gas Technical and Achievable Potential

Sector	2025 Total Gas Sales (dth)	20-Year Cumulative Potential (dth as % of Baseline)	
		Technical	**Achievable**
Residential	75,278,759	27,738,747	6,334,280
		36.8%	*8.4%*
Commercial	42,637,285	10,170,241	3,864,537
		23.9%	*9.1%*
Industrial	4,028,666	314,924	314,924
		7.8%	*7.8%*
Total	***121,944,710***	***38,223,912***	***10,513,741***

This relatively small variance may be the result of a number of factors including, among others, differences in customer mix, fuel saturation and levels of past conservation activity, and market conditions that affect customers' acceptance of energy efficiency measures. It also stems from the Council's use of a 4% discount rate in its economic screening of energy efficiency measures, which is lower than the 7.5% discount rate used in this study. Since the levelized, per-unit cost of conserved energy is a major criterion for defining "achievable" potential, use of the higher discount rate reduces long-term achievable energy savings by increasing the per unit cost of some technical potential above the $0.115 per kWh achievable potential threshold used in this assessment. This effect is also evidenced by the fact that PSE's estimates of technical energy efficiency potential relative to its load are indeed higher than those of the Council.

Residential Sector

Technical electric energy efficiency potentials in the residential sector are estimated at 376 aMW over the 2006-2025 planning horizon, 133.4 aMW (36%) of which is expected to be achievable (see Table II.13). Technical and achievable electric energy efficiency potentials in the residential sector represent nearly 26% and 9.2% of the residential load

forecast in 2025. Nearly 60% of all achievable electric energy efficiency potentials fall in the low-cost category of less than 4.5 cents per kWh. As shown in Figure II.3, savings in lighting, achieved mainly through installation of energy-efficient lighting technologies such as compact fluorescent light bulbs and fixtures, represent the largest electric energy efficiency potential in the residential sector, accounting for 42% of the sector's achievable savings. The results also show that about 24% of achievable savings in the residential sector may be obtained through installation of measures to improve space-heating performance such as insulation, weatherization, and equipment replacement. The remaining savings can be achieved through the implementation of water-heating measures such as water heating equipment upgrade (20%), installation of ENERGY STAR®-rated appliances (13%), and cooling measures (1%). The largest portion (68%) of electric energy-efficiency potentials are in single-family dwellings (Figure II.4).

Table II.13: Distributions of Residential Sector Electric Energy Efficiency Potentials by Cost Category

Cost Category ($/kWh)	Technical Potential		Achievable Potential	
	2025 aMW	%	2025 aMW	%
Categories				
A: less than $0.045	182.2	48%	79.0	59%
B: $0.045 to $0.055	1.4	0%	0.8	1%
C: $0.055 to $0.065	8.7	2%	4.5	3%
D: $0.065 to $0.075	21.4	6%	8.8	7%
E: $0.075 to $0.085	14.9	4%	7.7	6%
F: $0.085 to $0.095	20.9	6%	12.2	9%
G: $0.095 to $0.105	31.5	8%	15.7	12%
H: $0.105 to $0.115	10.3	3%	4.7	4%
I: $0.115 and higher	84.5	22%		
Total	*375.8*		*133.4*	
Econometric Forecast 2025	**1450.2**		**1450.2**	
Percent of Baseline	**25.9%**		**9.2%**	

Figure II.3: Distribution of Residential Sector Achievable Electric Energy Efficiency Potential by End-Use

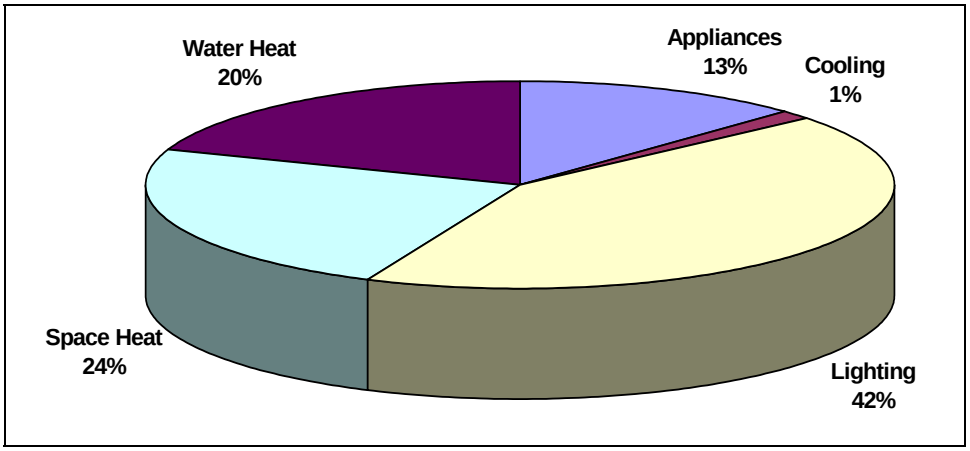
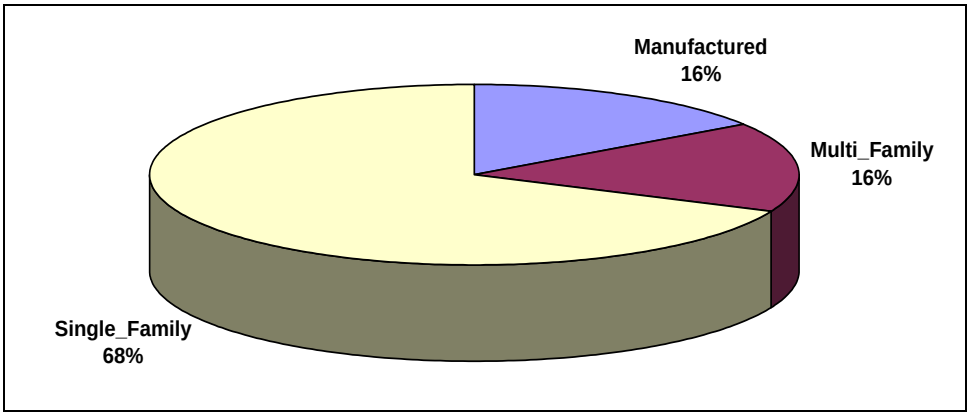


Figure II.4: Figure Distribution of Achievable Electric Energy Efficiency Potential by Dwelling Type Residential Sector



Gas energy-efficiency potentials in the residential sector are estimated at 27.7 million decatherms, 6.3 million decatherms (23%) of which is expected to be achievable. Approximately 22% (1.4 million decatherms) of the achievable potential can be achieved at an average cost of 45 cents per decatherm or less (Table II.14). As shown in Figure II.6, expected savings in space heating is the largest component of the achievable gas energy efficiency potential in the residential sector and account for nearly 69% of the gas savings potential. Upgrade of heating equipment with alternative, more energy-efficient equipment provides the main source for the potential savings. The results also show that installation of more efficient water heaters and application of

measures that improve performance of existing water heating equipment (e.g., insulation and, to a lesser degree, water-saving measures and home weatherization) together account for more than 31% of the gas energy efficiency potential in the residential sector (Figure II.5).

Single-family dwellings account for the largest share (62%) of gas energy-efficiency potentials in the residential sector. Multi-family dwellings account for 33% of the remaining gas energy-efficiency potential in this sector (Figure II.6).

Table II.14: Distribution of Residential Sector Technical and Achievable Gas Energy Efficiency Potential by Cost Category

Cost Category ($/therm)	Technical Potential		Achievable Potential	
	2025 Decatherms	%	2025 Decatherms	%
Categories				
A: less than $0.45	2,158,495	8%	1,366,457	22%
B: $0.45 to $0.55	6,254	0%	4,125	0%
C: $0.55 to $0.65	1,324,505	5%	797,666	13%
D: $0.65 to $0.75	2,053,946	7%	1,240,053	20%
E: $0.75 to $0.85	311,278	1%	289,316	5%
F: $0.85 to $0.95	966,054	3%	1,615,936	26%
G: $0.95 to $1.05	253,500	1%	1,020,726	16%
H: $1.05 and higher	20,664,714	74%		
Total	*27,738,747*		*6,334,280*	
Econometric Forecast 2025	**75,278,759**		**75,278,759**	
Percent of Baseline	**36.8%**		**8.4%**	

Figure II.5: Distribution of Residential Sector Achievable Natural Gas Energy Efficiency Potential by End-Use

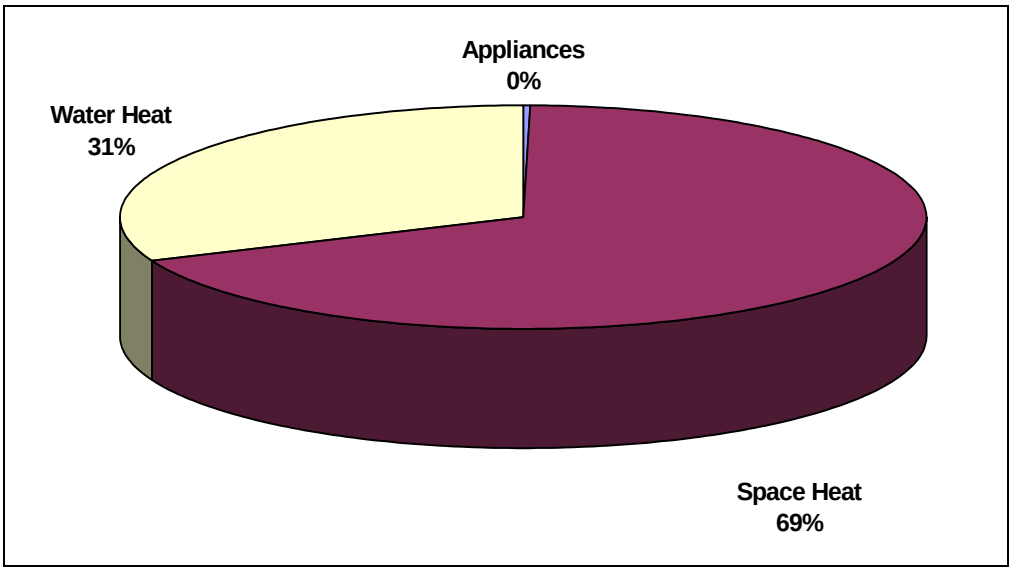
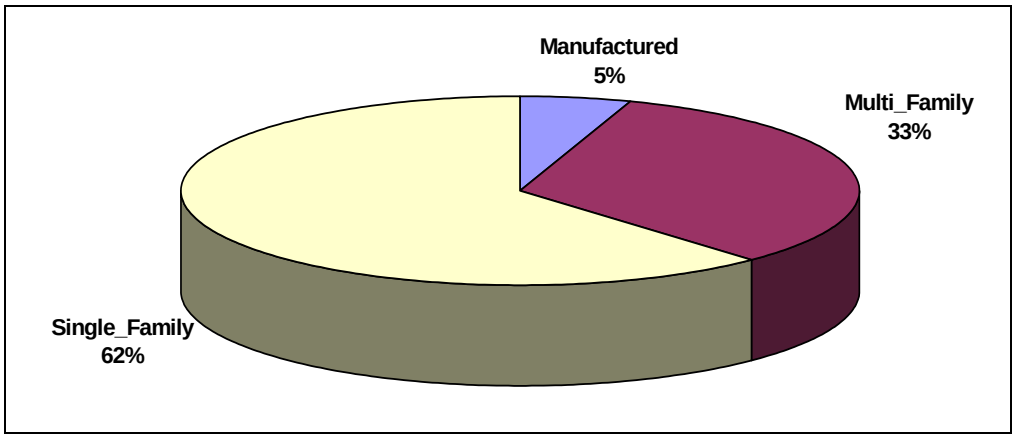


Figure II.6: Distribution of Residential Sector Achievable Natural Gas Energy efficiency Potential by Facility Type



Commercial Sector

Total electric energy efficiency potential in the commercial sector is estimated at nearly 504 aMW, nearly 148 aMW of which (29%) are expected to be achievable. About 54% of the achievable electric energy efficiency potential in the commercial sector falls in the low cost category of less than 4.5 cents per kWh (Table II.15). As can be seen in Figure

II.7, lighting retrofit represents the largest potential for electricity savings. Nearly 45% of potential electricity savings in the commercial sector are attributable to the application of energy-efficient lighting. Retrofit, upgrade, and better operation and maintenance of HVAC equipment are also shown to be effective energy efficiency measures, which account for more than 38% of the total electricity savings potential in this sector. High-efficiency office and cooking equipment (plug loads) account for 14% of the savings potential, while water heating measures account for 3% of total commercial-sector electricity savings (Figure II.7).

Office buildings account for nearly one-third of achievable electric energy-efficiency potentials in the commercial sector. Retail establishments and educational facilities represent the second and third largest shares of electric energy-efficiency opportunities in the commercial sector (Figure II.8).

Table II.15: Distribution of Commercial Sector Technical and Achievable Electric Energy Efficiency Potential by Cost Category

Cost Category ($/kWh)	Technical Potential		Achievable Potential	
	2025 aMW	%	2025 aMW	%
Categories				
A: less than $0.045	147.9	29%	80.1	54%
B: $0.045 to $0.055	19.2	4%	9.7	7%
C: $0.055 to $0.065	49.9	10%	24.2	16%
D: $0.065 to $0.075	13.2	3%	6.8	5%
E: $0.075 to $0.085	13.0	3%	6.8	5%
F: $0.085 to $0.095	13.0	3%	6.6	4%
G: $0.095 to $0.105	13.8	3%	7.0	5%
H: $0.105 to $0.115	12.5	2%	6.5	4%
I: $0.115 and higher	221.2	44%		
Total	*503.7*		*147.6*	
Econometric Forecast 2025	**1578.1**		**1578.1**	
Percent of Baseline	**31.9%**		**9.4%**	

Figure II.7: Distribution of Commercial Sector Achievable Electric Energy Efficiency Potential by End-Use

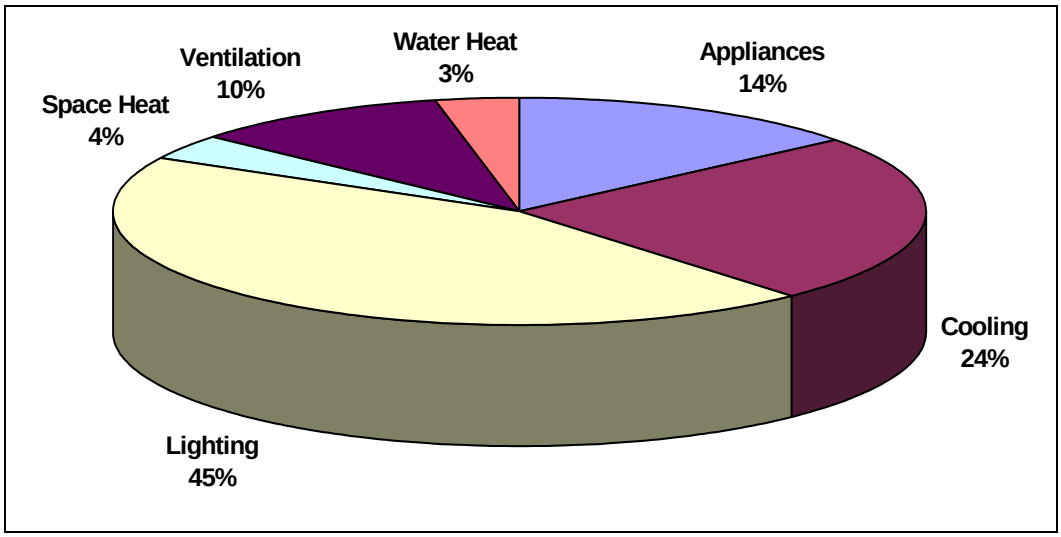
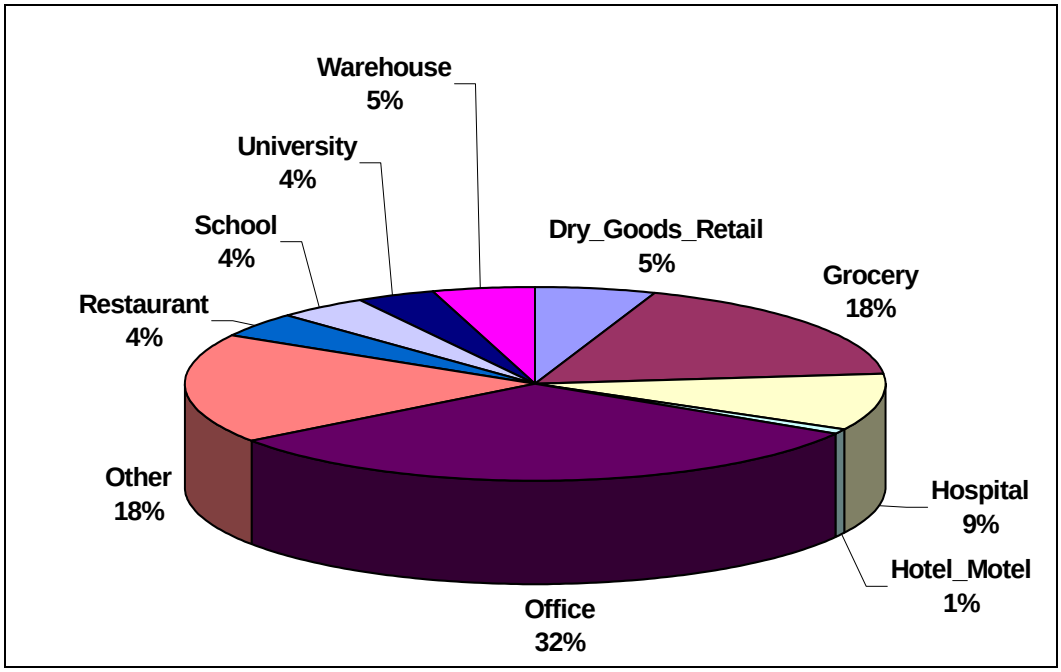


Figure II.8: Distribution of Commercial Sector Achievable Electric Energy Efficiency Potential by Facility Type



The results of this study show that there are large opportunities in the commercial sector for gas conservation. Technical gas energy efficiency potentials in the commercial sector

are estimated at more than 10 million decatherms, with achievable opportunities of nearly 3.9 million decatherms, representing more than 9% of total load in 2025. Approximately 70% of this potential can be expected to be achievable at a cost of less than $0.55 per therm (Table II.16).

As Figure II.9 illustrates, space heating, water heating, and appliance energy efficiency measures provide the largest potentials for gas savings in the commercial sector. These measures respectively represent 52% (space heating), 37% (water heating), and 10% (appliances – primarily cooking) of the total achievable gas energy efficiency potential in the commercial sector. Pool heating energy efficiency measures accounts for a small share of the total gas savings potential in this sector. Office buildings, hospitals, and institutional facilities together account for nearly 45% of the commercial sector gas energy-efficiency potentials. A large portion of this opportunity is found in the general, unclassified segment of the commercial sector (Figure II.10).

Table II.16: Distribution of Commercial Sector Technical and Achievable Gas Energy Efficiency Potentials by Cost Category

Cost Category ($/therm)	Technical Potential		Achievable Potential	
	2025 dth	%	2025 dth	%
Categories				
A: less than $0.45	3,850,791	38%	2,006,699	52%
B: $0.45 to $0.55	2,385,109	23%	1,072,278	28%
C: $0.55 to $0.65	759,667	7%	376,642	10%
D: $0.65 to $0.75	517,424	5%	245,922	6%
E: $0.75 to $0.85	97,981	1%	52,415	1%
F: $0.85 to $0.95	110,312	1%	57,267	1%
G: $0.95 to $1.05	109,673	1%	53,314	1%
H: $1.05 and higher	2,339,285	23%		
Total	*10,170,241*		*3,864,537*	
Econometric Forecast 2025	42,637,285		42,637,285	
Percent of Baseline	23.9%		9.1%	

Figure II.9: Distribution of Commercial Sector Achievable Gas Energy Efficiency Potential by End-Use

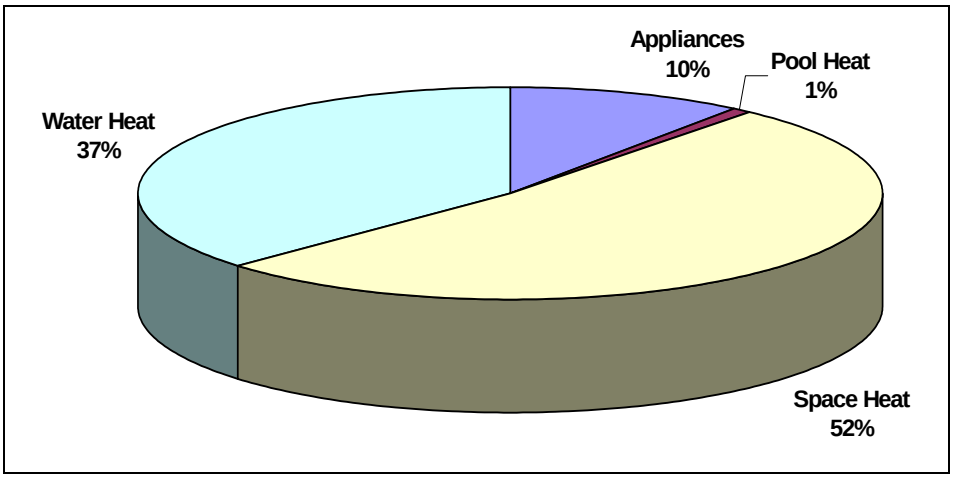
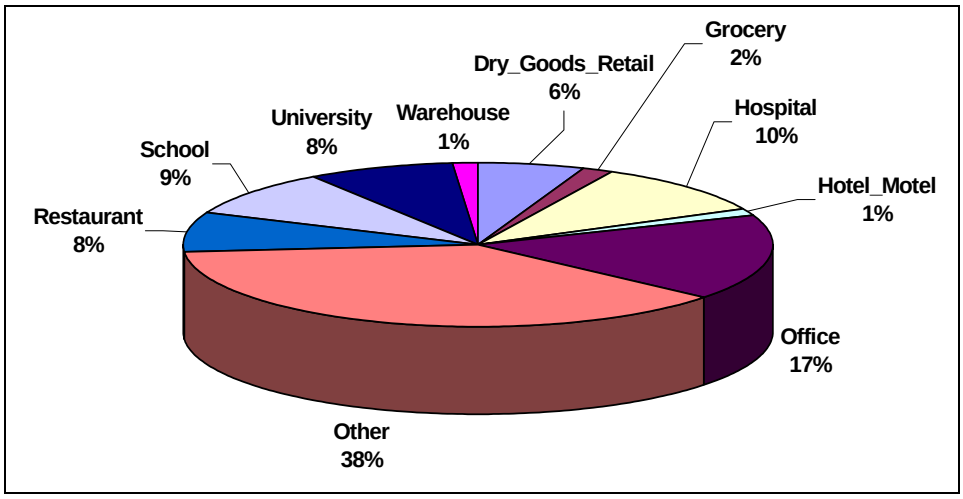


Figure II.10: Distribution of Commercial Sector Achievable Gas Energy Efficiency Potential by Facility Type



Industrial Sector

Technical and achievable electric and gas energy-efficiency potentials were estimated for all major end uses and within fourteen major industrial sectors and wastewater treatment in PSE's service territory. Achievable electric energy-efficiency potentials in the industrial sector are estimated at 2.2 million MWh or an equivalence of 15.9 aMW, representing approximately 10% of the total industrial load in 2025, an average cost of

2.2 cents per kWh (see Table II.17). As shown in Figure II.11, 48% of this potential is attributable to efficiency gains in motor upgrades. Facility improvements, primarily HVAC and lighting retrofits, account for nearly 25% of the potential. Energy efficiency improvements in refrigeration and process cooling account for an additional 7% of the potential.

Table II.17: Distribution of Industrial Sector Electric Energy-Efficiency Potentials by End Use

Electric Market Segments	2025 Cumulative Savings (MWh)	2025 Cumulative Savings (aMW)	Levelized CCE* ($/kWh)
Uncoded/Miscoded/Invalid			
HVAC	237,233	1.8	0.051
Indirect Boiler			
Lighting	150,139	1.7	0.036
Other - Not Reported			
Process Electro Chemical			
Process Heat			
Process Other			
Motors	1,475,765	9.8	0.014
Motors	1,449,312	8.3	0.015
Compressed Air O&M	26,453	1.5	0.017
Refrigeration/Process Cooling	176,377	1.3	0.017
Wastewater Treatment	170,430	1.24	0.042
Total	***2,209,944***	***15.9***	***0.022***

* Cost of Conserved Energy is levelized cost of efficiency measure cost, not including program administration costs.

Long-term achievable gas energy-efficiency potentials are estimated at 315,000 decatherms (Tables II. 18). As shown in Figure II.12, boilers and process heating represent the largest portions of gas energy-efficiency potentials in the industrial sector, each accounting for 39% of the estimated achievable potential. HVAC upgrades account for an additional 14% gain in gat energy-efficiency potential. At average levelized per-unit costs of 2.2 cents per kWh and slightly over 20 cents per therm, all industrial energy efficiency measures considered in this assessment fall in low-cost resource categories. Estimates of achievable electric and gas energy-efficiency potentials by industrial classification are shown in Tables II.19 and II.20 respectively.

Table II.18: Industrial Gas Energy Efficiency Potential by End-Use

Gas End Use	2025 Cumulative Savings (therms)	Levelized CCE* ($/therms)
Uncoded/Miscoded/Invalid		
HVAC	674,546	0.621
Process Boiler:	4,000,372	
Boiler (Upgrade/Controls/Heat Recovery)	1,112,789	0.172
Boiler O&M	244,711	0.101
Steam Distribution Systems	2,642,873	0.127
Other - Not Reported	- - -	
Process Heat	- - -	
Process Other	- - -	
Total	4,674,918	***0.201***

* Cost of Conserved Energy is levelized cost of efficiency measure cost, not including program administration costs.

Figure II.11: Industrial Electric Energy Efficiency Potential by End-Use

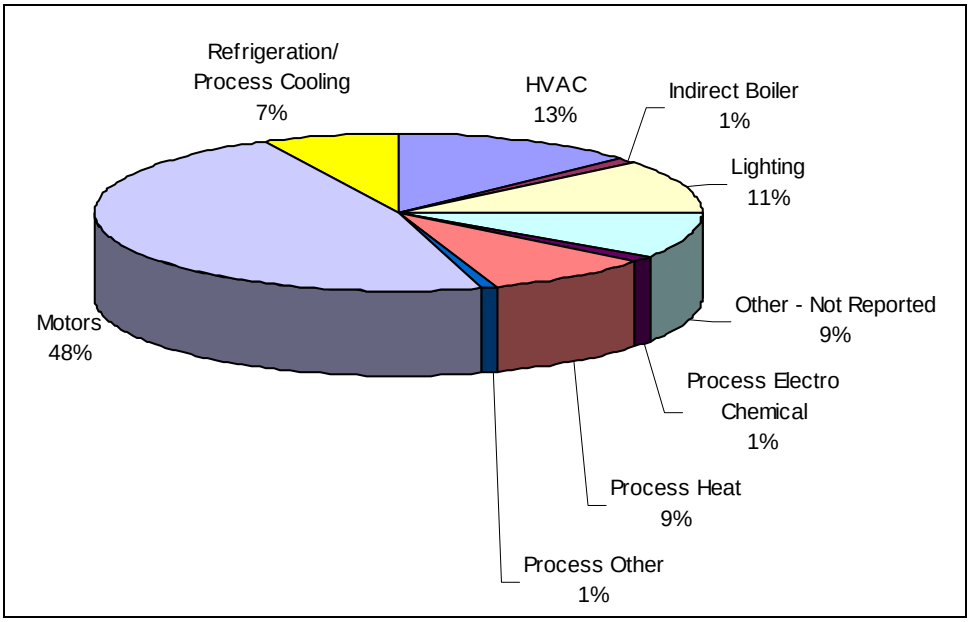


Figure II.12: Industrial Gas Energy Efficiency Potential by End-Use

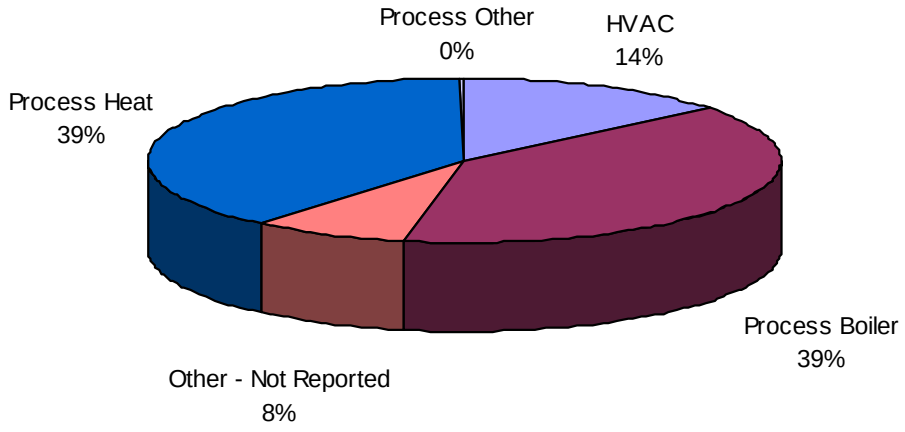


Table II.19: Industrial Electric Energy Efficiency Potential by SIC

Electric Market Segments		2025 Cumulative Savings (MWh)	2025 Cumulative Savings (aMW)	Levelized CCE* ($/kWh)
Uncoded/Miscoded/Invalid				
20	Food/Kindred Products	636,742	4.2	0.017
24	Lumber/Wood Products	272,045	1.7	0.016
26	Paper/Allied Products	118,669	0.7	0.017
27	Printing/Publishing	38,993	0.3	0.033
28	Chemical/Allied Products	284,393	1.9	0.015
29	Petroleum Related	39,247	0.2	0.015
30	Rubber/Misc. Plastics Products	82,204	0.6	0.020
32	Stone/Clay/Glass/Concrete Prod.	78,859	0.6	0.016
33	Primary Metal Industries	5,271	0.0	0.016
34	Fabricated Metal Products	89,520	0.9	0.025
35	Machinery, except Electrical	104,565	0.8	0.027
36	Electric/Electronic Equip.	97,151	0.8	0.028
37	Transportation Equipment	110,039	1.0	0.032
38	Instruments/Related Products	53,876	0.5	0.035
1629	Wastewater Treatment	170,430	0.3	0.042
39	Miscellaneous	27,940	1.2	0.044
Total		***2,209,944***	***15.9***	***0.022***

* Cost of Conserved Energy (CCE) is levelized cost of efficiency measure cost, not including program administration costs.

Table II.20: Industrial Gas Energy Efficiency Potential by SIC

Gas Market Segments		2025 Cumulative Savings (Decatherms)	Levelized CCE* ($/therms)
Uncoded/Miscoded/Invalid			
20	Food/Kindred Products	2,283,233	0.150
24	Lumber/Wood Products	218,111	0.170
26	Paper/Allied Products	24,428	0.140
27	Printing/Publishing	76,670	0.279
28	Chemical/Allied Products	343,522	0.141
29	Petroleum Related	41,413	0.134
30	Rubber/Misc. Plastics Products	68,109	0.225
32	Stone/Clay/Glass/Concrete Prod.	112,075	0.283
33	Primary Metal Industries	45,227	0.233
34	Fabricated Metal Products	476,068	0.296
35	Machinery, except Electrical	112,086	0.621
36	Electric/Electronic Equip.	117,071	0.234
37	Transportation Equipment	367,576	0.227
38	Instruments/Related Products	90,261	0.236
39	Miscellaneous	299,071	0.279
Total		***4,674,918***	***0.201***

* Cost of Conserved Energy (CCE) is levelized cost of efficiency measure cost, not including program administration costs.

Resource Acquisition Timing

Timing is an important element in developing strategies to acquire energy-efficiency resources. Consistent with the definitions established by the Northwest Power and Conservation Council, PSE distinguishes between “lost opportunities” and “retrofits” in considering energy-efficiency potentials. Lost opportunities such as energy-efficiency potentials in new construction and upgrades to equipment upon their natural replacement tend to be timing-dependent and must be captured as they become available. Retrofits, on the other, are assumed to remain available over time.

The results of this assessment, as shown in Figure II.13, indicate that more than two-thirds (68%) of electric energy efficiency potentials in the residential sector are comprised of retrofit opportunities, while lost opportunities account for a grater portion of electric energy efficiency potentials in the commercial sector (57% compared to 43%). With respect to natural gas energy efficiency, potentials, however, lost opportunities are

larger in both residential and commercial sectors (see Figure II.14). All of the estimated electric and gas energy efficiency potentials in the industrial sector are shown to result from retrofits.

Figure II.13: Electric Energy Efficiency Potentials: Aretrofit vs. Lost Opportunities

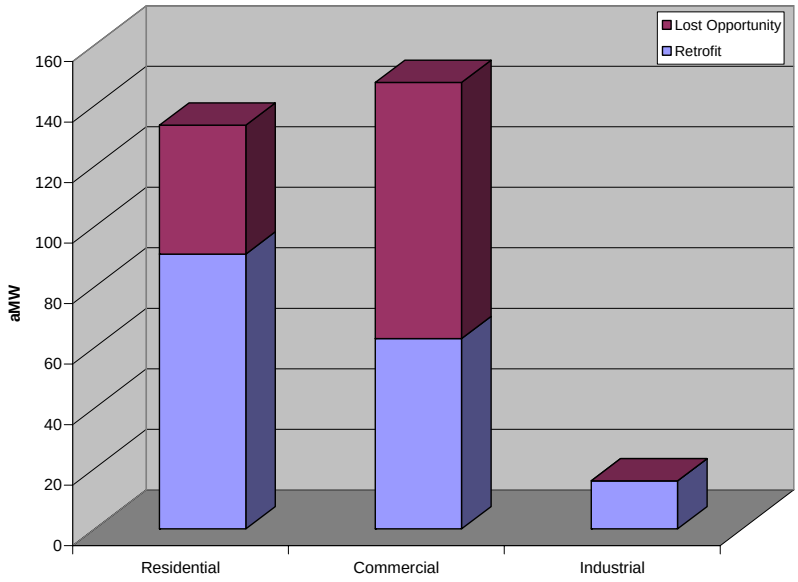
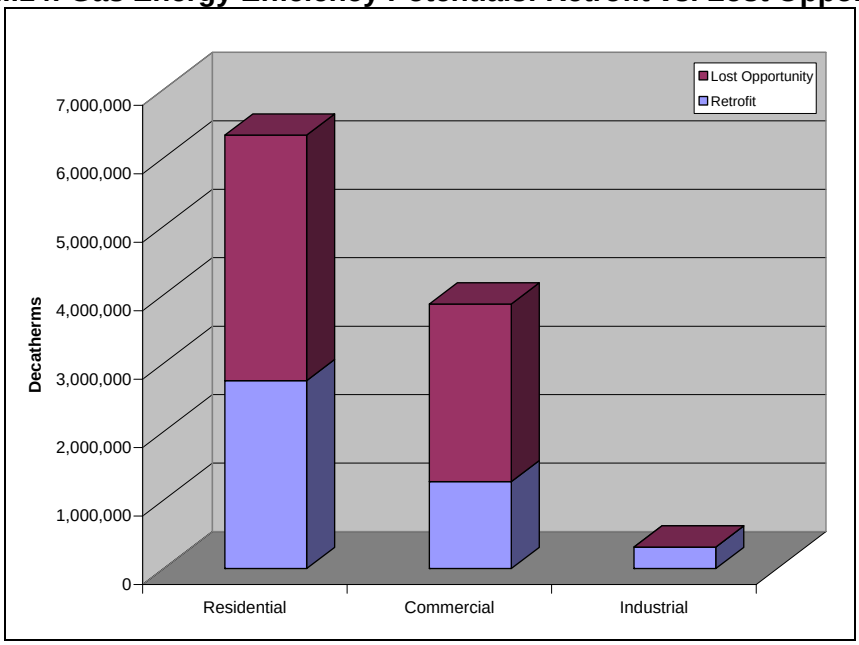


Figure II.14: Gas Energy Efficiency Potentials: Retrofit vs. Lost Opportunities



Estimates of achievable electric energy efficiency potentials from this study are slightly lower than those reported in the 2003 LCP report. A comparison of the results of the two studies shows a decline in electric energy efficiency potentials in the residential and commercial sectors and a slight increase in the industrial sector. In aggregate, achievable electric energy efficiency potential decreased by approximately 9.5% (from 328 aMW to 297 aMW). This difference is explained by several intervening factors including the effects of PSE's demand-side management activities in 2004, refinements to measure data, changes in assumptions regarding saturation of energy-efficient technologies, and, particularly, changes in load forecasts. Gas energy efficiency potentials were nearly unchanged, declining modestly from 10.8 million decatherms in 2003 to 10.6 million decatherms in 2005.

III. Fuel Conversion Resource Potentials

Scope

Potentials for fuel conversion were made only for the population of residential customers in PSE's combined electric and gas service area as electric energy efficiency resource. Additional fuel conversion potential, as an electric resource alternative, may be available from PSE electric customers in areas served by other gas utilities. However, lack of data on the capability to serve additional loads, coverage of existing gas distribution systems, and line extension plans of other gas utilities precludes quantifying this additional potential.

Four end uses (space heating, water heating, cooking, and clothes drying) were examined. For each, conversion potentials were estimated under both "normal" and "early" equipment replacement scenarios. Under the normal replacement scenario, it is assumed that conversions would occur at a naturally occurring pace upon failing of existing equipment. The early replacement scenario assumes a more aggressive approach where conversions are made during the first ten years of the planning horizon regardless of age and condition of existing equipment.

Methodology

Fuel conversion resources augment electric energy-efficiency potentials in reducing total electric loads. At the same time, fuel conversion precludes realizing the full electric energy efficiency potentials of affected electric end uses because the substitution of gas appliances for electric replaces the some opportunities to install electric efficiency measures. Fuel conversion also results in increased consumption of natural gas, which, in turn, diminishes the savings from for gas energy efficiency. Due to this interdependency, analyses of electric energy efficiency and fuel conversion potentials must be performed simultaneously, explicitly taking account interactions between the two resource options.

Fuel conversion potentials were, therefore, assessed in conjunction with electric and gas energy efficiency potentials in the context of the ForecastPro® model. The basis equation for assessment of fuel conversion was the same as that of energy-efficiency and began with the same general equation for estimating the base case end-use forecast that is:

$$EUSE_{ijf} = ACCTS_i \times UPA_i \times SAT_{ij} \times FSH_{ijf} \times ESH_{ijfe} \times EUI_{ijfe},$$

The only exception is that in this case, equipment market shares (ESH_{ijfe}) were adjusted to represent electric equipment subject to conversion.

Fuel conversion savings potentials were estimated using the same bottom-up approach and the same data sources as for energy efficiency (see Section II). The assessment followed a four-step process, similar to the procedure used in estimating energy-efficiency potentials and was as follows.

1.) Develop Base Case Forecast. The analysis began with the same base case forecast, representing the starting fuel shares for existing and new construction for space heating, water heating, and appliances.

2.) Determine Measure Impacts. Analysis of fuel conversion began with compiling a list of potential measures and establishing baseline displacements of electric consumption for each measure. This list was then screened for measures that seemed most applicable to PSE's residential customer base according to the results of the residential appliance saturation survey. Four end uses were selected for inclusion in the final analysis:

- Electric furnace to gas furnace
- Electric water heat to gas water heat
- Electric range to gas range
- Electric dryer to gas dryer

Both standard and high efficiency gas appliances were considered in developing the resulting increases in gas consumption. A complete list of measures and applicable assumptions for each are shown in Table III.1.

Table III.1: List of Fuel Conversion Measures

End Use	Gas Measure	Electric Baseline
Space Heating	Standard Furnace, 80 AFUE, 60 kBtu	Electric Furnace
Base use = 8895 kWh/yr	Condensing Furnace, 92 AFUE w/ VSD	Electric Furnace
Seattle, Zone 1	Condensing Furnace, 96 AFUE w/ VSD	Electric Furnace
(NWPCC-1998, Part 2, p.G-76)		
Water Heating	Storage Water Heater, 50 gal., EF=.59	Electric Water Heater, 50 gal.
Base use = 3800 kWh/yr	Storage Water Heater, 50 gal., EF=.63	Electric Water Heater, 50 gal.
(NWPCC-1998, Part 2, p.G-76)	Storage Water Heater, 50 gal., EF=.70	Electric Water Heater, 50 gal.
Appliances	Gas Dryer	Electric Dryer
	Gas Dryer w/ Moisture Sens.	Electric Dryer
	Standard Gas Range, Free-Standing, 30"	Electric Range, 30"
	Convection Gas Range, Free-Standing, 30"	Electric Range, 30"

3.) Estimate Phase-In Technical Potential. Technical potentials for fuel conversion were estimated through the Intervention Strategies Module in ForecastPro®, by overriding the base case fuel shares with 100% gas shares in applicable homes. The phase-in technical potential was calculated by subtracting the energy forecast associated with the highest possible penetration of gas fuel shares from the base case forecast.

4.) Create Bundles and Estimate Achievable Potential. Achievable potential applies market penetration rates of 50% for all applicable end-uses of eligible customers. Again, the potential was calculated by subtracting this forecast from the base case forecast. The impacts were then aggregated into bundles for screening and integration in PSE's IRP process.

Acquisition of fuel conversion potentials were analyzed under two alternative scenarios for timing of equipment replacements:

- ***Normal Replacement***, which assumes that fuel conversions take place only upon natural retirement or failure of the existing equipment.

- ***Early Replacement***, which assumes that achievable fuel conversions are accelerated through early replacement over the first ten years of the planning horizon regardless of the age and condition of existing equipment.

The effects of fuel conversion on gas consumption were also analyzed under two scenarios concerning the efficiency of gas equipment: 1) minimum standard gas efficiency appliances and 2) high-efficiency gas appliances. Each of these scenarios was then assessed in conjunction with two (normal and accelerated acquisition) replacement and electric energy-efficiency resource acquisition strategies (see Section IV).

Summary of the Results

Table III.2 shows the technical and achievable electricity savings resulting from fuel conversion for the normal and early replacement scenarios. Under the normal replacement scenario, fuel conversion is estimated to provide 132.8 aMW in technical potential and 62.5 aMW in achievable potential. In an accelerated conversion scenario that assumes early equipment replacement, technical and achievable potentials are expected to increase to 189.5 aMW and 101.5 aMW respectively.

Table III.2: Effects of Fuel Conversion on Residential Electric Energy Efficiency Potentials

Electric Resource Potential – 2025	Without Fuel Conversion (aMW)	With Normal Replacement (aMW)	With Early Replacement (aMW)
Technical			
Fuel Conversion Potential (gross)		132.8	189.5
Energy Efficiency	375.8	338.5	321.2
Total Technical Potential	375.8	471.2	510.7
As % of Residential Load	25.9%	32.5%	35.2%
Achievable			
Fuel Conversion Potential (gross)		62.5	101.5
Energy Efficiency	133.4	127.9	123.5
Total Achievable Potential	133.4	190.4	224.9
As % of Residential Load	9.2%	13.1%	15.5%

Appliance conversions account for more than half of the achievable fuel conversion potential under the normal conversion scenario; HVAC equipment, mainly space heat conversions, and water heating measures each represent approximately 25% of additional fuel conversion resource potentials (Table III.3).

Table III.3: Fuel Conversion Electric Energy Efficiency Potentials by End Use

End-Use	Equipment Replacement Scenario	
	Normal (aMW)	**Early** (aMW)
Appliances	32.7	40.5
HVAC	15.4	29.6
Water Heat	14.3	31.4
Total	***62.5***	***101.5***

Effects of Fuel Conversion on Electric Energy Efficiency Potentials

Fuel conversion will reduce opportunities for upgrade of applicable electric equipment and hence diminish the potentials for electric energy efficiency. As can be seen in Table III.3, achievable electric energy efficiency potentials will be reduced from 133.4 aMW to 127.9 aMW under the normal replacement scenario and to 123.5 aMW under the early replacement fuel conversion scenario.

Table III.4: Effects of Fuel Conversion on Residential Electric Energy Efficiency Potentials

Electric Resource Potential - 2025	Without Fuel Conversion (aMW)	With Normal Replacement (aMW)	With Early Replacement (aMW)
Technical			
Fuel Conversion Potential		132.8	189.5
Energy Efficiency	375.8	338.5	321.2
Total Technical Potential	375.8	471.2	510.7
As % of Residential Load	25.9%	32.5%	35.2%
Achievable			
Fuel Conversion Potential		62.5	101.5
Energy Efficiency	133.4	127.9	123.5
Total Achievable Potential	133.4	190.4	224.9
As % of Residential Load	9.2%	13.1%	15.5%

Effects of Fuel Conversion on Gas Energy Efficiency Potentials

Increases in gas consumption due to fuel conversions were examined under both "standard" (current state and federal codes) and "high" equipment efficiency levels (the same as those used in energy efficiency potential). As shown in Table III.4, fuel conversion potential would increase natural gas usage by nearly 7.8 million decatherms (technical) and 4.2 million decatherms (achievable) under the standard efficiency scenario, and 7 million decatherms (technical) and 3.6 million decatherms (achievable) under the high-efficiency equipment scenario. The efficiency level of the gas equipment has no impact on the amount of electric load reduction from fuel conversion.

Table III.5: Effects of Fuel Conversion on Residential Gas Load

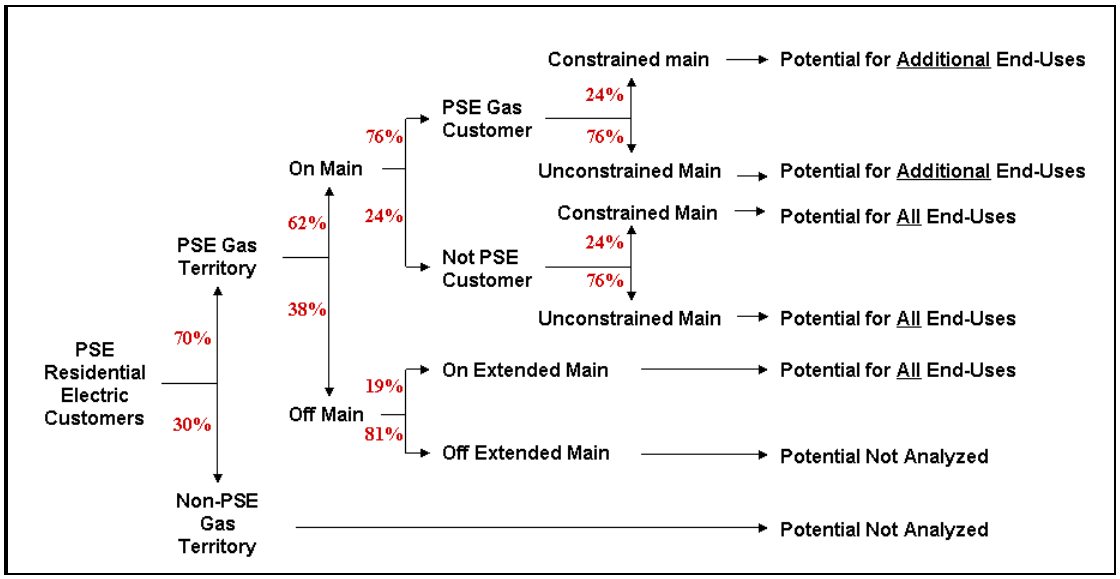
Efficiency Level of New Gas Appliances	Standard		High	
	Technical (Decatherms)	**Achievable** (Decatherms)	**Technical** (Decatherms)	**Achievable** (Decatherms)
Increased Use Due to Fuel Conversion	7,763,444	4,169,422	6,987,099	3,752,480
Gas Use Increase as % of Residential Load	10.3%	5.5%	9.3%	5.0%

Scope of Fuel Conversion Opportunities

Service availability and distribution system constraints are important considerations in assessing the achievable potentials for fuel conversion. As Figure III.1 demonstrates, PSE provides gas service to 70% of residential customers in its electric service area. Of these customers, 62% are on gas mains, of which 76% are currently receiving gas services from PSE. Moreover, current loads indicate that 24% of customers who are served by PSE are on constrained gas mains, although in the long term most of these constrained mains would likely be upgraded. Based on this data, approximately 33% of all customers offer an opportunity for conversions without imposing additional main extension or hook-up costs, because they are already PSE gas customers that are simply converting additional end uses. Another 15% of PSE's customers could be

converted from all-electric to gas (10% in areas where gas is already available and 5% through short main extensions).[9]

Figure III.1: Geographic Distribution of Residential Gas Customers by Utility Service Area, Service Availability, and System Characteristics

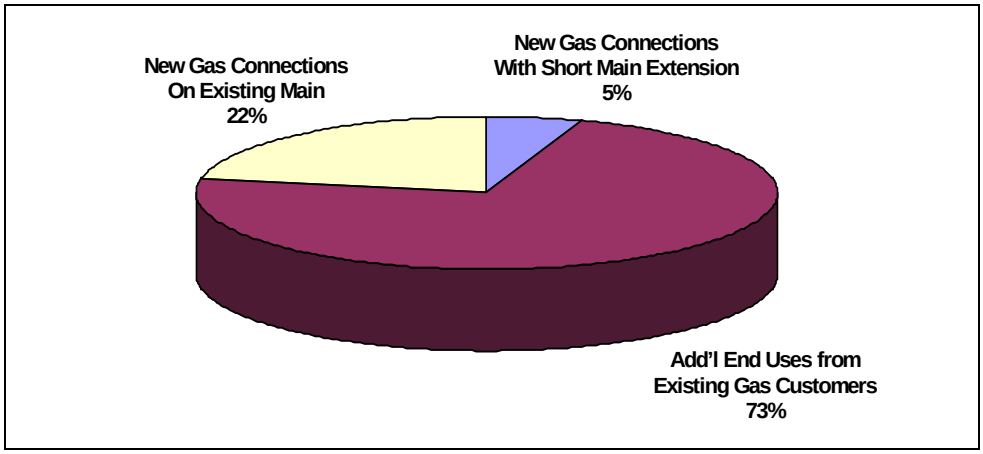


As can be seen in Figure III.2, under the normal conversion scenario, nearly three-quarters of fuel conversion potential comes from existing PSE gas customers that convert additional end uses, while relatively small proportions of fuel conversion potential are attributable to hook-up of entirely new gas customers.

Although the amounts of conversion potential per customer tend to be large among customers who are not currently hooked up, capturing such opportunities would require significant additional investments in customer hookup and/or expansion of the existing distribution system. Based on PSE records, average hook-up costs for new customers is estimated at $2,175 each.

[9] The customer shares for the various branches in Figure III.1 were derived from PSE Customer Information System and mapping of zip+4 census track codes to PSE's gas distribution system.

Figure III.2: Distribution of Electric Energy Savings from Fuel Conversion by Source



Hook-up costs for new customers, combined with the additional gas fuel costs, have important ramifications in terms of overall fuel conversion resource costs. The effects of additional hook-up and fuel costs on electric efficiency fuel conversion costs were analyzed under the accelerated and normal conversion scenarios assuming standard and high-efficiency gas equipment.

As shown in Table III.5, the addition of fuel and hook-up costs can be expected to increase the cost of conserved electricity fro fuel conversion dramatically for all ened-uses. For example, under the normal replacement scenario, assuming standard efficiency gas equipment (column 2), average fuel conversion resource costs for appliance conversions can be expected to more than double (from $14.3/MWh to $37,1/MWh) once additional fuel costs are taken into account. Inclusion of hook-up costs for new customers will nearly quadruple the cost of conserved energy from $14.3/MWh to $56.3/MWh. Due to the higher starting costs under the accelerated scenario, the incremental costs of additional fuel and hook-up will have a smaller relative effect and will increase resource costs by about 25% for standard efficiency appliances.

Table III.6: Effects of Additional Fuel (Gas) and New Service Hook-up Costs on Fuel Conversion Electric Efficiency Resource Costs

Scenario	Normal Replacement		Accelerated Replacement	
Equipment Efficiency	**Standard**	**High**	**Standard**	**High**
Existing Gas Customers – Gas Appliance Costs Only, No Fuel Costs ($/MWh)				
Appliances	$14.3	$38.7	$80.0	$104.4
HVAC	$9.7	$18.5	$27.9	$36.7
Water Heat	$10.0	$12.7	$16.2	$18.9
Existing Gas Customers - With Additional Gas Fuel Costs ($/MWh)				
Appliances	$37.1	$61.5	$102.8	$127.2
HVAC	$43.4	$52.1	$61.6	$70.3
Water Heat	$32.7	$35.4	$38.9	$41.6
New Customers - With Additional Gas Fuel & Service Hook-Up Costs ($/MWh)				
Appliances	$56.3	$80.8	$123.0	$147.5
HVAC	$62.8	$71.6	$81.0	$89.8
Water Heat	$45.8	$48.5	$52.0	$54.7

IV. Resource Portfolios

While an accurate assessment of achievable demand-side potentials represented an important objective of this study, the paramount consideration was to construct portfolios of electric and natural gas energy efficiency resource options, which could be compared with and evaluated against supply options on a balanced and consistent basis.

To facilitate the incorporation of the results of this study into PSE's least-cost, integrated resource planning process, electricity and natural gas energy efficiency potential estimates for each sector were disaggregated into distinct cost-based "bundles" of energy efficiency resource for each fuel and customer class. The grouping of measures into cost bundles begins with ranking of all measures by their respective cost per energy unit saved to create "measure supply curves" as shown in Figures IV.1 and IV.2, irrespective of sector or end use. (The vertical axis in each figure shows cumulative savings; the horizontal axis shows the levelized cost per unit of conserved energy). The measures are then assigned to specific resource bundles based on sector, and end use load characteristics.

Eight electric and seven gas cost-group "bundles" were created by grouping energy efficiency measures with similar cost and load-shape characteristics. Electric and gas measures with costs above the thresholds of $0.115/kWh or $1.05/therm were not considered economic or achievable. The composition of electric and natural gas energy efficiency resources and their associated cost ranges are shown in Tables IV.1 and IV.2. More detailed breakdowns of the electricity and natural gas energy efficiency resource bundles by market segment are presented in Tables IV.3 and IV.4.

As shown in Table IV.1, nearly 60% of achievable electricity savings in the residential sector, 54% of the achievable savings in the commercial sector, and all potential savings in the industrial sector fall in the low-cost category. With respect to natural gas, energy efficiency potentials are more evenly distributed across the five cost categories, particularly in the residential sector (see Table IV.2). Again, a significant portion of energy efficiency potential in the residential (22%) and commercial (52%) sectors, and all potential savings in the industrial sector fall in the low cost category.

Figure IV.1: Electric Achievable Potential Measure Supply Curve (1024 Points)

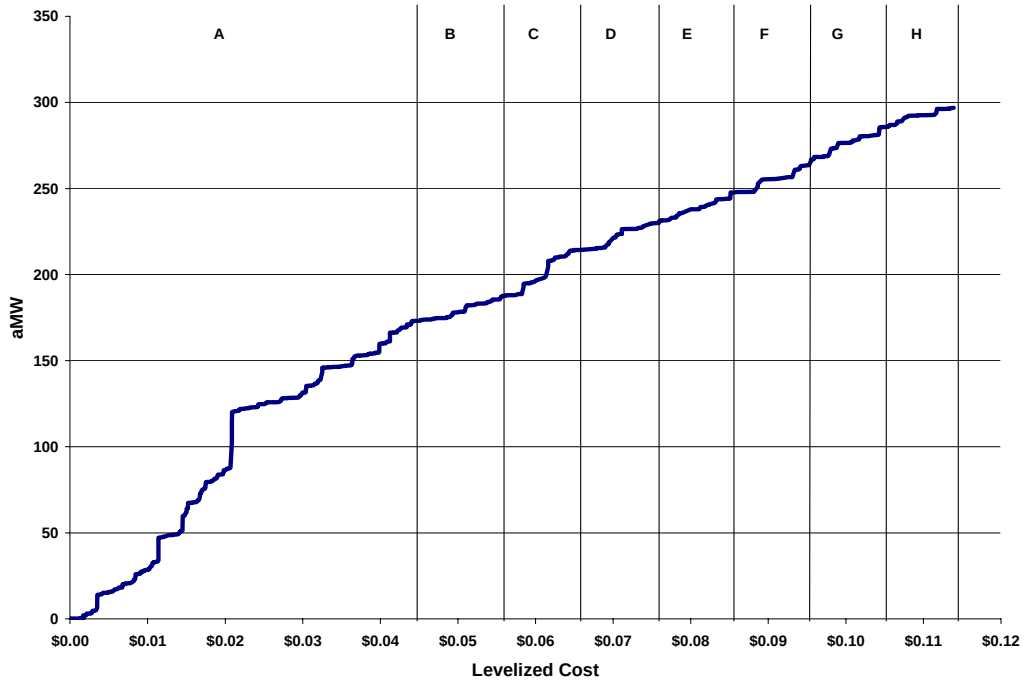
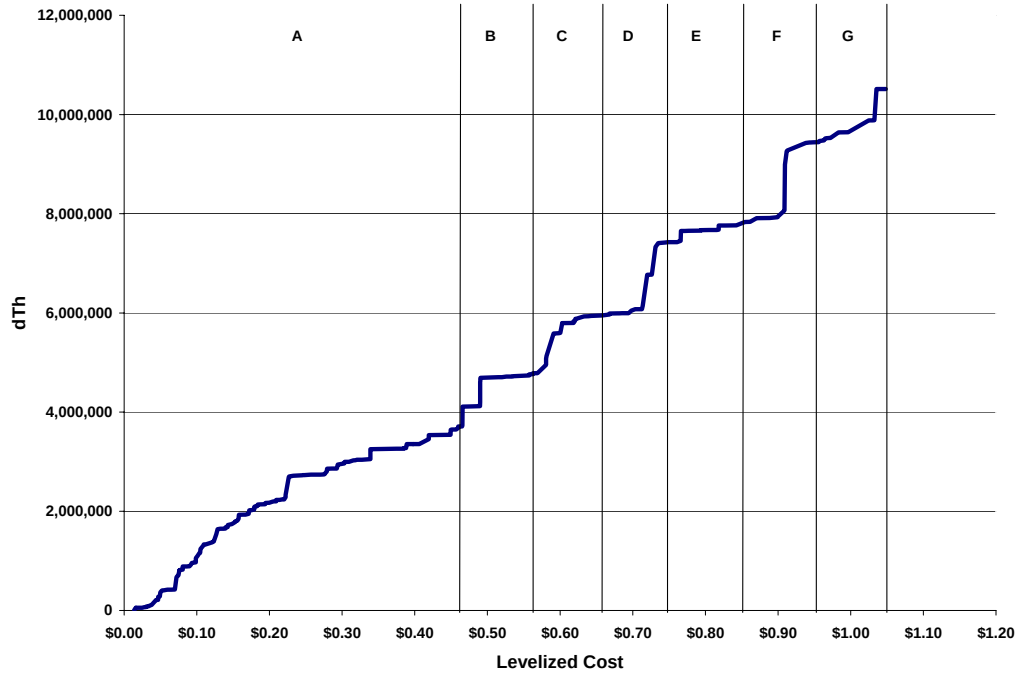


Figure IV.2: Gas Achievable Potential Measure Supply Curve (278 Points)



Fuel conversion potentials were assigned to the same end use bundles as energy efficiency to produce bundles that represent the net combination of energy efficiency and fuel conversion. The costs of these fuel conversion/energy efficiency bundles include PSE's costs to serve the additional natural gas demand (commodity costs and new service hookup costs, where applicable) and the costs of the new gas end use appliances.

Allocation of achievable energy efficiency potentials to electric and gas resource bundles are shown in Tables IV.3 and IV.4, respectively.

Table IV.1: Technical and Achievable Electric Energy Efficiency Potential by Sector and Cost Groups, 2025 aMW

Electricity Cost Category	Residential		Commercial		Industrial		Total All Sectors	
	Technical Potential	Achievable Potential	Technical Potential	Achievable Potential	Technical Potential	Achievable Potential	Technical Potential	Achievable Potential
A: less than $0.045/kWh	182.2	79.0	147.9	80.1	15.9	15.9	346.0	175.0
B: $0.045 - $0.055/kWh	1.4	0.8	19.2	9.7			20.5	10.5
C: $0.055 - $0.065/kWh	8.7	4.5	49.9	24.2			58.6	28.7
D: $0.065 - $0.075/kWh	21.4	8.8	13.2	6.8			34.6	15.5
E: $0.075 - $0.085/kWh	14.9	7.7	13.0	6.8			28.0	14.5
F: $0.085 - $0.095/kWh	20.9	12.2	13.0	6.6			33.9	18.7
G: $0.095 - $0.105/kWh	31.5	15.7	13.8	7.0			45.3	22.7
H: $0.105 - $0.115/kWh	10.3	4.7	12.5	6.5			22.8	11.2
I: > $0.115/kWh	84.5		221.2				305.6	
Total	***375.8***	***133.4***	***503.7***	***147.6***	***15.9***	***15.9***	***895.4***	***296.9***

Table IV.2: Technical and Achievable Natural Gas Energy Efficiency Potential by Sector and Cost Groups, 2025 dth

Gas Cost Category	Residential		Commercial		Industrial		Total All Sectors	
	Technical Potential	Achievable Potential	Technical Potential	Achievable Potential	Technical Potential	Achievable Potential	Technical Potential	Achievable Potential
A: less than $0.45/therm	2,158,495	1,366,457	3,850,791	2,006,699	314,924	314,924	6,324,211	3,688,080
B: $0.45 - $0.55/therm	6,254	4,125	2,385,109	1,072,278			2,391,363	1,076,403
C: $0.55 - $0.65/therm	1,324,505	797,666	759,667	376,642			2,084,172	1,174,308
D: $0.65 - $0.75/therm	2,053,946	1,240,053	517,424	245,922			2,571,370	1,485,975
E: $0.75 - $0.85/therm	311,278	289,316	97,981	52,415			409,259	341,731
F: $0.85 - $0.95/therm	966,054	1,615,936	110,312	57,267			1,076,366	1,673,203
G: $0.95 - $1.05/therm	253,500	1,020,726	109,673	53,314			363,173	1,074,040
H: >$1.05/therm	20,664,714		2,339,285				23,003,999	
Total	***27,738,747***	***6,334,280***	***10,170,241***	***3,864,537***	***314,924***	***314,924***	***38,223,912***	***10,513,741***

Table IV.3: Achievable Electricity Energy Efficiency Potentials by Resource Bundle and Segment (Base Case Cumulative aMW 2006-2025)

Segment/Bundle	A	B	C	D	E	F	G	H
	less than $0.045/kWh	$0.045 - $0.055/kWh	$0.055 - $0.065/kWh	$0.065 - $0.075/kWh	$0.075 - $0.085/kWh	$0.085 - $0.095/kWh	$0.095 - $0.105/kWh	$0.105 - $0.115/kWh
Residential								
Existing- Appliances	6.7			2.7		4.9	3.0	
Existing- HVAC	17.6	0.8	0.7	4.4	3.5	3.2	2.8	0.0
Existing- Lighting	26.4		0.6		1.0		2.2	1.1
Existing- Water Heat	6.9		2.3		2.1	3.5	4.7	2.1
New- Appliances				0.4	0.3	0.2	0.8	0.0
New- HVAC							0.0	
New- Lighting	20.5		0.5		0.8		1.7	0.9
New- Water Heat	0.9		0.5	1.3		0.5	0.5	0.6
Subtotal Residential	*79.0*	*0.8*	*4.5*	*8.8*	*7.7*	*12.2*	*15.7*	*4.7*
Commercial								
Existing- Appliances	9.5	1.1	3.0		0.1	2.8	0.0	0.2
Existing- HVAC	24.2	2.1	7.4	3.6	2.1	0.3	1.6	1.5
Existing- Lighting	14.2	2.3	3.3	1.3	1.8	0.6	2.5	2.0
Existing- Water Heat	0.4	0.0	0.0				0.0	
New- Appliances	5.0	0.6	1.9		0.1	1.8	0.0	0.1
New- HVAC	15.7	1.9	6.1	0.9	1.5	0.5	0.8	1.2
New- Lighting	11.0	1.7	2.5	1.0	1.3	0.5	2.1	1.5
New- Water Heat	0.1	0.0	0.0				0.0	
Subtotal Commercial	*80.1*	*9.7*	*24.2*	*6.8*	*6.8*	*6.6*	*7.0*	*6.5*
Industrial Existing- General	15.9							
Total All Sectors	***175.0***	***10.5***	***28.7***	***15.5***	***14.5***	***18.7***	***22.7***	***11.2***

Table IV.4: Achievable Gas Energy Efficiency Potentials by Resource Bundle and Segment
(Base Case Cumulative Decatherms 2006-2025)

Segment/Bundle	A less than $0.45/therm	B $0.45 - $0.55/therm	C $0.55 - $0.65/therm	D $0.65 - $0.75/therm	E $0.75 - $0.85/therm	F $0.85 - $0.95/therm	G $0.95 - $1.05/therm
Residential							
Existing- Base Load	434,955	4,125	24,032		90,436	490,038	22,550
Existing- Space Heat	745,165		21,397	1,230,822	198,880	1,125,898	115,356
New- Base Load	186,338		752,237	9,231			
New- Space Heat							882,821
Subtotal Residential	*1,366,457*	*4,125*	*797,666*	*1,240,053*	*289,316*	*1,615,936*	*1,020,726*
Commercial							
Existing- Base Load	491,157	580,765	2,516	145,633	34,583	26,035	47,197
Existing- Space Heat	820,594	44,940	227,384	24,380	15,230		1,196
New- Base Load	273,678	418,181	507	53,083	1,378	25,278	2,748
New- Space Heat	421,270	28,392	146,235	22,826	1,224	5,954	2,173
Subtotal Commercial	*2,006,699*	*1,072,278*	*376,642*	*245,922*	*52,415*	*57,267*	*53,314*
Industrial Existing- General	314,924						
Total All Sectors	***3,688,080***	***1,076,403***	***1,174,308***	***1,485,975***	***341,731***	***1,673,203***	***1,074,040***

Electric Demand-Side Resource Acquisition Scenarios

In assessing long-run demand-side resource potentials, how the resources are acquired over time has significant ramifications for the IRP process. A large portion of energy efficiency and fuel conversion potential is made up of finite resources, particularly savings from retrofits and early replacement. Thus, the amount of demand-side resources already acquired affects current and future potentials. The timing for the acquisition of demand-side resources must take into account practical administrative and logistical considerations, as well as potential market barriers.

In this analysis, two alternative scenarios for acquisition of achievable electric energy efficiency resources were considered: "Base Case," and "Accelerated." The base-case scenario assumes that energy efficiency resources would be acquired in equal annual proportions over the 20-year planning horizon, which equates to approximately 15 aMW per year. Under the accelerated scenario, it is assumed that energy efficiency resource acquisition would be accelerated and all achievable retrofit or early replacement resources would be acquired during the first ten years of the plan. On average, the accelerated case results in 24 aMW per year over the first ten years and 5 aMW per year over the last ten years.

Similarly, different scenarios for the timing of fuel conversion acquisition were developed. The "Normal Replacement" scenario acquires fuel conversion at the time of naturally occurring appliance replacement, when the useful life of the electric appliance is complete, averaging about 3 aMW per year. This is analogous to the base case for energy efficiency. The "Early Replacement" scenario assumes all possible electric appliances are converted in the first ten years, which is analogous to the Accelerated Case for energy efficiency. The Early Replacement scenario for fuel conversion acquires approximately 10 aMW of savings per year for the first ten years and none afterward.

In order to fully consider all reasonable mixes of energy efficiency resources in the IRP process, six scenarios were constructed by combining the timing of energy efficiency resource acquisition (normal and accelerated), timing of fuel conversion resource acquisition (normal replacement, early replacement), and equipment efficiency in conversions (standard efficiency, high efficiency). See Table IV.5.

Table IV.5: Residential Electric Energy Efficiency and Fuel Conversion Scenarios

Scenario	Energy Efficiency	Fuel Conversion	Gas Increase
Scenario 1: Normal EE, No FC	Constant Rate of Acquisition	NA	NA
Scenario 2: Accelerated EE, No FC	Accelerated Acquisition	NA	NA
Scenario 3: Normal EE, Normal FC, Standard	Constant Rate of Acquisition	Normal Replacement	Standard Efficiency
Scenario 4: Normal EE, Normal FC, High	Constant Rate of Acquisition	Normal Replacement	High Efficiency
Scenario 5: Accelerated EE, Normal FC, Standard	Accelerated Acquisition	Normal Replacement	Standard Efficiency
Scenario 6: Accelerated EE, High FC, High	Accelerated Acquisition	Normal Replacement	High Efficiency
Scenario 7: Accelerated EE, Early FC, Standard	Accelerated Acquisition	Early Replacement	Standard Efficiency
Scenario 8: Accelerated EE, Early FC, High	Accelerated Acquisition	Early Replacement	High Efficiency

With respect to electric energy-efficiency potentials, the eight scenarios described in Table IV.5 are in effect reduced to five cases, since various levels of equipment efficiency in fuel conversion merely affect increases in gas consumption and have no impact on electric potentials. The five resource acquisition scenarios for electric energy efficiency are as follows:

1. Base case energy efficiency without fuel conversion
2. Accelerated energy efficiency without fuel conversion
3. Base case energy efficiency with normal replacement fuel conversion
4. Accelerated energy efficiency with normal replacement fuel conversion
5. Accelerated energy efficiency with early replacement fuel conversion

The five electric energy efficiency resource acquisition scenarios are illustrated graphically in Figure IV.3. The size and average cost for various resource bundles under the three combined energy efficiency and fuel conversion scenarios are reported in Tables IV.6, IV.7, and IV.8 respectively.

Figure IV.3: Electric Energy Efficiency Resource Acquisition Scenarios

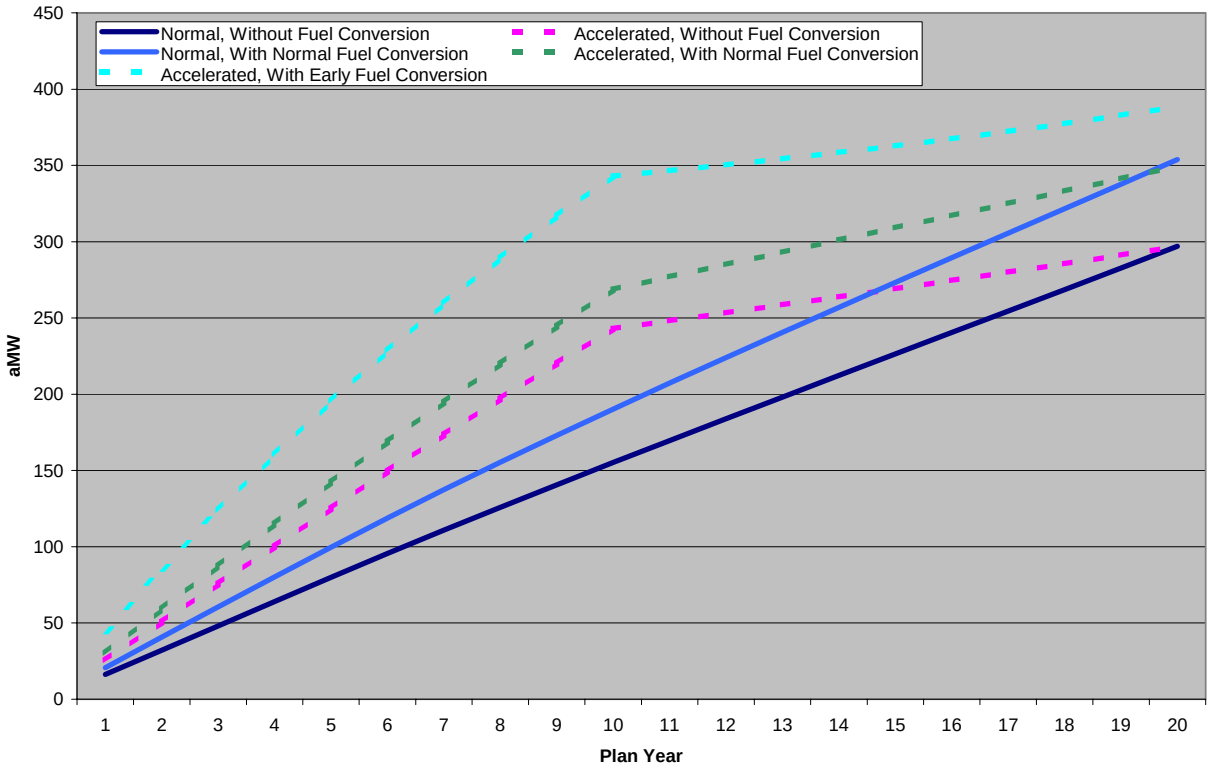


Table IV.6: Achievable Resource Potentials: Base Case Energy Efficiency & Normal Replacement Fuel Conversion

Segment/Bundle	A	B	C	D	E	F	G	H
	Less than $0.045/kWh	$0.045 - $0.055/kWh	$0.055 - $0.065/kWh	$0.065 - $0.075/kWh	$0.075 - $0.085/kWh	$0.085 - $0.095/kWh	$0.095 - $0.105/kWh	$0.105 - $0.115/kWh
Residential								
Existing- Appliances	38.3		1.1	1.9		4.9	3.0	
Existing- HVAC	20.5	0.8	11.8	4.2	3.4	3.1	2.5	0.0
Existing- Lighting	26.4		0.6		1.0		2.2	1.1
Existing- Water Heat	18.3	2.4	2.0		1.9	3.0	4.3	1.8
New- Appliances				0.3	0.3	0.2	0.8	0.0
New- HVAC							0.0	
New- Lighting	20.5		0.5		0.8		1.7	0.9
New- Water Heat	0.8		0.4	1.2		0.4	0.4	0.6
Total Residential	***124.9***	***3.2***	***16.4***	***7.7***	***7.3***	***11.6***	***15.0***	***4.4***

Table IV.7: Achievable Resource Potentials: Accelerated Energy Efficiency & Normal Replacement Fuel Conversion

Segment/Bundle	A	B	C	D	E	F	G	H
	Less than $0.045/kWh	$0.045 - $0.055/kWh	$0.055 - $0.065/kWh	$0.065 - $0.075/kWh	$0.075 - $0.085/kWh	$0.085 - $0.095/kWh	$0.095 - $0.105/kWh	$0.105 - $0.115/kWh
Residential								
Existing- Appliances	31.6	6.7	1.1	2.3		4.9	3.0	
Existing- HVAC	18.8		11.9	0.7	4.1	3.0		5.0
Existing- Lighting	26.4			0.6			1.0	3.3
Existing- Water Heat	17.5	2.4		1.6		2.0	2.5	5.5
New- Appliances				0.3	0.3	0.2	0.8	0.0
New- HVAC							0.0	
New- Lighting	20.5		0.5		0.8		1.7	0.9
New- Water Heat	0.8		0.4	1.2		0.4	0.4	0.6
Total Residential	***115.7***	***9.1***	***13.9***	***6.8***	***5.2***	***10.6***	***9.4***	***15.4***

Table IV.8: Achievable Resource Potentials: Accelerated Energy Efficiency & Early Replacement Fuel Conversion

Segment/Bundle	A	B	C	D	E	F	G	H
	Less than $0.045/kWh	$0.045 - $0.055/kWh	$0.055 - $0.065/kWh	$0.065 - $0.075/kWh	$0.075 - $0.085/kWh	$0.085 - $0.095/kWh	$0.095 - $0.105/kWh	$0.105 - $0.115/kWh
Residential								
Existing- Appliances		6.7		2.3		4.9	42.1	1.4
Existing- HVAC	14.5		19.3	0.7	15.2	3.0		5.0
Existing- Lighting	26.4			0.6			1.0	3.3
Existing- Water Heat	35.1	1.8		1.6		2.0	2.5	5.5
New- Appliances				0.3	0.3	0.2	0.8	0.0
New- HVAC							0.0	
New- Lighting	20.5		0.5		0.8		1.7	0.9
New- Water Heat	0.8		0.4	1.2		0.4	0.4	0.6
Total Residential	***97.4***	***8.5***	***20.2***	***6.8***	***16.2***	***10.6***	***48.5***	***16.8***

V. Demand Response Potentials

Scope

Demand-response (or demand-responsive) resources are comprised of flexible, price-responsive loads that may be curtailed or interrupted during system emergencies or when wholesale market prices exceed the utility's supply cost. Acquisition of demand-response resources may be based on either reliability considerations or economic/market objectives. Objectives of demand response may be met through a broad range of price-based (e.g., time-varying rates and interruptible tariffs) or incentive-based (e.g., direct load control, demand buy-back, demand bidding, and dispatchable stand-by generation) strategies. In this assessment, five demand-response options were considered, similar to those examined in PSE's 2003 Least Cost Plan:

1) Direct Load Control: This strategy allows the utility to remotely interrupt or cycle electrical equipment and appliances such as water heaters, space heaters, and central air-conditioners. Direct load control programs are generally best suited for the residential and, to a lesser extent, small commercial sectors.

2) Time-of-Use Rates: This demand response option consists of two-part pricing structures designed to encourage customers to curtail consumption during peak or shift it to off-peak hours. TOU tariffs are designed to reflect the utility's marginal cost of power supply.

3) Critical Peak Pricing: Critical peak or extreme-day pricing refers to incentive-based, demand-response strategies that aim to preempt system emergencies by encouraging customers to curtail their loads for a limited number of hours during the year. The amount of incentive is generally based on the utility's avoided cost of supply during extreme peak events. For the purpose of this study, critical peak is defined as loads coinciding with the highest one percentile region (87 hours) of PSE's system load duration curve.

4) Curtailment Contracts: These refer to contractual arrangements between the utility and its large customers who agree to curtail or interrupt their operations for a predetermined period when requested by the utility. The duration and frequency of such requests and levels of load reduction are also stipulated in the contract. Customers who agree to participate are typically compensated either through lower rates or fixed payments.

5) Demand Buyback: Under demand buyback arrangements, the utility offers payments to customers for reducing their demand when requested by the utility. The buyback amount generally depends on market prices published by the utility ahead of the curtailment event, and the level of reduction is verified against an agreed upon baseline usage level.

Methodology

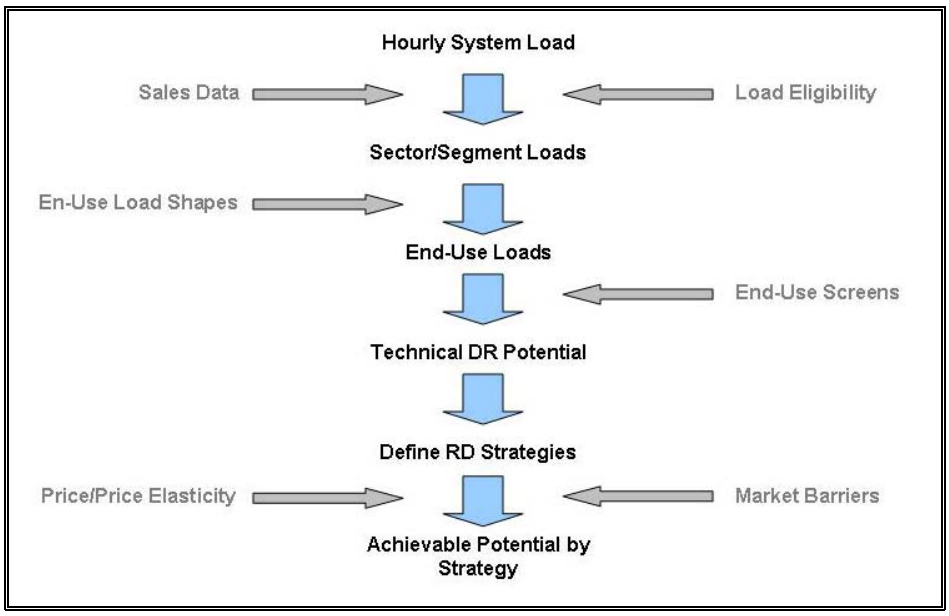
As in the case with energy efficiency and fuel conversion, demand response opportunities were assessed in terms of both "technical" and "achievable" potential.

Technical Potential: In the context of demand response, technical potential assumes that all applicable end-use loads in all customer sectors are wholly or partially available for curtailment, except for those customer segments (e.g., hospitals) and end-uses (e.g., restaurant cooking loads), which clearly do not lend themselves to interruption.

Achievable Potential: Achievable potential is a subset of technical potential and takes into account the customers' ability and willingness to participate in load reduction programs subject to their unique business priorities, operating requirements, and economic (price) considerations. Evaluation of achievable potential is a significant refinement of the Company's 2003 Least Cost Plan assessment of demand response, which focused on technical potential. In this assessment, estimates of achievable potential were derived by adjusting technical potentials by two factors: expected rates of ***program*** and ***event*** participation. Assumed rates of program and event participation were estimated based on the recent experiences of PSE, other utilities in the Northwest, other national utilities, and Regional Transmission Organizations (RTOs) that have offered similar programs.

Demand response options are not equally applicable to or effective in all segments of the electricity consumer market, and their impacts tend to be end-use specific. Recognizing this, the study employed a "bottom-up" approach, which involved first breaking down PSE's system load by sector, market segment, and end use; estimating demand response potentials at the end-use level; and then aggregating the end-use resource potentials estimates to sector and system levels. The approach was implemented in seven steps as follows. The general approach for estimation of demand response potentials is illustrated in Figure V.1.

Figure V.1: Demand-Response Potentials Assessment Methodology



1) Define customer sectors and market segments. System load was disaggregated into four sectors: 1) residential, 2) commercial, 3) industrial, and 4) other. The commercial sector was further broken down into eleven segments. Consistent with the analysis of energy efficiency potentials assessment, 14 industrial sectors (wastewater treatment was not included) and 11 commercial segments were analyzed.

2) Create sector and segment load profiles. NWPCC's regional load profiles were applied to PSE's sales data to generate sector- and segment-specific load shapes.

3) Develop sector- and segment-specific typical peak day load profiles. "Typical" weekday profiles were developed for winter (January and February) and summer (July and August). Contributions to system peak for each customer class and market segments were estimated based on class and end-use load shapes obtained from the Northwest Power and Conservation Council. Since PSE's system peak typically occurs during winter months, summer period was not considered (see Table V.1).

Table V.1: Class and Market Segment Contributions to System Peak

Sector/Segment	Winter a.m.	Winter p.m.
Industrial	164,584	159,757
Commercial		
Education	186,342	112,843
Food Stores	23,350	23,761
Hospitals	18,034	16,196
Hotels/Motels	47,107	47,974
Other Health	52,341	42,712
Miscellaneous	369,354	356,268
Offices	295,318	243,606
Assembly	30,480	29,897
Restaurants	8,436	9,339
Retail	157,670	166,697
Warehouses	232,038	121,477
Residential	1,800,324	1,958,354

4) Screen customer segments and end uses for eligibility. This step involved screening of customers for applicability of specific demand-response strategies. For example, the hospital segment and certain commercial end uses such as cooking loads in the restaurant segment were excluded.

5) Estimate end-use shares by sector and market segments. End-use shares were estimated by applying annual end-use load profiles obtained from the Northwest Power and Conservation Council. End-Use contributions to peak load by customer class and market segment are shown in Table V.2

Table V.2: End-Use Shares by Customer Class and Market Segment

Sector/Segment	Space Heat	Cooling	Water Heating	Lighting	Refrigeration	Plug Load	Process
Industrial	8,229	16,458	8,229	41,146	16,458	16,458	57,604
Commercial							
Education	21,632	1,694	7,191	125,805	7,837	22,183	
Food Stores	4,091	14	690	4,282	13,920	1,251	
Hospitals	5,806	1,552		7,385	1,141	5,267	
Hotels/Motels	13,354	4,307	4,967	27,262	1,718	7,631	
Other Health	6,903	2,635	184	25,439	379	16,998	
Miscellaneous	249,352	3,037	9,150	154,179	7,358	38,772	
Offices	31,570	75,591	3,036	127,393	1,900	66,113	
Assembly	7,020	2,566	194	20,596	1,324	4,917	
Restaurants	380	92	55	5,253	2,568	1,625	
Retail	49,184	24,081	2,541	111,751	3,715	22,173	
Warehouses	40,247	10,208	1,913	111,766	6,099	61,805	
Residential	1,051,486	3,706	351,448	225,013		392,908	

6) Estimate technical potential. Technical potential for each demand response strategy is assumed to be a function of customer eligibility in each class, affected end-uses in that class, and the expected impact of the strategy on the targeted end-uses. Analytically, technical potential (*TP*) for demand-response strategy *s* was calculated as the sum of impacts at the end-use level *e* generated in customer class *c* by the strategy, that is:

$$TP_s = \sum TP_{sce}$$

and

$$TP_{sce} = LE_{cs} \times EUS_{cs} \times LI_{se}$$

where,

- LE_c (load eligibility) represents the percent of customer class loads that are eligible for strategy *s*
- EUS_{cs} (end-use share) represents share of end-use *e* in customer class *c*
- LI_{se} (load impact) is percent reduction in end-use load *e* resulting from strategy *s*

Load eligibility thresholds were established by calculating the percent of load by customer class and market segment that meet load criterion for each strategy. For example, only those customers with minimum loads of 250 kW were deemed eligible for participation in curtailment contracts and demand buy-back strategies; and maximum load for residential and small commercial TOU strategy was set at 30kW.

For each demand-response strategy, estimates of end-use load impacts were developed by applying the fraction of load for each end use that might be curtailed based on available data from the California Energy Commission's recent assessments of load reduction opportunities in commercial and industrial buildings and impact evaluations of demand-side management programs.

PSE's hourly system load and sales by customer class, and end-use load shapes available from the Northwest Power and Conservation Council, served as the primary data sources for this assessment. Estimates of expected load impacts resulting from various demand response strategies were based on data available from the commercial and industrial Enhanced Automation Study sponsored by the California Energy Commission, and the experiences of PSE and other utilities in the Northwest with various demand-side management programs. Expected load impacts by affected end uses from the five demand response strategies are shown in Table V.3.

7) Estimate achievable potential. Finally, for each demand response strategy, achievable potential (*AP*) was then calculated as the product of technical potential, program participation rate (*PP*) and expected event participation (*EP*) rates, that is:

$$AP_s = \sum TP_{sce} \times PP_s \times EP_s$$

Estimates of potential program penetration and event participation were derived through a review of available research literature on a large number of demand response programs offered by national RTOs and utilities in the Northwest and elsewhere in the country (see Table V.4). See Appendix D for bibliography of the reviewed reports and data sources.

Table V.3: Expected Load Impacts Resulting from Demand Response Strategies

Sector/Segment	Space Heating	Cooling	Hot Water	Lighting	Plug Load	Process
Industrial	20%	20%	20%	20%	12%	12%
Commercial						
Education	13%	13%	13%	13%	12%	
Food Stores	18%	18%	18%	18%	12%	
Hospitals	12%	12%	12%	12%	12%	
Hotels/Motels	12%	12%	12%	12%	12%	
Other Health	15%	15%	15%	15%	12%	
Miscellaneous	12%	12%	12%	12%	12%	
Offices	13%	13%	13%	13%	12%	
Assembly	12%	12%	12%	12%	12%	
Restaurants	12%	12%	12%	12%	12%	
Retail	12%	12%	12%	12%	12%	
Warehouses	12%	12%	12%	12%	12%	
Residential	30%	10%	19%	10%	10%	

Table V.4: Assumed Program and Event Participation Rates

Customer Class	Direct Load Control	Curtailment Contracts	TOU	Critical Peak Pricing	Demand Buy-Back
Industrial					
Program Participation		25%	25%	50%	50%
Event Participation		90%	90%	75%	30%
Commercial					
Program Participation	0%	25%	25%	50%	75%
Event Participation	0%	90%	90%	75%	30%
Residential					
Program Participation	25%		35%	50%	
Event Participation	100%		90%	75%	

Summary of the Results

The results of this assessment, as summarized in Table V.4, indicate that critical peak pricing and direct load control of residential space heating and water heating, with achievable potentials of 155 MW (4.6% of system peak) and 95 MW (2.8% of system peak), respectively, offer the largest opportunities for demand response interventions.

Achievable peak reductions from time-of-use tariffs are estimated at 49 MW, representing 1.5% of system peak. Opportunities resulting from curtailment contracts and demand buy-back are expected to be relatively small, averaging between 0.5% and 0.8% of system peak. Although the potentials for different demand response strategies are not mutually exclusive, hence not additive, it is estimated that combinations of these strategies could achieve 200 MW to 300 MW of total peak demand reduction.

The demand-response strategies considered here also vary significantly with respect to their costs. Costs for direct load control, time-of-use tariffs, and critical peak pricing were estimated on a kW basis. For direct load control and time-of-use tariffs, costs were estimated using the most recent data from PSE and other regional utilities with experience in similar programs, especially Portland General Electric Company. For both strategies, it was assumed that the total estimated achievable potentials would be captured in five years and that participants would remain in the program for seven years, after which customers would have to be re-recruited if the savings are to continue. The choice of the seven-year participation was based on the expectation that most customers tend to relocate after seven years or less.

Table V.5: Demand-Response Potentials Summary - 2025

Sector	Direct Load Control	TOU	Critical Peak Pricing	Curtail-ment Contracts	Demand Buy-Back
Industrial					
Technical Potential (MW)	- - -	4.9	19.8	12.2	14.8
Achievable Potential (MW)	- - -	1.7	7.4	2.7	4.4
Commercial					
Technical Potential (MW)	- - -	14.8	164.5	66.4	75.5
Market Potential (MW)	- - -	5.2	72.1	14.9	22.6
Residential					
Technical Potential (MW)	381.3	121.5	202.5	- - -	- - -
Achievable Potential (MW)	95.3	42.5	75.9	- - -	- - -
Total*					
Technical Potential (MW)	381	141	387	79	90
% of System Peak	11.2%	4.1%	11.4%	2.3%	2.7%
Achievable Potential (MW)	95	49	155	18	27
% of System Peak	2.8%	1.5%	4.6%	0.5%	0.8%
Average Cost ($/kW)	$55.0	$44.1	$21.6	NA	NA
Average Cost ($/MWh)	NA	NA	NA	$154.7	$154.7

* Since not all demand response strategies are mutually exclusive, the figures are not additive.

The results of the analysis show that, based on the available data, critical peak pricing has the lowest average cost at $21.6 per kW represents the least-cost option. Time-of use-tariffs ($44.1/kW) and direct load control ($55/kW) have the next lowest costs.

Since participant incentives for curtailment contracts and demand-buy-back programs are generally based on reduction in energy, costs for these strategies were estimated on a dollar-per-MWh basis. Based on the results of the commercial- and industrial-sector load reduction programs offered by PSE and other regional utilities during the summer of 2001, the achievable potentials for these strategies appear to be relatively small, mainly due to low program and/or event participation. The data shows that of the 457 eligible customers only 19 (4%), representing about 3% of the eligible load, participated in PSE's program.

Through its demand buy-back program in 2001, PSE was able to acquire a total of 21.1 MWh (approximately 2 MW) at an average cost of nearly $155/MWh. Participation levels in such programs are to a large extent a function of incentive amounts, but they also depend on the customers' willingness and ability to commit to curtailment. An analysis of PSE's program activity during the spring and summer of 2001 indicates that load response to prices was indeed relatively inelastic, with an estimated elasticity of 0.8%. This indicates that a 1% increase in incentives is likely to increase load reduction by 0.8%. The results of this analysis suggest that significantly larger prices must be paid if PSE is to capture all or most of the expected achievable potential for such demand response strategies.

Assessment of demand-response potential poses considerable analytic challenges and tends to be less precise than for energy efficiency. This is particularly the case in assessing achievable potentials for market-based strategies such as curtailment contracts and demand buy-back, due to the lack of sufficient market data on the participant's willingness to participate in such programs. In its assessment of demand-response strategies, PSE has relied on innovative methods and the best available data. A more accurate assessment of the achievable amounts of demand-response potentials would require better market data and more rigorous analyses of customers' willingness to participate in demand-response programs. The results of this assessment, therefore, are to be regarded as indicative, rather than conclusive.

Appendix A: Energy Efficiency Measures

Table A.1: Commercial Energy Efficiency Measures - Puget Sound Energy

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	HVAC	Air-Cooled HP Package, 5 tons, SEER=11		x	x	
Electric	HVAC	Air-Cooled HP Package, 5 tons, SEER=12		x	x	x
Electric	HVAC	Chiller Tune-Up / Diagnostics	x	x	x	
Electric	HVAC	Clock / Programmable Thermostat	x	x	x	
Electric	HVAC	Cool Roofs (Reflective and Spray Evaporative)	x	x		x
Electric	HVAC	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F		x	x	x
Electric	HVAC	Duct Insulation	x	x	x	x
Electric	HVAC	Duct Repair and Sealing	x	x	x	
Electric	HVAC	DX Tune-Up / Diagnostics	x	x	x	
Electric	HVAC	EMS Optimization	x	x	x	x
Electric	HVAC	Energy Efficient Fan & Pump Motors (ODP)	x	x	x	x
Electric	HVAC	HE Chiller, 0.51 kW/ton, 300 Tons	x	x	x	
Electric	HVAC	Hi-Eff DX Packaged System, 10 tons, EER=11.3	x	x	x	x
Electric	HVAC	High Efficiency Windows (Low-E Glass or Multiple Glazed)	x	x	x	x
Electric	HVAC	Installation of Air Side Economizers	x	x	x	x
Electric	HVAC	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	x	x	x	x
Electric	HVAC	Installation of Chiller Economizers (water side)	x	x	x	x
Electric	HVAC	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	x	x		x
Electric	HVAC	Installation of Energy Management Systems	x	x	x	x
Electric	HVAC	Insulation of Pipes	x	x	x	x
Electric	HVAC	Occupancy Sensor for room HVAC units		x	x	
Electric	HVAC	Optimize Chilled Water and Condenser Water Settings	x	x	x	x

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	HVAC	Primary/Secondary De-coupled Chilled Water System		x	x	x
Electric	HVAC	Roof / Ceiling Insulation	x	x	x	x
Electric	HVAC	Two-Speed Cooling Tower, 300 Tons		x	x	x
Electric	HVAC	VSD Chiller, 0.47 kW/ton, 300 Tons		x	x	
Electric	HVAC	VSD Cooling Tower, 300 Tons		x	x	x
Electric	HVAC	VSD, ASD Fan & Pump Applications	x	x	x	x
Electric	Lighting	10 % More Efficient Design (Lighting)	x			
Electric	Lighting	20 % More Efficient Design (Lighting)	x			
Electric	Lighting	4' 1L T5HO, EB	x	x	x	x
Electric	Lighting	4' 1L T8 Premium, EB	x	x	x	x
Electric	Lighting	4' 2L T5HO, EB	x	x	x	x
Electric	Lighting	4' 2L T8 Premium, EB	x	x	x	x
Electric	Lighting	RET 2L4'T8, 1EB	x			
Electric	Lighting	4' 3L T8 Premium, EB		x	x	
Electric	Lighting	4' 3L T8, EB		x	x	x
Electric	Lighting	4' 4L T8 Premium, EB	x	x	x	
Electric	Lighting	4' 4L T8, EB		x	x	x
Electric	Lighting	8' 1L T12, 60W, EB	x	x	x	x
Electric	Lighting	8' 2L T12, 60W, EB	x	x	x	x
Electric	Lighting	8' 2L T8, EB		x	x	x
Electric	Lighting	ROB 2L4' Premium T8, 1EB	x			
Electric	Lighting	ROB 4L4' Premium T8, 1EB	x			
Electric	Lighting	CFL Screw-in, Modular 18W	x	x	x	
Electric	Lighting	Continuous Dimming, 10-4' Fluorescent Fixtures	x	x	x	x
Electric	Lighting	Continuous Dimming, 5-4' Fluorescent Fixtures	x	x	x	x
Electric	Lighting	Continuous Dimming, 5-8' Fluorescent Fixtures	x	x	x	x
Electric	Lighting	Halogen PAR Flood, 90W	x	x	x	
Electric	Lighting	High Pressure Sodium 250W Lamp	x			x
Electric	Lighting	Metal Halide, 50W	x	x		x
Electric	Lighting	HPS, 50W		x		x
Electric	Lighting	Occupancy Sensor, 4-4' Fluorescent Fixtures	x	x	x	x

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	Lighting	Occupancy Sensor, 4-8' Fluorescent Fixtures	x	x	x	x
Electric	Lighting	Occupancy Sensor, 8-4' Fluorescent Fixtures	x	x	x	x
Electric	Lighting	Outdoor Lighting Controls (Photocell/Timeclock)	x			x
Electric	Lighting	LED Exit Signs				x
Electric	Other	ENERGY STAR or Better Office Equipment: Computer	x	x	x	x
Electric	Other	ENERGY STAR or Better Office Equipment: Copiers	x	x	x	x
Electric	Other	ENERGY STAR or Better Office Equipment: Monitors	x	x	x	x
Electric	Other	ENERGY STAR or Better Office Equipment: Printers	x	x	x	x
Electric	Other	High-Efficiency Convection Oven	x	x	x	
Electric	Other	High-Efficiency Range and Oven	x			
Electric	Other	Smart Networks	x	x	x	x
Electric	Refrigeration	Anti-Sweat (Humidistat) Controls	x	x	x	x
Electric	Refrigeration	Compressor VSD retrofit	x	x	x	x
Electric	Refrigeration	Demand Control Defrost - Electric	x	x	x	x
Electric	Refrigeration	Demand Control Defrost - Hot Gas	x	x	x	x
Electric	Refrigeration	High Efficiency Case Fans	x	x	x	
Electric	Refrigeration	High-Efficiency Compressors	x	x	x	x
Electric	Refrigeration	Installation of Floating Condenser Head Pressure Controls	x	x	x	x
Electric	Refrigeration	Night Covers for Display Cases	x	x	x	
Electric	Refrigeration	Reduced Speed or Cycling of Evaporator Fans	x	x		x
Electric	Refrigeration	Refrigeration Commissioning	x	x	x	
Electric	Refrigeration	Strip Curtains for Walk-Ins	x	x	x	
Electric	Water Heating	Demand controlled circulating systems	x	x		x
Electric	Water Heating	Heat Pump Water Heater	x	x		x
Electric	Water Heating	High-Efficiency Water Heater (electric)	x	x		x
Electric	Water Heating	Hot Water (SHW) Pipe Insulation	x	x	x	x
Electric	Water Heating	Low-Flow Showerheads				x
Electric	Water Heating	Faucet Aerators				x
Electric	Water Heating	Chemical Dishwashing system				x
Gas	HVAC	Boiler Tune-Up	x	x	x	
Gas	HVAC	Clock / Programmable Thermostat	x	x	x	

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Gas	HVAC	Duct Insulation	x	x	x	x
Gas	HVAC	Duct Repair and Sealing	x	x	x	
Gas	HVAC	High Efficiency Gas Furnace/Boiler	x	x	x	
Gas	HVAC	High Efficiency Windows (Multiple Glazed, Low Emissivity)	x	x	x	x
Gas	HVAC	Installation of Air Side Heat Recovery Systems	x	x		x
Gas	HVAC	Installation of Energy Management Systems (EMS)	x	x	x	x
Gas	HVAC	Insulation (ceiling)	x	x		x
Gas	HVAC	Insulation (wall)	x	x	x	x
Gas	HVAC	Insulation of Pipes	x	x	x	x
Gas	HVAC	Occupancy Sensor for room HVAC units		x	x	
Gas	HVAC	Stack Heat Exchanger	x	x	x	
Gas	Other	Efficient Infrared Griddle	x	x	x	
Gas	Other	High-Efficiency Convection Oven	x	x	x	
Gas	Other	Infrared Conveyer Oven	x	x	x	
Gas	Other	Infrared Fryer	x	x	x	
Gas	Other	Installation of Solar Pool/Spa Heating Systems	x	x	x	
Gas	Other	Installation of Swimming Pool / Spa Covers	x	x	x	
Gas	Other	Power Burner Fryer	x	x	x	
Gas	Other	Power Burner Oven	x	x		
Gas	Water Heating	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	x	x		
Gas	Water Heating	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95		x	x	
Gas	Water Heating	Hot Water (SHW) Pipe Insulation	x	x	x	x
Gas	Water Heating	Tankless Water Heater	x	x	x	x
Gas	Water Heating	Water Heater Tank Blanket/Insulation	x	x	x	x

Table A.2: Residential Energy Efficiency Measures – Puget Sound Energy

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	HVAC	Addition of Attic and Crawlspace Ventilation	x			x
Electric	HVAC	Air-to-Air Heat Exchangers	x			x
Electric	HVAC	Ceiling R-0 to R-19 Insulation	x	x	x	x
Electric	HVAC	Ceiling R-19 to R-30 Insulation		x		
Electric	HVAC	Ceiling R-19 to R-38 Insulation	x	x		x
Electric	HVAC	Comprehensive Shell Air Sealing – Inf. Reduction	x	x		x
Electric	HVAC	Duct Testing and Sealing	x	x		
Electric	HVAC	Duct Insulation (R-3 to R-8)	x	x	x	x
Electric	HVAC	ENERGY STAR New Construction	x	x		x
Electric	HVAC	ENERGY STAR New Construction Plus	x	x		
Electric	HVAC	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	x	x	x	x
Electric	HVAC	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	x	x	x	
Electric	HVAC	ENERGY STAR or better Room AC, 10 kBtu, EER=10.7	x	x		x
Electric	HVAC	ENERGY STAR or better Room AC, 12 kBtu, EER=10.7	x	x		
Electric	HVAC	ENERGY STAR or better Room AC, 14 kBtu, EER=10.7	x	x		
Electric	HVAC	ENERGY STAR or better Room AC, 8 kBtu, EER=10.7	x	x		
Electric	HVAC	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	x	x	x	x
Electric	HVAC	Floor R-0 to R-30 Insulation-Batts	x	x	x	x
Electric	HVAC	Floor R-5 to R-25 Insulation-Batts		x		
Electric	HVAC	Furnace Blower Motor Replacement	x			
Electric	HVAC	Geothermal Heat Pump	x	x		x
Electric	HVAC	High-Efficiency Central AC, SEER=12		x		
Electric	HVAC	High-Efficiency Central AC, SEER=14		x		
Electric	HVAC	High Efficiency Ventilating Fans	x			
Electric	HVAC	HVAC Diagnostic Testing, Repair and Maintenance	x	x	x	x
Electric	HVAC	PTCS Duct Sealing &O&M		x	x	x
Electric	HVAC	Super Good Cents / ENERGY STAR New Man. Housing	x	x	x	x
Electric	HVAC	Super Good Cents / ENERGY STAR New Man. Housing Plus	x	x		

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	HVAC	Wall 2x4 R-0 to Blow-In R-13 Insulation (.86)	x	x		x
Electric	HVAC	Wall 2x4 R-0 to Blow-In R-19 Insulation		x	x	
Electric	HVAC	Windows (high efficiency / ENERGY STAR+)	x	x	x	x
Electric	Lighting	CFL Fixtures, 0.5 hr/day	x	x		x
Electric	Lighting	CFL Fixtures, 2.5 hr/day	x	x	x	x
Electric	Lighting	CFL Fixtures, 6.0 hr/day	x	x	x	x
Electric	Lighting	CFL, 0.5 hr/day	x	x	x	x
Electric	Lighting	CFL, 2.5 hr/day	x	x	x	x
Electric	Lighting	CFL, 6.0 hr/day	x	x	x	x
Electric	Lighting	Fluorescent Torchieries, 0.5 hr/day	x	x		x
Electric	Lighting	Fluorescent Torchieries, 2.5 hr/day	x	x	x	x
Electric	Lighting	Fluorescent Torchieries, 6.0 hr/day	x	x	x	x
Electric	Other	Convection Oven	x	x		x
Electric	Other	ENERGY STAR or better Freezer	x	x	x	x
Electric	Other	ENERGY STAR or better Refrigerator	x	x	x	x
Electric	Other	High Efficiency Dryer With Moisture Sensor		x	x	x
Electric	Other	Powerstrip with Occupancy Sensor	x	x		x
Electric	Other	Removal of Secondary Freezer	x	x	x	x
Electric	Other	Removal of Secondary Refrigerator	x	x	x	x
Electric	Water Heating	Drain Water Heat Recovery (GFX)	x	x	x	x
Electric	Water Heating	Energy Star DW (EF=0.58)	x	x	x	x
Electric	Water Heating	Energy Star Vertical-Axis Clothes Washer: SEHA CW Tier 2 (EF=3.25)	x	x	x	x
Electric	Water Heating	Faucet Aerators		x	x	x
Electric	Water Heating	HE Water Heater (EF=0.95)	x	x	x	x
Electric	Water Heating	Heat Pump Water Heater (EF=2.9)	x	x		x
Electric	Water Heating	Horizontal-Axis Clothes Washer: Energy Star CW (EF=2.5)	x	x	x	x
Electric	Water Heating	Hot Water Heater Tank Wrap (R-10)		x	x	x
Electric	Water Heating	Hot Water Pipe Insulation	x	x	x	x
Electric	Water Heating	Low-Flow Showerheads	x	x	x	x
Electric	Water Heating	Solar Water Heater	x	x		x

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	Water Heating	Tankless Water Heater (EF=0.98)	x	x		x
Electric	Water Heating	Water Heater Thermostat Setback	x	x	x	x
Gas	HVAC	Addition of Attic and Crawlspace Ventilation	x			x
Gas	HVAC	Ceiling R-0 to R-19 Insulation Blown-in (.71)	x	x	x	x
Gas	HVAC	Ceiling R-19 to R-30 Insulation Blown in (.73)		x		
Gas	HVAC	Ceiling R-19 to R-38 Insulation Blown in (.73)	x	x		x
Gas	HVAC	Comprehensive Shell Air Sealing – Inf. Reduction	x	x	x	x
Gas	HVAC	Condensing Furnace, 92 AFUE	x	x	x	x
Gas	HVAC	Condensing Furnace, 96 AFUE	x	x	x	
Gas	HVAC	Duct Insulation (R-3 to R-8)	x	x		x
Gas	HVAC	Duct Testing and Sealing	x	x		
Gas	HVAC	ENERGY STAR New Construction	x	x		x
Gas	HVAC	ENERGY STAR New Construction Plus	x	x		
Gas	HVAC	ENERGY STAR Programmable Thermostat	x	x	x	x
Gas	HVAC	Floor R-0 to R-30 Insulation-Batts	x	x		x
Gas	HVAC	Floor R-5 to R-25 Insulation-Batts		x		
Gas	HVAC	Furnace Diagnostic Testing, Repair and Maintenance	x	x	x	x
Gas	HVAC	High Efficiency Condensing Boiler (AFUE = 90%)	x	x		x
Gas	HVAC	Integrated Space and Water Heating	x	x		x
Gas	HVAC	Natural Choice / ENERGY STAR New Man. Housing	x	x		x
Gas	HVAC	PTCS Duct Sealing & O&M		x	x	x
Gas	HVAC	Wall 2x4 R-0 to Blow-In R-13 Insulation (.86)	x	x		x
Gas	HVAC	Wall 2x4 R-0 to Blow-In R-19 Insulation		x	x	
Gas	HVAC	Windows (high efficiency / ENERGY STAR+)	x	x	x	x
Gas	Other	Convection Oven	x	x		x
Gas	Other	High Efficiency Dryer With Moisture Sensor		x	x	
Gas	Water Heating	Drain Water Heat Recovery (GFX)	x	x	x	x
Gas	Water Heating	Energy Star DW (EF=0.58)	x	x		
Gas	Water Heating	Energy Star Vertical-Axis Clothes Washer	x	x		
Gas	Water Heating	Faucet Aerators		x	x	x
Gas	Water Heating	HE Water Heater (EF=0.63)	x	x	x	x

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Gas	Water Heating	HE Water Heater (EF=0.70)	x	x		
Gas	Water Heating	Horizontal-Axis Clothes Washer	x	x		
Gas	Water Heating	Hot Water Heater Tank Wrap (R-10)		x	x	x
Gas	Water Heating	Hot Water Pipe Insulation	x	x	x	x
Gas	Water Heating	Low-Flow Showerheads	x	x	x	x
Gas	Water Heating	Solar Water Heater	x	x		x
Gas	Water Heating	Tankless Water Heater (EF=0.82)	x	x		x
Gas	Water Heating	Water Heater Thermostat Setback	x	x	x	x

Table A.3: Other Energy Efficiency Measures - Puget Sound Energy

Fuel	End Use	Measure Name	2003 LCP	2005 LCP Tech	2005 LCP Achievable	2004 NWPPC
Electric	Other	LED Traffic Signals				x
Electric	Other	Vending Machine Controller				x
Electric	Other	Premium Efficiency Motors				x

Appendix B: Measure Inputs

Segment Definitions

Residential

1= Single Family - Existing Construction

2= Multifamily - Existing Construction

3= Manufactured Homes – Existing Construction

4= Single Family - New Construction

5= Multifamily - New Construction

6= Manufactured Homes – New Construction

Commercial

1= Existing Construction

2= New Construction

Building Definitions

Commercial

1 = Office

2 = Retail

3 = Restaurant

4 = Grocery

5 = Warehouse

6 = School

7 = University

8 = Hospital

9 = Lodging

10 = Miscellaneous

Residential

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	120	120	Base Heat Pump, 3 ton, HSPF=6.8	4989.83	4490.85	100.00%	0.00%	100.00%	18	$0.00	$2,275.00
1	1	120	121	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	4989.83	4490.85	82.00%	15.00%	50.00%	18	$160.00	$2,275.00
1	1	120	122	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	4989.83	4490.85	99.14%	20.00%	50.00%	18	$620.00	$2,275.00
1	1	120	123	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	4989.83	4989.83	47.29%	6.00%	80.00%	12	$150.00	$2,275.00
1	1	120	124	Ceiling R-0 to R-19 Insulation	4989.83	4989.83	52.98%	24.29%	67.00%	30	$812.70	$2,275.00
1	1	120	125	Ceiling R-19 to R-38 Insulation	4989.83	4989.83	52.98%	8.40%	33.00%	30	$812.70	$2,275.00
1	1	120	126	Floor R-0 to R-30 Insulation-Batts	4989.83	4989.83	54.50%	24.12%	33.00%	30	$1,512.00	$2,275.00
1	1	120	127	Wall 2x4 R-0 to Blow-In R-19 Insulation	4989.83	4989.83	54.50%	20.01%	50.00%	30	$1,063.70	$2,275.00
1	1	120	128	Comprehensive Shell Air Sealing - Inf. Reduction	4989.83	4989.83	40.00%	6.34%	90.00%	10	$650.00	$2,275.00
1	1	120	129	PTCS Duct Sealing &O&M	4989.83	4989.83	72.00%	25.32%	50.00%	20	$750.00	$2,275.00
1	1	120	130	Duct Insulation (R-3 to R-8)	4989.83	4989.83	21.64%	9.01%	50.00%	30	$376.00	$2,275.00
1	1	120	131	HVAC Diagnostic Testing, Repair and Maintenance	4989.83	4989.83	48.43%	4.00%	100.00%	10	$123.00	$2,275.00
1	1	120	132	Windows (high efficiency / ENERGY STAR+)	4989.83	4989.83	84.98%	16.90%	75.00%	30	$3,100.69	$2,275.00
1	1	160	160	Base Room Air Conditioner, 12 kBtu, EER=9.7	738.64	685.34	100.00%	0.00%	100.00%	15	$0.00	$279.00
1	1	160	161	ENERGY STAR or better Room AC, 12 kBtu, EER=10.7	738.64	685.34	99.11%	9.35%	100.00%	18	$406.00	$279.00
1	1	180	180	Base Resistance Space Heating	8008.29	8008.29	100.00%	0.00%	100.00%	18	$0.00	$1,500.00
1	1	180	181	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	8008.29	8008.29	82.00%	52.33%	3.50%	18	$160.00	$1,500.00
1	1	180	182	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	8008.29	8008.29	99.14%	55.14%	1.17%	18	$620.00	$1,500.00
1	1	180	183	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	8008.29	8008.29	47.29%	6.00%	80.00%	12	$100.00	$1,500.00
1	1	180	184	Ceiling R-0 to R-19 Insulation	8008.29	8008.29	52.98%	24.29%	67.00%	30	$812.70	$1,500.00
1	1	180	185	Ceiling R-19 to R-38 Insulation	8008.29	8008.29	52.98%	8.40%	33.00%	30	$812.70	$1,500.00
1	1	180	186	Floor R-0 to R-30 Insulation-Batts	8008.29	8008.29	54.50%	24.12%	33.00%	30	$1,512.00	$1,500.00
1	1	180	187	Wall 2x4 R-0 to Blow-In R-19 Insulation	8008.29	8008.29	54.50%	20.01%	50.00%	30	$1,063.70	$1,500.00
1	1	180	188	Comprehensive Shell Air Sealing - Inf. Reduction	8008.29	8008.29	40.00%	6.34%	90.00%	10	$650.00	$1,500.00
1	1	180	189	PTCS Duct Sealing &O&M	8008.29	8008.29	72.00%	8.00%	50.00%	20	$750.00	$1,500.00
1	1	180	190	Duct Insulation (R-3 to R-8)	8008.29	8008.29	21.64%	9.01%	50.00%	30	$376.00	$1,500.00
1	1	180	191	HVAC Diagnostic Testing, Repair and Maintenance	8008.29	8008.29	48.43%	4.00%	100.00%	10	$123.00	$1,500.00
1	1	180	192	Windows (high efficiency / ENERGY STAR+)	8008.29	8008.29	84.98%	16.90%	75.00%	30	$3,100.69	$1,500.00
1	1	200	200	Base Lighting Combined	2328.00	2328.00	100.00%	0.00%	100.00%	1	$0.00	#N/A
1	1	200	201	CFL, 6.0 hr/day	2328.00	2328.00	69.28%	21.31%	90.00%	5	$4.50	#N/A
1	1	200	202	CFL, 2.5 hr/day	2328.00	2328.00	89.04%	39.27%	90.00%	7	$4.50	#N/A
1	1	200	203	CFL, 0.5 hr/day	2328.00	2328.00	93.77%	4.42%	90.00%	7	$4.50	#N/A

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	200	204	CFL Fixtures, 6.0 hr/day	2328.00	2328.00	69.28%	21.31%	5.00%	8	$23.33	#N/A
1	1	200	205	CFL Fixtures, 2.5 hr/day	2328.00	2328.00	89.04%	39.27%	5.00%	10	$23.33	#N/A
1	1	200	206	CFL Fixtures, 0.5 hr/day	2328.00	2328.00	93.77%	4.42%	5.00%	10	$23.33	#N/A
1	1	200	207	Fluorescent Torchieries, 6.0 hr/day	2328.00	2328.00	100.00%	21.31%	5.00%	5	$23.00	#N/A
1	1	200	208	Fluorescent Torchieries, 2.5 hr/day	2328.00	2328.00	100.00%	39.27%	5.00%	7	$23.00	#N/A
1	1	200	209	Fluorescent Torchieries, 0.5 hr/day	2328.00	2328.00	100.00%	4.42%	5.00%	7	$23.00	#N/A
1	1	300	300	Base Refrigerator, 20 cu.ft.	848.44	848.44	100.00%	0.00%	100.00%	15	$0.00	$549.99
1	1	300	301	ENERGY STAR or better Refrigerator	848.44	678.75	73.54%	15.00%	100.00%	15	$79.00	$549.99
1	1	310	310	Base Secondary Refrigerator	1000.00	1000.00	100.00%	0.00%	100.00%	15	$0.00	#N/A
1	1	310	311	Removal of Secondary Refrigerator	1000.00	1000.00	100.00%	100.00%	15.00%	7	$200.00	#N/A
1	1	400	400	Base Freezer	823.49	823.49	100.00%	0.00%	100.00%	15	$0.00	$309.99
1	1	400	401	ENERGY STAR or better Freezer	823.49	658.79	92.80%	10.00%	100.00%	15	$50.00	$309.99
1	1	410	410	Base Secondary Freezer	950.00	950.00	100.00%	0.00%	100.00%	15	$0.00	#N/A
1	1	410	411	Removal of Secondary Freezer	950.00	950.00	100.00%	100.00%	7.50%	7	$200.00	#N/A
1	1	500	500	Base 40 gal. Water Heating (EF=0.917)	3636.00	3489.29	100.00%	0.00%	100.00%	15	$0.00	$189.99
1	1	500	501	Heat Pump Water Heater (EF=2.9)	3636.00	3636.00	99.90%	50.00%	40.00%	15	$1,750.00	$189.99
1	1	500	502	HE Water Heater (EF=0.95)	3636.00	3489.29	93.70%	3.47%	40.00%	15	$80.00	$189.99
1	1	500	503	Solar Water Heater	3636.00	3636.00	99.00%	50.00%	10.00%	15	$5,500.00	$189.99
1	1	500	504	Low-Flow Showerheads	3636.00	3636.00	20.41%	8.70%	95.00%	10	$20.00	$189.99
1	1	500	505	Hot Water Pipe Insulation	3636.00	3636.00	31.61%	1.05%	75.00%	15	$5.80	$189.99
1	1	500	506	Water Heater Thermostat Setback	3636.00	3636.00	78.03%	4.26%	50.00%	15	$15.00	$189.99
1	1	500	507	Tankless Water Heater (EF=0.98)	3636.00	3636.00	100.00%	13.10%	10.00%	15	$1,200.00	$189.99
1	1	500	508	Drain Water Heat Recovery (GFX)	3636.00	3636.00	100.00%	24.60%	35.00%	15	$550.00	$189.99
1	1	500	509	Horizontal-Axis Clothes Washer: Energy Star CW (EF=2.5)	3636.00	3636.00	97.00%	12.37%	50.00%	14	$280.00	$189.99
1	1	500	510	Energy Star Vertical-Axis Clothes Washer: SEHA CW Tier 2 (EF=3.25)	3636.00	3636.00	78.97%	15.01%	50.00%	14	$350.00	$189.99
1	1	500	511	Energy Star DW (EF=0.58)	3636.00	3636.00	82.42%	5.00%	100.00%	13	$70.00	$189.99
1	1	500	512	Hot Water Heater Tank Wrap (R-10)	3636.00	3636.00	31.32%	10.00%	90.00%	15	$17.00	$189.99
1	1	500	513	Faucet Aerators	3636.00	3636.00	73.40%	1.65%	90.00%	15	$4.82	$189.99
1	1	600	600	Base Dryer	564.00	564.00	100.00%	0.00%	100.00%	14	$0.00	$249.98
1	1	600	601	High Efficiency Dryer With Moisture Sensor	564.00	564.00	79.31%	31.91%	100.00%	14	$100.00	$249.98
1	1	700	700	Base Central AC, SEER=10	327.00	327.00	100.00%	0.00%	100.00%	18	$0.00	$2,321.00
1	1	700	701	High-Efficiency Central AC, SEER=12	327.00	255.06	99.14%	16.67%	100.00%	18	$277.00	$2,321.00
1	1	700	702	High-Efficiency Central AC, SEER=14	327.00	255.06	99.14%	28.57%	100.00%	18	$795.00	$2,321.00
1	1	900	900	Base Conventional Oven	573.95	573.95	100.00%	0.00%	100.00%	15	$0.00	$349.99
1	1	900	901	Convection Oven	573.95	573.95	100.00%	14.46%	100.00%	15	$120.00	$349.99
1	1	950	950	Base Plug Loads	3389.50	3389.50	100.00%	0.00%	100.00%	20	$0.00	#N/A
1	1	950	951	Powerstrip with Occupancy Sensor	3389.50	3389.50	100.00%	0.80%	100.00%	20	$90.00	#N/A
2	1	120	120	Base Exhaust Air Heat Pump, 2 ton, HSPF=6.8	1985.35	1786.82	100.00%	0.00%	50.00%	18	$0.00	$1,900.00
2	1	120	121	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	1985.35	1786.82	100.00%	15.00%	50.00%	18	$160.00	$1,900.00
2	1	120	122	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	1985.35	1786.82	100.00%	20.00%	50.00%	18	$620.00	$1,900.00

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	1	120	123	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	1985.35	1985.35	89.36%	6.00%	80.00%	12	$150.00	$1,900.00
2	1	120	124	Ceiling R-0 to R-19 Insulation	1985.35	1985.35	59.83%	14.20%	67.00%	30	$447.20	$1,900.00
2	1	120	125	Ceiling R-19 to R-38 Insulation	1985.35	1985.35	59.83%	2.20%	33.00%	30	$447.20	$1,900.00
2	1	120	126	Floor R-0 to R-30 Insulation-Batts	1985.35	1985.35	59.91%	10.56%	33.00%	30	$582.40	$1,900.00
2	1	120	127	Wall 2x4 R-0 to Blow-In R-19 Insulation	1985.35	1985.35	59.91%	26.33%	50.00%	30	$624.00	$1,900.00
2	1	120	128	Comprehensive Shell Air Sealing - Inf. Reduction	1985.35	1985.35	20.00%	14.40%	90.00%	10	$650.00	$1,900.00
2	1	120	129	PTCS Duct Sealing &O&M	1985.35	1985.35	36.00%	17.27%	50.00%	20	$630.00	$1,900.00
2	1	120	130	Duct Insulation (R-3 to R-8)	1985.35	1985.35	39.99%	0.68%	50.00%	30	$376.00	$1,900.00
2	1	120	132	Windows (high efficiency / ENERGY STAR+)	1985.35	1985.35	95.07%	26.80%	75.00%	30	$1,129.69	$1,900.00
2	1	160	160	Base Room Air Conditioner, 8 kBtu, EER=9.7	409.25	379.71	100.00%	0.00%	100.00%	15	$0.00	$219.99
2	1	160	161	ENERGY STAR or better Room AC, 8 kBtu, EER=10.7	409.25	379.71	100.00%	9.35%	100.00%	18	$270.00	$219.99
2	1	180	180	Base Resistance Space Heating	2772.91	2772.91	100.00%	0.00%	100.00%	18	$0.00	$990.00
2	1	180	181	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	2772.91	2772.91	82.00%	45.23%	4.57%	18	$160.00	$990.00
2	1	180	182	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	2772.91	2772.91	100.00%	48.45%	1.52%	18	$620.00	$990.00
2	1	180	183	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	2772.91	2772.91	89.36%	6.00%	80.00%	12	$100.00	$990.00
2	1	180	184	Ceiling R-0 to R-19 Insulation	2772.91	2772.91	59.83%	14.20%	67.00%	30	$447.20	$990.00
2	1	180	185	Ceiling R-19 to R-38 Insulation	2772.91	2772.91	59.83%	2.20%	33.00%	30	$447.20	$990.00
2	1	180	186	Floor R-0 to R-30 Insulation-Batts	2772.91	2772.91	59.91%	10.56%	33.00%	30	$582.40	$990.00
2	1	180	187	Wall 2x4 R-0 to Blow-In R-19 Insulation	2772.91	2772.91	59.91%	26.33%	50.00%	30	$624.00	$990.00
2	1	180	188	Comprehensive Shell Air Sealing - Inf. Reduction	2772.91	2772.91	20.00%	14.40%	90.00%	10	$650.00	$990.00
2	1	180	189	PTCS Duct Sealing &O&M	2772.91	2772.91	36.00%	6.00%	50.00%	20	$630.00	$990.00
2	1	180	190	Duct Insulation (R-3 to R-8)	2772.91	2772.91	39.99%	0.68%	50.00%	30	$376.00	$990.00
2	1	180	192	Windows (high efficiency / ENERGY STAR+)	2772.91	2772.91	95.07%	26.80%	75.00%	30	$1,129.69	$990.00
2	1	200	200	Base Lighting Combined	1088.00	1088.00	100.00%	0.00%	100.00%	1	$0.00	#N/A
2	1	200	201	CFL, 6.0 hr/day	1088.00	1088.00	72.68%	21.31%	90.00%	5	$4.50	#N/A
2	1	200	202	CFL, 2.5 hr/day	1088.00	1088.00	86.19%	39.27%	90.00%	7	$4.50	#N/A
2	1	200	203	CFL, 0.5 hr/day	1088.00	1088.00	96.50%	4.42%	90.00%	7	$4.50	#N/A
2	1	200	204	CFL Fixtures, 6.0 hr/day	1088.00	1088.00	72.68%	21.31%	5.00%	8	$23.33	#N/A
2	1	200	205	CFL Fixtures, 2.5 hr/day	1088.00	1088.00	86.19%	39.27%	5.00%	10	$23.33	#N/A
2	1	200	206	CFL Fixtures, 0.5 hr/day	1088.00	1088.00	96.50%	4.42%	5.00%	10	$23.33	#N/A
2	1	200	207	Fluorescent Torchieries, 6.0 hr/day	1088.00	1088.00	100.00%	21.31%	5.00%	5	$23.00	#N/A
2	1	200	208	Fluorescent Torchieries, 2.5 hr/day	1088.00	1088.00	100.00%	39.27%	5.00%	7	$23.00	#N/A
2	1	200	209	Fluorescent Torchieries, 0.5 hr/day	1088.00	1088.00	100.00%	4.42%	5.00%	7	$23.00	#N/A
2	1	300	300	Base Refrigerator, 15 cu.ft.	653.80	653.80	100.00%	0.00%	100.00%	15	$0.00	$429.99
2	1	300	301	ENERGY STAR or better Refrigerator	653.80	523.04	93.83%	15.00%	100.00%	15	$59.00	$429.99
2	1	310	310	Base Secondary Refrigerator	1000.00	1000.00	100.00%	0.00%	100.00%	15	$0.00	#N/A
2	1	310	311	Removal of Secondary Refrigerator	1000.00	1000.00	100.00%	100.00%	1.00%	7	$200.00	#N/A
2	1	400	400	Base Freezer	598.90	598.90	100.00%	0.00%	100.00%	15	$0.00	$309.99

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	1	400	401	ENERGY STAR or better Freezer	598.90	479.12	100.00%	10.00%	100.00%	15	$50.00	$309.99
2	1	410	410	Base Secondary Freezer	950.00	950.00	100.00%	0.00%	100.00%	15	$0.00	#N/A
2	1	410	411	Removal of Secondary Freezer	950.00	950.00	100.00%	100.00%	0.50%	7	$200.00	#N/A
2	1	500	500	Base 40 gal. Water Heating (EF=0.917)	3092.27	2967.50	100.00%	0.00%	100.00%	15	$0.00	$189.99
2	1	500	501	Heat Pump Water Heater (EF=2.9)	3092.27	3092.27	99.90%	50.00%	40.00%	15	$1,750.00	$189.99
2	1	500	502	HE Water Heater (EF=0.95)	3092.27	2967.50	93.70%	3.47%	40.00%	15	$80.00	$189.99
2	1	500	503	Solar Water Heater	3092.27	3092.27	99.00%	50.00%	10.00%	15	$5,500.00	$189.99
2	1	500	504	Low-Flow Showerheads	3092.27	3092.27	27.24%	5.11%	95.00%	10	$20.00	$189.99
2	1	500	505	Hot Water Pipe Insulation	3092.27	3092.27	62.57%	1.24%	75.00%	15	$5.80	$189.99
2	1	500	506	Water Heater Thermosat Setback	3092.27	3092.27	83.71%	4.26%	50.00%	15	$15.00	$189.99
2	1	500	507	Tankless Water Heater (EF=0.98)	3092.27	3092.27	100.00%	13.10%	10.00%	15	$1,200.00	$189.99
2	1	500	508	Drain Water Heat Recovery (GFX)	3092.27	3092.27	100.00%	24.70%	25.00%	15	$550.00	$189.99
2	1	500	509	Horizontal-Axis Clothes Washer: Energy Star CW (EF=2.5)	3092.27	3092.27	97.00%	9.91%	50.00%	14	$280.00	$189.99
2	1	500	510	Energy Star Vertical-Axis Clothes Washer: SEHA CW Tier 2 (EF=3.25)	3092.27	3092.27	91.76%	12.07%	50.00%	14	$350.00	$189.99
2	1	500	511	Energy Star DW (EF=0.58)	3092.27	3092.27	96.44%	4.02%	100.00%	13	$70.00	$189.99
2	1	500	512	Hot Water Heater Tank Wrap (R-10)	3092.27	3092.27	53.10%	10.00%	90.00%	15	$17.00	$189.99
2	1	500	513	Faucet Aerators	3092.27	3092.27	73.40%	1.94%	90.00%	15	$4.82	$189.99
2	1	600	600	Base Dryer	564.00	564.00	100.00%	0.00%	100.00%	14	$0.00	$249.98
2	1	600	601	High Efficiency Dryer With Moisture Sensor	564.00	564.00	95.49%	31.91%	100.00%	14	$100.00	$249.98
2	1	700	700	Base Central AC, SEER=10	327.00	327.00	100.00%	0.00%	100.00%	18	$0.00	$2,321.00
2	1	700	701	High-Efficiency Central AC, SEER=12	327.00	255.06	100.00%	16.67%	100.00%	18	$277.00	$2,321.00
2	1	700	702	High-Efficiency Central AC, SEER=14	327.00	255.06	100.00%	28.57%	100.00%	18	$795.00	$2,321.00
2	1	900	900	Base Conventional Oven	465.15	465.15	100.00%	0.00%	100.00%	15	$0.00	$349.99
2	1	900	901	Convection Oven	465.15	465.15	100.00%	18.27%	100.00%	15	$120.00	$349.99
2	1	950	950	Base Plug Loads	1534.18	1534.18	100.00%	0.00%	100.00%	20	$0.00	#N/A
2	1	950	951	Powerstrip with Occupancy Sensor	1534.18	1534.18	100.00%	1.78%	100.00%	20	$90.00	#N/A
3	1	120	120	Base Heat Pump, 2 ton, HSPF=6.8	5320.23	4788.21	100.00%	0.00%	100.00%	18	$0.00	$1,900.00
3	1	120	121	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	5320.23	4788.21	82.00%	15.00%	50.00%	18	$160.00	$1,900.00
3	1	120	122	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	5320.23	4788.21	94.36%	20.00%	50.00%	18	$620.00	$1,900.00
3	1	120	123	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	5320.23	5320.23	71.49%	6.00%	80.00%	12	$150.00	$1,900.00
3	1	120	124	Ceiling R-0 to R-19 Insulation	5320.23	5320.23	59.70%	10.30%	67.00%	25	$687.22	$1,900.00
3	1	120	125	Ceiling R-19 to R-30 Insulation	5320.23	5320.23	59.70%	6.25%	33.00%	25	$864.60	$1,900.00
3	1	120	126	Floor R-5 to R-25 Insulation-Batts	5320.23	5320.23	57.36%	8.60%	33.00%	25	$817.60	$1,900.00
3	1	120	127	Wall 2x4 R-0 to Blow-In R-13 Insulation (.86)	5320.23	5320.23	57.36%	3.20%	50.00%	25	$1,660.00	$1,900.00
3	1	120	128	Comprehensive Shell Air Sealing - Inf. Reduction	5320.23	5320.23	40.00%	5.20%	90.00%	10	$300.00	$1,900.00
3	1	120	129	PTCS Duct Sealing &O&M	5320.23	5320.23	72.00%	17.00%	50.00%	20	$450.00	$1,900.00
3	1	120	130	Duct Insulation (R-3 to R-8)	5320.23	5320.23	18.62%	9.58%	50.00%	25	$245.00	$1,900.00
3	1	120	131	HVAC Diagnostic Testing, Repair and Maintenance	5320.23	5320.23	64.19%	4.00%	100.00%	10	$123.00	$1,900.00

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
3	1	120	132	Windows (high efficiency / ENERGY STAR+)	5320.23	5320.23	79.47%	24.80%	75.00%	25	$1,467.24	$1,900.00
3	1	160	160	Base Room Air Conditioner, 10 kBtu, EER=9.7	579.93	538.08	100.00%	0.00%	100.00%	15	$0.00	$249.99
3	1	160	161	ENERGY STAR or better Room AC, 10 kBtu, EER=10.7	579.93	538.08	94.33%	9.35%	100.00%	18	$338.00	$249.99
3	1	180	180	Base Resistance Space Heating	9184.13	9184.13	100.00%	0.00%	100.00%	18	$0.00	$990.00
3	1	180	181	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	9184.13	9184.13	82.00%	55.68%	49.88%	18	$160.00	$990.00
3	1	180	182	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	9184.13	9184.13	94.36%	58.29%	16.63%	18	$620.00	$990.00
3	1	180	183	ENERGY STAR Programmable Thermostat (Electronic w/ Adaptive Recovery)	9184.13	9184.13	71.49%	6.00%	80.00%	12	$100.00	$990.00
3	1	180	184	Ceiling R-0 to R-19 Insulation	9184.13	9184.13	59.70%	10.30%	67.00%	25	$687.22	$990.00
3	1	180	185	Ceiling R-19 to R-30 Insulation	9184.13	9184.13	59.70%	6.25%	33.00%	25	$864.60	$990.00
3	1	180	186	Floor R-5 to R-25 Insulation-Batts	9184.13	9184.13	57.36%	8.60%	33.00%	25	$817.60	$990.00
3	1	180	187	Wall 2x4 R-0 to Blow-In R-13 Insulation (.86)	9184.13	9184.13	57.36%	3.20%	50.00%	25	$1,660.00	$990.00
3	1	180	188	Comprehensive Shell Air Sealing - Inf. Reduction	9184.13	9184.13	40.00%	5.20%	90.00%	10	$300.00	$990.00
3	1	180	189	PTCS Duct Sealing &O&M	9184.13	9184.13	72.00%	10.00%	50.00%	20	$450.00	$990.00
3	1	180	190	Duct Insulation (R-3 to R-8)	9184.13	9184.13	18.62%	9.58%	50.00%	25	$245.00	$990.00
3	1	180	191	HVAC Diagnostic Testing, Repair and Maintenance	9184.13	9184.13	64.19%	4.00%	100.00%	10	$123.00	$990.00
3	1	180	192	Windows (high efficiency / ENERGY STAR+)	9184.13	9184.13	79.47%	24.80%	75.00%	25	$1,467.24	$990.00
3	1	200	200	Base Lighting Combined	1690.00	1690.00	100.00%	0.00%	100.00%	1	$0.00	#N/A
3	1	200	201	CFL, 6.0 hr/day	1690.00	1690.00	68.13%	21.31%	90.00%	5	$4.50	#N/A
3	1	200	202	CFL, 2.5 hr/day	1690.00	1690.00	87.17%	39.27%	90.00%	7	$4.50	#N/A
3	1	200	203	CFL, 0.5 hr/day	1690.00	1690.00	94.14%	4.42%	90.00%	7	$4.50	#N/A
3	1	200	204	CFL Fixtures, 6.0 hr/day	1690.00	1690.00	68.13%	21.31%	5.00%	8	$23.33	#N/A
3	1	200	205	CFL Fixtures, 2.5 hr/day	1690.00	1690.00	87.17%	39.27%	5.00%	10	$23.33	#N/A
3	1	200	206	CFL Fixtures, 0.5 hr/day	1690.00	1690.00	94.14%	4.42%	5.00%	10	$23.33	#N/A
3	1	200	207	Fluorescent Torchieries, 6.0 hr/day	1690.00	1690.00	100.00%	21.31%	5.00%	5	$23.00	#N/A
3	1	200	208	Fluorescent Torchieries, 2.5 hr/day	1690.00	1690.00	100.00%	39.27%	5.00%	7	$23.00	#N/A
3	1	200	209	Fluorescent Torchieries, 0.5 hr/day	1690.00	1690.00	100.00%	4.42%	5.00%	7	$23.00	#N/A
3	1	300	300	Base Refrigerator, 15 cu.ft.	854.43	854.43	100.00%	0.00%	100.00%	15	$0.00	$429.99
3	1	300	301	ENERGY STAR or better Refrigerator	854.43	683.54	79.39%	15.00%	100.00%	15	$59.00	$429.99
3	1	310	310	Base Secondary Refrigerator	1000.00	1000.00	100.00%	0.00%	100.00%	15	$0.00	#N/A
3	1	310	311	Removal of Secondary Refrigerator	1000.00	1000.00	100.00%	100.00%	11.00%	7	$200.00	#N/A
3	1	400	400	Base Freezer	807.52	807.52	100.00%	0.00%	100.00%	15	$0.00	$309.99
3	1	400	401	ENERGY STAR or better Freezer	807.52	646.01	94.93%	10.00%	100.00%	15	$50.00	$309.99
3	1	410	410	Base Secondary Freezer	950.00	950.00	100.00%	0.00%	100.00%	15	$0.00	#N/A
3	1	410	411	Removal of Secondary Freezer	950.00	950.00	100.00%	100.00%	5.50%	7	$200.00	#N/A
3	1	500	500	Base 40 gal. Water Heating (EF=0.917)	2183.51	2095.41	100.00%	0.00%	100.00%	15	$0.00	$189.99
3	1	500	501	Heat Pump Water Heater (EF=2.9)	2183.51	2183.51	99.90%	50.00%	40.00%	15	$1,750.00	$189.99
3	1	500	502	HE Water Heater (EF=0.95)	2183.51	2095.41	93.70%	3.47%	40.00%	15	$80.00	$189.99
3	1	500	503	Solar Water Heater	2183.51	2183.51	99.00%	50.00%	10.00%	15	$5,500.00	$189.99
3	1	500	504	Low-Flow Showerheads	2183.51	2183.51	21.10%	7.23%	95.00%	10	$20.00	$189.99

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
3	1	500	505	Hot Water Pipe Insulation	2183.51	2183.51	57.52%	1.75%	75.00%	15	$5.80	$189.99
3	1	500	506	Water Heater Thermosat Setback	2183.51	2183.51	90.09%	4.26%	50.00%	15	$15.00	$189.99
3	1	500	507	Tankless Water Heater (EF=0.98)	2183.51	2183.51	100.00%	13.10%	10.00%	15	$1,200.00	$189.99
3	1	500	508	Drain Water Heat Recovery (GFX)	2183.51	2183.51	100.00%	25.00%	25.00%	15	$550.00	$189.99
3	1	500	509	Horizontal-Axis Clothes Washer: Energy Star CW (EF=2.5)	2183.51	2183.51	97.00%	14.47%	50.00%	14	$280.00	$189.99
3	1	500	510	Energy Star Vertical-Axis Clothes Washer: SEHA CW Tier 2 (EF=3.25)	2183.51	2183.51	89.06%	17.54%	50.00%	14	$350.00	$189.99
3	1	500	511	Energy Star DW (EF=0.58)	2183.51	2183.51	93.43%	7.89%	100.00%	13	$70.00	$189.99
3	1	500	512	Hot Water Heater Tank Wrap (R-10)	2183.51	2183.51	31.94%	10.00%	90.00%	15	$17.00	$189.99
3	1	500	513	Faucet Aerators	2183.51	2183.51	73.40%	2.74%	90.00%	15	$4.82	$189.99
3	1	600	600	Base Dryer	564.00	564.00	100.00%	0.00%	100.00%	14	$0.00	$249.98
3	1	600	601	High Efficiency Dryer With Moisture Sensor	564.00	564.00	88.35%	31.91%	100.00%	14	$100.00	$249.98
3	1	700	700	Base Central AC, SEER=10	452.00	452.00	100.00%	0.00%	100.00%	18	$0.00	$2,321.00
3	1	700	701	High-Efficiency Central AC, SEER=12	452.00	352.56	94.36%	16.67%	100.00%	18	$277.00	$2,321.00
3	1	700	702	High-Efficiency Central AC, SEER=14	452.00	352.56	94.36%	28.57%	100.00%	18	$795.00	$2,321.00
3	1	900	900	Base Conventional Oven	514.06	514.06	100.00%	0.00%	100.00%	15	$0.00	$349.99
3	1	900	901	Convection Oven	514.06	514.06	100.00%	14.78%	100.00%	15	$120.00	$349.99
3	1	950	950	Base Plug Loads	1265.57	1265.57	100.00%	0.00%	100.00%	20	$0.00	#N/A
3	1	950	951	Powerstrip with Occupancy Sensor	1265.57	1265.57	100.00%	1.44%	100.00%	20	$90.00	#N/A
4	1	120	120	Base Heat Pump, 4 ton, HSPF=6.8	3967.71	3967.71	100.00%	0.00%	100.00%	18	$0.00	$2,600.00
4	1	120	121	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	3272.40	3272.40	82.00%	15.00%	40.00%	18	$160.00	$2,600.00
4	1	120	122	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	3272.40	3272.40	99.14%	20.00%	40.00%	18	$620.00	$2,600.00
4	1	120	137	Geothermal Heat Pump	3967.71	3967.71	100.00%	51.94%	20.00%	18	$6,472.00	$2,600.00
4	1	120	138	ENERGY STAR New Construction	3967.71	3967.71	99.14%	30.00%	50.00%	30	$3,000.00	$2,600.00
4	1	120	139	ENERGY STAR New Construction Plus	3967.71	3967.71	99.14%	40.00%	50.00%	30	$5,000.00	$2,600.00
4	1	160	160	Base Room Air Conditioner, 14 kBtu, EER=9.7	738.64	738.64	100.00%	0.00%	100.00%	15	$0.00	$349.00
4	1	160	161	ENERGY STAR or better Room AC, 14 kBtu, EER=10.7	738.64	738.64	99.11%	9.35%	100.00%	25	$473.00	$349.00
4	1	200	200	Base Lighting Combined	2328.00	2328.00	100.00%	0.00%	100.00%	1	$0.00	#N/A
4	1	200	201	CFL, 6.0 hr/day	2328.00	2328.00	69.28%	21.31%	90.00%	5	$4.50	#N/A
4	1	200	202	CFL, 2.5 hr/day	2328.00	2328.00	89.04%	39.27%	90.00%	7	$4.50	#N/A
4	1	200	203	CFL, 0.5 hr/day	2328.00	2328.00	93.77%	4.42%	90.00%	7	$4.50	#N/A
4	1	200	204	CFL Fixtures, 6.0 hr/day	2328.00	2328.00	69.28%	21.31%	5.00%	8	$23.33	#N/A
4	1	200	205	CFL Fixtures, 2.5 hr/day	2328.00	2328.00	89.04%	39.27%	5.00%	10	$23.33	#N/A
4	1	200	206	CFL Fixtures, 0.5 hr/day	2328.00	2328.00	93.77%	4.42%	5.00%	10	$23.33	#N/A
4	1	200	207	Fluorescent Torchieries, 6.0 hr/day	2328.00	2328.00	100.00%	21.31%	5.00%	5	$23.00	#N/A
4	1	200	208	Fluorescent Torchieries, 2.5 hr/day	2328.00	2328.00	100.00%	39.27%	5.00%	7	$23.00	#N/A
4	1	200	209	Fluorescent Torchieries, 0.5 hr/day	2328.00	2328.00	100.00%	4.42%	5.00%	7	$23.00	#N/A
4	1	300	300	Base Refrigerator, 20 cu.ft.	675.76	675.76	100.00%	0.00%	100.00%	15	$0.00	$549.99
4	1	300	301	ENERGY STAR or better Refrigerator	675.76	675.76	73.54%	15.00%	100.00%	15	$79.00	$549.99
4	1	400	400	Base Freezer	655.80	655.80	100.00%	0.00%	100.00%	15	$0.00	$309.99
4	1	400	401	ENERGY STAR or better Freezer	655.80	655.80	92.80%	10.00%	100.00%	15	$50.00	$309.99

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
4	1	500	500	Base 40 gal. Water Heating (EF=0.917)	3090.60	3090.60	100.00%	0.00%	100.00%	15	$0.00	$189.99
4	1	500	501	Heat Pump Water Heater (EF=2.9)	3090.60	3090.60	99.90%	50.00%	40.00%	15	$1,750.00	$189.99
4	1	500	502	HE Water Heater (EF=0.95)	3090.60	3090.60	93.70%	3.47%	40.00%	15	$80.00	$189.99
4	1	500	503	Solar Water Heater	3090.60	3090.60	99.00%	50.00%	10.00%	15	$5,500.00	$189.99
4	1	500	507	Tankless Water Heater (EF=0.98)	3090.60	3090.60	100.00%	13.10%	10.00%	15	$903.00	$189.99
4	1	500	508	Drain Water Heat Recovery (GFX)	3090.60	3090.60	100.00%	25.00%	35.00%	15	$400.00	$189.99
4	1	500	509	Horizontal-Axis Clothes Washer: Energy Star CW (EF=2.5)	3090.60	3090.60	95.00%	13.33%	50.00%	14	$280.00	$189.99
4	1	500	510	Energy Star Vertical-Axis Clothes Washer: SEHA CW Tier 2 (EF=3.25)	3090.60	3090.60	78.97%	16.16%	50.00%	14	$350.00	$189.99
4	1	500	511	Energy Star DW (EF=0.58)	3090.60	3090.60	82.42%	5.00%	100.00%	13	$70.00	$189.99
4	1	500	512	Hot Water Heater Tank Wrap (R-10)	3090.60	3090.60	31.32%	10.00%	90.00%	15	$17.00	$189.99
4	1	500	513	Faucet Aerators	3090.60	3090.60	73.40%	1.65%	90.00%	15	$4.82	$189.99
4	1	600	600	Base Dryer	564.00	564.00	100.00%	1.94%	100.00%	14	$0.00	$249.98
4	1	600	601	High Efficiency Dryer With Moisture Sensor	564.00	564.00	79.31%	31.91%	100.00%	14	$100.00	$249.98
4	1	700	700	Base Central AC, SEER=10	236.00	236.00	100.00%	0.00%	100.00%	18	$0.00	$2,321.00
4	1	700	701	High-Efficiency Central AC, SEER=12	236.00	236.00	99.14%	16.67%	100.00%	18	$277.00	$2,321.00
4	1	700	702	High-Efficiency Central AC, SEER=14	236.00	236.00	99.14%	28.57%	100.00%	18	$795.00	$2,321.00
4	1	900	900	Base Conventional Oven	573.95	573.95	100.00%	0.00%	100.00%	15	$0.00	$349.99
4	1	900	901	Convection Oven	573.95	573.95	100.00%	11.67%	100.00%	15	$120.00	$349.99
4	1	950	950	Base Plug Loads	3389.50	3389.50	100.00%	0.00%	100.00%	20	$0.00	#N/A
4	1	950	951	Powerstrip with Occupancy Sensor	3389.50	3389.50	100.00%	0.39%	100.00%	20	$90.00	#N/A
5	1	120	120	Base Exhaust Air Heat Pump, 2 ton, HSPF=6.8	1247.71	1247.71	100.00%	0.00%	50.00%	18	$0.00	$1,900.00
5	1	120	121	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	2783.05	2783.05	100.00%	15.00%	40.00%	18	$160.00	$1,900.00
5	1	120	122	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	2783.05	2783.05	100.00%	20.00%	40.00%	18	$620.00	$1,900.00
5	1	120	138	ENERGY STAR New Construction	1247.71	1247.71	100.00%	30.00%	50.00%	30	$2,000.00	$1,900.00
5	1	120	139	ENERGY STAR New Construction Plus	1247.71	1247.71	100.00%	40.00%	50.00%	30	$3,500.00	$1,900.00
5	1	160	160	Base Room Air Conditioner, 10 kBtu, EER=9.7	389.28	389.28	100.00%	0.00%	100.00%	15	$0.00	$249.99
5	1	160	161	ENERGY STAR or better Room AC, 10 kBtu, EER=10.7	389.28	389.28	100.00%	9.35%	100.00%	25	$338.00	$249.99
5	1	200	200	Base Lighting Combined	1088.00	1088.00	100.00%	0.00%	100.00%	1	$0.00	#N/A
5	1	200	201	CFL, 6.0 hr/day	1088.00	1088.00	72.68%	21.31%	90.00%	5	$4.50	#N/A
5	1	200	202	CFL, 2.5 hr/day	1088.00	1088.00	86.19%	39.27%	90.00%	7	$4.50	#N/A
5	1	200	203	CFL, 0.5 hr/day	1088.00	1088.00	96.50%	4.42%	90.00%	7	$4.50	#N/A
5	1	200	204	CFL Fixtures, 6.0 hr/day	1088.00	1088.00	72.68%	21.31%	5.00%	8	$23.33	#N/A
5	1	200	205	CFL Fixtures, 2.5 hr/day	1088.00	1088.00	86.19%	39.27%	5.00%	10	$23.33	#N/A
5	1	200	206	CFL Fixtures, 0.5 hr/day	1088.00	1088.00	96.50%	4.42%	5.00%	10	$23.33	#N/A
5	1	200	207	Fluorescent Torchieries, 6.0 hr/day	1088.00	1088.00	100.00%	21.31%	5.00%	5	$23.00	#N/A
5	1	200	208	Fluorescent Torchieries, 2.5 hr/day	1088.00	1088.00	100.00%	39.27%	5.00%	7	$23.00	#N/A
5	1	200	209	Fluorescent Torchieries, 0.5 hr/day	1088.00	1088.00	100.00%	4.42%	5.00%	7	$23.00	#N/A
5	1	300	300	Base Refrigerator, 15 cu.ft.	637.83	637.83	100.00%	0.00%	100.00%	15	$0.00	$429.99
5	1	300	301	ENERGY STAR or better Refrigerator	637.83	637.83	93.83%	15.00%	100.00%	15	$59.00	$429.99
5	1	400	400	Base Freezer	583.93	583.93	100.00%	0.00%	100.00%	15	$0.00	$309.99

Table B.1: Residential Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
5	1	400	401	ENERGY STAR or better Freezer	583.93	583.93	100.00%	10.00%	100.00%	15	$50.00	$309.99
5	1	500	500	Base 40 gal. Water Heating (EF=0.917)	2628.43	2628.43	100.00%	0.00%	100.00%	15	$0.00	$189.99
5	1	500	501	Heat Pump Water Heater (EF=2.9)	2628.43	2628.43	99.90%	50.00%	40.00%	15	$1,750.00	$189.99
5	1	500	502	HE Water Heater (EF=0.95)	2628.43	2628.43	93.70%	3.47%	40.00%	15	$80.00	$189.99
5	1	500	503	Solar Water Heater	2628.43	2628.43	99.00%	50.00%	10.00%	15	$5,500.00	$189.99
5	1	500	507	Tankless Water Heater (EF=0.98)	2628.43	2628.43	100.00%	13.10%	10.00%	15	$903.00	$189.99
5	1	500	508	Drain Water Heat Recovery (GFX)	2628.43	2628.43	100.00%	28.70%	25.00%	15	$400.00	$189.99
5	1	500	509	Horizontal-Axis Clothes Washer: Energy Star CW (EF=2.5)	2628.43	2628.43	97.00%	10.67%	50.00%	14	$280.00	$189.99
5	1	500	510	Energy Star Vertical-Axis Clothes Washer: SEHA CW Tier 2 (EF=3.25)	2628.43	2628.43	91.76%	13.01%	50.00%	14	$350.00	$189.99
5	1	500	511	Energy Star DW (EF=0.58)	2628.43	2628.43	96.44%	4.34%	100.00%	13	$70.00	$189.99
5	1	500	512	Hot Water Heater Tank Wrap (R-10)	2628.43	2628.43	53.10%	10.00%	90.00%	15	$17.00	$189.99
5	1	500	513	Faucet Aerators	2628.43	2628.43	73.40%	1.94%	90.00%	15	$4.82	$189.99
5	1	600	600	Base Dryer	564.00	564.00	100.00%	0.00%	100.00%	14	$0.00	$249.98
5	1	600	601	High Efficiency Dryer With Moisture Sensor	564.00	564.00	95.49%	31.91%	100.00%	14	$100.00	$249.98
5	1	700	700	Base Central AC, SEER=10	236.00	236.00	100.00%	0.00%	100.00%	18	$0.00	$2,321.00
5	1	700	701	High-Efficiency Central AC, SEER=12	236.00	236.00	100.00%	16.67%	100.00%	18	$277.00	$2,321.00
5	1	700	702	High-Efficiency Central AC, SEER=14	236.00	236.00	100.00%	28.57%	100.00%	18	$795.00	$2,321.00
5	1	900	900	Base Conventional Oven	465.15	465.15	100.00%	0.00%	100.00%	15	$0.00	$349.99
5	1	900	901	Convection Oven	465.15	465.15	100.00%	19.13%	100.00%	15	$120.00	$349.99
5	1	950	950	Base Plug Loads	1534.18	1534.18	100.00%	0.00%	100.00%	20	$0.00	#N/A
5	1	950	951	Powerstrip with Occupancy Sensor	1534.18	1534.18	100.00%	1.98%	100.00%	20	$90.00	#N/A
6	1	120	120	Base Heat Pump, 3 ton, HSPF=6.8	4972.87	4972.87	100.00%	0.00%	100.00%	18	$0.00	$2,275.00
6	1	120	121	ENERGY STAR or better Air Source Heat Pump, HSPF=8.0	1965.16	1965.16	82.00%	15.00%	50.00%	18	$160.00	$2,275.00
6	1	120	122	ENERGY STAR or better Air Source Heat Pump, HSPF=8.5	1965.16	1965.16	94.36%	20.00%	50.00%	18	$620.00	$2,275.00
6	1	120	138	Super Good Cents / ENERGY STAR New Man. Housing	4972.87	4972.87	100.00%	30.00%	50.00%	25	$1,500.00	$2,275.00
6	1	120	139	Super Good Cents / ENERGY STAR New Man. Housing Plus	4972.87	4972.87	100.00%	40.00%	50.00%	25	$3,000.00	$2,275.00
6	1	160	160	Base Room Air Conditioner, 10 kBtu, EER=9.7	579.93	579.93	100.00%	0.00%	100.00%	15	$0.00	$249.99
6	1	160	161	ENERGY STAR or better Room AC, 10 kBtu, EER=10.7	579.93	579.93	94.33%	9.35%	100.00%	25	$338.00	$249.99
6	1	200	200	Base Lighting Combined	1690.00	1690.00	100.00%	0.00%	100.00%	1	$0.00	#N/A
6	1	200	201	CFL, 6.0 hr/day	1690.00	1690.00	68.13%	21.31%	90.00%	5	$4.50	#N/A
6	1	200	202	CFL, 2.5 hr/day	1690.00	1690.00	87.17%	39.27%	90.00%	7	$4.50	#N/A
6	1	200	203	CFL, 0.5 hr/day	1690.00	1690.00	94.14%	4.42%	90.00%	7	$4.50	#N/A
6	1	200	204	CFL Fixtures, 6.0 hr/day	1690.00	1690.00	68.13%	21.31%	5.00%	8	$23.33	#N/A
6	1	200	205	CFL Fixtures, 2.5 hr/day	1690.00	1690.00	87.17%	39.27%	5.00%	10	$23.33	#N/A
6	1	200	206	CFL Fixtures, 0.5 hr/day	1690.00	1690.00	94.14%	4.42%	5.00%	10	$23.33	#N/A
6	1	200	207	Fluorescent Torchieries, 6.0 hr/day	1690.00	1690.00	100.00%	21.31%	5.00%	5	$23.00	#N/A
6	1	200	208	Fluorescent Torchieries, 2.5 hr/day	1690.00	1690.00	100.00%	39.27%	5.00%	7	$23.00	#N/A
6	1	200	209	Fluorescent Torchieries, 0.5 hr/day	1690.00	1690.00	100.00%	4.42%	5.00%	7	$23.00	#N/A
6	1	950	951	Powerstrip with Occupancy Sensor	1265.57	1265.57	100.00%	1.71%	100.00%	20	$90.00	#N/A

Table B.2: Residential Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	180	180	Base Furnace, 80 AFUE, 100 kbtu	691.75	648.52	100.00%	0.00%	100.00%	20	$0.00	$2,300.00
1	1	180	181	Condensing Furnace, 92 AFUE	691.75	648.52	90.00%	13.04%	40.00%	20	$724.00	$2,300.00
1	1	180	182	Condensing Furnace, 96 AFUE	691.75	648.52	95.98%	16.67%	40.00%	20	$978.00	$2,300.00
1	1	180	183	ENERGY STAR Programmable Thermostat7	691.75	691.75	35.65%	6.00%	80.00%	12	$100.00	$2,300.00
1	1	180	184	Ceiling R-0 to R-19 Insulation Blown-in (.71)	691.75	691.75	4.95%	24.29%	67.00%	30	$812.70	$2,300.00
1	1	180	185	Ceiling R-19 to R-38 Insulation Blown in (.73)	691.75	691.75	4.95%	8.40%	33.00%	30	$812.70	$2,300.00
1	1	180	186	Floor R-0 to R-30 Insulation-Batts	691.75	691.75	55.33%	6.67%	33.00%	30	$1,512.00	$2,300.00
1	1	180	187	Wall 2x4 R-0 to Blow-In R-19 Insulation	691.75	691.75	55.33%	20.01%	50.00%	30	$1,063.70	$2,300.00
1	1	180	188	Comprehensive Shell Air Sealing - Inf. Reduction	691.75	691.75	40.00%	6.34%	90.00%	10	$650.00	$2,300.00
1	1	180	189	PTCS Duct Sealing & O&M	691.75	691.75	72.00%	10.00%	50.00%	20	$750.00	$2,300.00
1	1	180	190	Duct Insulation (R-3 to R-8)	691.75	691.75	20.14%	4.04%	50.00%	30	$376.00	$2,300.00
1	1	180	191	Furnace Diagnostic Testing, Repair and Maintenance	691.75	691.75	46.51%	4.00%	100.00%	10	$123.00	$2,300.00
1	1	180	192	Windows (high efficiency / ENERGY STAR+)	691.75	691.75	85.26%	6.98%	75.00%	30	$3,100.69	$2,300.00
1	1	180	194	Integrated Space and Water Heating	691.75	691.75	100.00%	17.40%	10.00%	20	$4,085.93	$2,300.00
1	1	500	500	Base 40 gal. Water Heating (EF=0.59)	214.84	196.63	100.00%	0.00%	100.00%	15	$224.00	$269.99
1	1	500	501	HE Water Heater (EF=0.63)	214.84	196.63	88.00%	6.35%	45.00%	15	$307.00	$269.99
1	1	500	502	HE Water Heater (EF=0.70)	214.84	196.63	88.00%	15.71%	45.00%	15	$552.00	$269.99
1	1	500	503	Solar Water Heater	214.84	214.84	99.00%	50.00%	33.00%	15	$5,500.00	$269.99
1	1	500	504	Low-Flow Showerheads	214.84	214.84	22.20%	8.60%	95.00%	10	$20.00	$269.99
1	1	500	505	Hot Water Pipe Insulation	214.84	214.84	33.50%	4.61%	75.00%	10	$5.80	$269.99
1	1	500	506	Water Heater Thermosat Setback	214.84	214.84	75.77%	4.26%	50.00%	10	$15.00	$269.99
1	1	500	507	Tankless Water Heater (EF=0.82)	214.84	214.84	79.90%	27.70%	25.00%	15	$1,700.00	$269.99
1	1	500	508	Drain Water Heat Recovery (GFX)	214.84	214.84	100.00%	37.59%	25.00%	15	$550.00	$269.99
1	1	500	509	Horizontal-Axis Clothes Washer	214.84	214.84	97.00%	12.37%	100.00%	14	$374.00	#N/A
1	1	500	510	Energy Star Vertical-Axis Clothes Washer	214.84	214.84	75.41%	15.01%	100.00%	14	$324.00	#N/A
1	1	500	511	Energy Star DW (EF=0.58)	214.84	214.84	80.69%	5.00%	100.00%	13	$204.00	#N/A
1	1	500	512	Hot Water Heater Tank Wrap (R-10)	214.84	214.84	31.32%	10.00%	90.00%	15	$17.00	$189.99
1	1	500	513	Faucet Aerators	214.84	214.84	73.40%	1.40%	90.00%	15	$4.82	$189.99
1	1	700	700	Base Dryer	71.54	71.54	100.00%	0.00%	100.00%	14	$0.00	$299.98
1	1	700	701	High Efficiency Dryer With Moisture Sensor	71.54	71.54	77.80%	31.82%	100.00%	14	$100.00	$299.98
1	1	900	900	Base Conventional Oven	44.85	44.85	100.00%	0.00%	100.00%	15	$0.00	$429.99
1	1	900	901	Convection Oven	44.85	44.85	100.00%	15.92%	100.00%	15	$120.00	$429.99
2	1	180	180	Base Furnace, 80 AFUE,60 kbtu	650.24	609.60	100.00%	0.00%	100.00%	20	$0.00	$1,900.00
2	1	180	181	Condensing Furnace, 92 AFUE	650.24	609.60	90.00%	13.04%	40.00%	20	$635.00	$1,900.00
2	1	180	182	Condensing Furnace, 96 AFUE	650.24	609.60	95.98%	16.67%	40.00%	20	$787.00	$1,900.00
2	1	180	183	ENERGY STAR Programmable Thermostat	650.24	650.24	35.65%	6.00%	80.00%	12	$100.00	$1,900.00
2	1	180	184	Ceiling R-0 to R-19 Insulation Blown-in (.71)	650.24	650.24	4.95%	14.24%	67.00%	30	$584.80	$1,900.00
2	1	180	185	Ceiling R-19 to R-38 Insulation Blown in (.73)	650.24	650.24	4.95%	2.20%	33.00%	30	$584.80	$1,900.00
2	1	180	186	Floor R-0 to R-30 Insulation-Batts	650.24	650.24	55.33%	10.56%	33.00%	30	$762.00	$1,900.00
2	1	180	187	Wall 2x4 R-0 to Blow-In R-19 Insulation	650.24	650.24	55.33%	26.33%	50.00%	30	$424.30	$1,900.00
2	1	180	188	Comprehensive Shell Air Sealing - Inf. Reduction	650.24	650.24	20.00%	14.40%	90.00%	10	$486.00	$1,900.00
2	1	180	189	PTCS Duct Sealing & O&M	650.24	650.24	36.00%	6.28%	50.00%	20	$630.00	$1,900.00

Table B.2: Residential Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	1	180	190	Duct Insulation (R-3 to R-8)	650.24	650.24	20.14%	3.30%	50.00%	30	$245.00	$1,900.00
2	1	180	192	Windows (high efficiency / ENERGY STAR+)	691.75	691.75	85.26%	10.90%	75.00%	30	$1,477.28	$1,900.00
2	1	180	194	Integrated Space and Water Heating	650.24	650.24	100.00%	13.80%	10.00%	20	$4,085.93	$1,900.00
2	1	500	500	Base 40 gal. Water Heating (EF=0.59)	201.95	184.83	100.00%	0.00%	100.00%	15	$224.00	$269.99
2	1	500	501	HE Water Heater (EF=0.63)	201.95	184.83	88.00%	6.35%	45.00%	15	$307.00	$269.99
2	1	500	502	HE Water Heater (EF=0.70)	201.95	184.83	88.00%	15.71%	45.00%	15	$552.00	$269.99
2	1	500	503	Solar Water Heater	201.95	201.95	99.00%	50.00%	33.00%	15	$5,500.00	$269.99
2	1	500	504	Low-Flow Showerheads	201.95	201.95	22.20%	8.60%	95.00%	10	$20.00	$269.99
2	1	500	505	Hot Water Pipe Insulation	201.95	201.95	33.50%	4.76%	75.00%	15	$5.80	$269.99
2	1	500	506	Water Heater Thermosat Setback	201.95	201.95	75.77%	4.26%	50.00%	10	$15.00	$269.99
2	1	500	507	Tankless Water Heater (EF=0.82)	201.95	201.95	79.90%	27.70%	25.00%	15	$1,700.00	$269.99
2	1	500	508	Drain Water Heat Recovery (GFX)	201.95	201.95	100.00%	39.68%	25.00%	15	$550.00	$269.99
2	1	500	509	Horizontal-Axis Clothes Washer	201.95	201.95	97.00%	9.91%	100.00%	14	$374.00	#N/A
2	1	500	510	Energy Star Vertical-Axis Clothes Washer	201.95	201.95	75.41%	12.07%	100.00%	14	$324.00	#N/A
2	1	500	511	Energy Star DW (EF=0.58)	201.95	201.95	80.69%	4.02%	100.00%	13	$204.00	#N/A
2	1	500	512	Hot Water Heater Tank Wrap (R-10)	201.95	201.95	53.10%	10.00%	90.00%	15	$17.00	$189.99
2	1	500	513	Faucet Aerators	201.95	201.95	73.40%	1.40%	90.00%	15	$4.82	$189.99
2	1	550	550	Base Boiler (AFUE = 80%)	650.24	583.55	100.00%	0.00%	100.00%	20	$0.00	$4,800.00
2	1	550	551	High Efficiency Condensing Boiler (AFUE = 90%)	650.24	583.55	100.00%	13.33%	50.00%	20	$734.00	$4,800.00
2	1	700	700	Base Dryer	67.25	67.25	100.00%	0.00%	100.00%	14	$0.00	$299.98
2	1	700	701	High Efficiency Dryer With Moisture Sensor	67.25	67.25	77.80%	31.82%	100.00%	14	$100.00	$299.98
2	1	900	900	Base Conventional Oven	42.16	42.16	100.00%	0.00%	100.00%	15	$0.00	$429.99
2	1	900	901	Convection Oven	42.16	42.16	100.00%	16.85%	100.00%	15	$120.00	$429.99
3	1	180	180	Base Furnace, 80 AFUE, 80 kbtu	691.75	648.52	100.00%	0.00%	100.00%	20	$0.00	$2,100.00
3	1	180	181	Condensing Furnace, 92 AFUE	691.75	648.52	90.00%	13.04%	40.00%	20	$680.00	$2,100.00
3	1	180	182	Condensing Furnace, 96 AFUE	691.75	648.52	95.98%	16.67%	40.00%	20	$882.00	$2,100.00
3	1	180	183	ENERGY STAR Programmable Thermostat	691.75	691.75	35.65%	6.00%	80.00%	12	$100.00	$2,100.00
3	1	180	184	Ceiling R-0 to R-19 Insulation Blown-in (.71)	691.75	691.75	4.95%	10.30%	67.00%	25	$757.83	$2,100.00
3	1	180	185	Ceiling R-19 to R-30 Insulation Blown in (.73)	691.75	691.75	4.95%	6.25%	33.00%	25	$953.44	$2,100.00
3	1	180	186	Floor R-5 to R-25 Insulation-Batts	691.75	691.75	55.33%	8.60%	33.00%	25	$902.00	$2,100.00
3	1	180	187	Wall 2x4 R-0 to Blow-In R-13 Insulation (.86)	691.75	691.75	55.33%	17.63%	50.00%	25	$1,660.00	$2,100.00
3	1	180	188	Comprehensive Shell Air Sealing - Inf. Reduction	691.75	691.75	40.00%	5.20%	90.00%	10	$300.00	$2,100.00
3	1	180	189	PTCS Duct Sealing & O&M	691.75	691.75	72.00%	10.00%	50.00%	20	$450.00	$2,100.00
3	1	180	190	Duct Insulation (R-3 to R-8)	691.75	691.75	20.14%	3.30%	50.00%	25	$245.00	$2,100.00
3	1	180	191	Furnace Diagnostic Testing, Repair and Maintenance	691.75	691.75	46.51%	4.00%	100.00%	10	$123.00	$2,100.00
3	1	180	192	Windows (high efficiency / ENERGY STAR+)	691.75	691.75	85.26%	24.80%	75.00%	25	$1,617.98	$2,100.00
3	1	180	194	Integrated Space and Water Heating	691.75	691.75	100.00%	36.52%	10.00%	20	$4,085.93	$2,100.00
3	1	500	500	Base 40 gal. Water Heating (EF=0.59)	214.84	196.63	100.00%	0.00%	100.00%	15	$224.00	$269.99
3	1	500	501	HE Water Heater (EF=0.63)	214.84	196.63	88.00%	6.35%	45.00%	15	$307.00	$269.99
3	1	500	502	HE Water Heater (EF=0.70)	214.84	196.63	88.00%	15.71%	45.00%	15	$552.00	$269.99
3	1	500	503	Solar Water Heater	214.84	214.84	99.00%	50.00%	33.00%	15	$5,500.00	$269.99
3	1	500	504	Low-Flow Showerheads	214.84	214.84	22.20%	8.60%	95.00%	10	$20.00	$269.99
3	1	500	505	Hot Water Pipe Insulation	214.84	214.84	33.50%	4.33%	75.00%	15	$5.80	$269.99
3	1	500	506	Water Heater Thermosat Setback	214.84	214.84	75.77%	4.26%	50.00%	5	$15.00	$269.99

Table B.2: Residential Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
3	1	500	507	Tankless Water Heater (EF=0.82)	214.84	214.84	79.90%	27.70%	25.00%	15	$1,700.00	$269.99
3	1	500	508	Drain Water Heat Recovery (GFX)	214.84	214.84	100.00%	35.83%	25.00%	15	$550.00	$269.99
3	1	500	509	Horizontal-Axis Clothes Washer	214.84	214.84	97.00%	14.47%	100.00%	14	$374.00	#N/A
3	1	500	510	Energy Star Vertical-Axis Clothes Washer	214.84	214.84	75.41%	17.54%	100.00%	14	$324.00	#N/A
3	1	500	511	Energy Star DW (EF=0.58)	214.84	214.84	80.69%	7.89%	100.00%	13	$204.00	#N/A
3	1	500	512	Hot Water Heater Tank Wrap (R-10)	214.84	214.84	31.94%	10.00%	90.00%	15	$17.00	$189.99
3	1	500	513	Faucet Aerators	214.84	214.84	73.40%	1.40%	90.00%	15	$4.82	$189.99
3	1	700	700	Base Dryer	71.54	71.54	100.00%	0.00%	100.00%	14	$0.00	$299.98
3	1	700	701	High Efficiency Dryer With Moisture Sensor	71.54	71.54	77.80%	31.82%	100.00%	14	$100.00	$299.98
3	1	900	900	Base Conventional Oven	44.85	44.85	100.00%	0.00%	100.00%	15	$0.00	$429.99
3	1	900	901	Convection Oven	44.85	44.85	100.00%	17.78%	100.00%	15	$120.00	$429.99
4	1	180	180	Base Furnace, 80 AFUE, 120 kbtu	575.15	575.15	100.00%	0.00%	100.00%	20	$0.00	$2,500.00
4	1	180	181	Condensing Furnace, 92 AFUE	575.15	575.15	90.00%	13.04%	40.00%	20	$731.00	$2,500.00
4	1	180	182	Condensing Furnace, 96 AFUE	575.15	575.15	95.98%	16.67%	40.00%	20	$1,073.00	$2,500.00
4	1	180	194	Integrated Space and Water Heating	575.15	575.15	100.00%	24.50%	20.00%	20	$4,085.93	$2,500.00
4	1	180	195	ENERGY STAR New Construction	575.15	575.15	96.04%	30.00%	50.00%	25	$3,000.00	$2,500.00
4	1	180	196	ENERGY STAR New Construction Plus	575.15	575.15	96.04%	40.00%	50.00%	25	$5,000.00	$2,500.00
4	1	500	500	Base 40 gal. Water Heating (EF=0.59)	276.68	276.68	100.00%	0.00%	100.00%	15	$224.00	$269.99
4	1	500	501	HE Water Heater (EF=0.63)	276.68	276.68	88.00%	6.35%	40.00%	15	$307.00	$269.99
4	1	500	502	HE Water Heater (EF=0.70)	276.68	276.68	88.00%	15.71%	40.00%	15	$552.00	$269.99
4	1	500	503	Solar Water Heater	276.68	276.68	99.00%	50.00%	25.00%	15	$5,500.00	$269.99
4	1	500	507	Tankless Water Heater (EF=0.82)	276.68	276.68	79.90%	27.70%	50.00%	15	$903.00	$269.99
4	1	500	508	Drain Water Heat Recovery (GFX)	276.68	276.68	100.00%	31.26%	50.00%	15	$400.00	$269.99
4	1	500	509	Horizontal-Axis Clothes Washer	276.68	276.68	97.00%	13.33%	100.00%	14	$374.00	#N/A
4	1	500	510	Energy Star Vertical-Axis Clothes Washer	276.68	276.68	75.41%	16.16%	100.00%	14	$324.00	#N/A
4	1	500	511	Energy Star DW (EF=0.58)	276.68	276.68	80.69%	5.00%	100.00%	13	$204.00	#N/A
4	1	500	512	Hot Water Heater Tank Wrap (R-10)	276.68	276.68	31.32%	10.00%	90.00%	15	$17.00	$189.99
4	1	500	513	Faucet Aerators	276.68	276.68	73.40%	1.40%	90.00%	15	$4.82	$189.99
4	1	700	700	Base Dryer	71.54	71.54	100.00%	0.00%	100.00%	14	$0.00	$299.98
4	1	700	701	High Efficiency Dryer With Moisture Sensor	71.54	71.54	77.80%	31.82%	100.00%	14	$100.00	$299.98
4	1	900	900	Base Conventional Oven	44.85	44.85	100.00%	0.00%	100.00%	15	$0.00	$429.99
4	1	900	901	Convection Oven	44.85	44.85	100.00%	17.91%	100.00%	15	$120.00	$429.99
5	1	180	180	Base Furnace, 80 AFUE, 80 kbtu	540.64	540.64	100.00%	0.00%	100.00%	20	$0.00	$2,100.00
5	1	180	181	Condensing Furnace, 92 AFUE	540.64	540.64	90.00%	13.04%	40.00%	20	$680.00	$2,100.00
5	1	180	182	Condensing Furnace, 96 AFUE	540.64	540.64	95.98%	16.67%	40.00%	20	$882.00	$2,100.00
5	1	180	194	Integrated Space and Water Heating	540.64	540.64	100.00%	8.21%	20.00%	20	$4,085.93	$2,100.00
5	1	180	195	ENERGY STAR New Construction	540.64	540.64	96.04%	30.00%	50.00%	20	$2,000.00	$2,100.00
5	1	180	196	ENERGY STAR New Construction Plus	540.64	540.64	96.04%	40.00%	50.00%	25	$3,500.00	$2,100.00
5	1	500	500	Base 40 gal. Water Heating (EF=0.59)	260.08	260.08	100.00%	0.00%	100.00%	25	$224.00	$269.99
5	1	500	501	HE Water Heater (EF=0.63)	260.08	260.08	88.00%	6.35%	40.00%	15	$307.00	$269.99
5	1	500	502	HE Water Heater (EF=0.70)	260.08	260.08	88.00%	15.71%	40.00%	15	$552.00	$269.99
5	1	500	503	Solar Water Heater	260.08	260.08	99.00%	50.00%	25.00%	15	$5,500.00	$269.99
5	1	500	507	Tankless Water Heater (EF=0.82)	260.08	260.08	79.90%	27.70%	50.00%	15	$903.00	$269.99
5	1	500	508	Drain Water Heat Recovery (GFX)	260.08	260.08	100.00%	33.28%	50.00%	15	$400.00	$269.99

Table B.2: Residential Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
5	1	500	509	Horizontal-Axis Clothes Washer	260.08	260.08	97.00%	10.67%	100.00%	14	$374.00	#N/A
5	1	500	510	Energy Star Vertical-Axis Clothes Washer	260.08	260.08	75.41%	13.01%	100.00%	14	$324.00	#N/A
5	1	500	511	Energy Star DW (EF=0.58)	260.08	260.08	80.69%	4.34%	100.00%	13	$204.00	#N/A
5	1	500	512	Hot Water Heater Tank Wrap (R-10)	260.08	260.08	53.10%	10.00%	90.00%	15	$17.00	$189.99
5	1	500	513	Faucet Aerators	260.08	260.08	73.40%	1.40%	90.00%	15	$4.82	$189.99
5	1	700	700	Base Dryer	67.25	67.25	100.00%	0.00%	100.00%	14	$0.00	$299.98
5	1	700	701	High Efficiency Dryer With Moisture Sensor	67.25	67.25	77.80%	31.82%	100.00%	14	$100.00	$299.98
5	1	900	900	Base Conventional Oven	42.16	42.16	100.00%	0.00%	100.00%	15	$0.00	$429.99
5	1	900	901	Convection Oven	42.16	42.16	100.00%	15.71%	100.00%	15	$120.00	$429.99
6	1	180	180	Base Furnace, 80 AFUE, 80 kbtu	575.15	575.15	100.00%	0.00%	100.00%	20	$0.00	$2,100.00
6	1	180	181	Condensing Furnace, 92 AFUE	575.15	575.15	90.00%	13.04%	40.00%	20	$680.00	$2,100.00
6	1	180	182	Condensing Furnace, 96 AFUE	575.15	575.15	95.98%	16.67%	40.00%	20	$882.00	$2,100.00
6	1	180	194	Integrated Space and Water Heating	575.15	575.15	100.00%	16.59%	20.00%	20	$4,085.93	$2,100.00
6	1	180	195	Natural Choice / ENERGY STAR New Man. Housing	575.15	575.15	96.04%	30.00%	100.00%	25	$2,000.00	$2,100.00
6	1	500	500	Base 40 gal. Water Heating (EF=0.59)	260.08	260.08	100.00%	0.00%	100.00%	15	$224.00	$269.99
6	1	500	501	HE Water Heater (EF=0.63)	260.08	260.08	88.00%	6.35%	40.00%	15	$307.00	$269.99
6	1	500	502	HE Water Heater (EF=0.70)	260.08	260.08	88.00%	15.71%	40.00%	15	$552.00	$269.99
6	1	500	503	Solar Water Heater	260.08	260.08	99.00%	50.00%	25.00%	15	$5,500.00	$269.99
6	1	500	507	Tankless Water Heater (EF=0.82)	260.08	260.08	79.90%	27.70%	50.00%	15	$903.00	$269.99
6	1	500	508	Drain Water Heat Recovery (GFX)	260.08	260.08	100.00%	29.89%	50.00%	15	$400.00	$269.99
6	1	500	509	Horizontal-Axis Clothes Washer	260.08	260.08	97.00%	15.21%	100.00%	14	$374.00	#N/A
6	1	500	510	Energy Star Vertical-Axis Clothes Washer	260.08	260.08	75.41%	18.44%	100.00%	14	$324.00	#N/A
6	1	500	511	Energy Star DW (EF=0.58)	260.08	260.08	80.69%	8.30%	100.00%	13	$204.00	#N/A
6	1	500	512	Hot Water Heater Tank Wrap (R-10)	260.08	260.08	31.94%	10.00%	90.00%	15	$17.00	$189.99
6	1	500	513	Faucet Aerators	260.08	260.08	73.40%	1.40%	90.00%	15	$4.82	$189.99
6	1	700	700	Base Dryer	71.54	71.54	100.00%	0.00%	100.00%	14	$0.00	$299.98
6	1	700	701	High Efficiency Dryer With Moisture Sensor	71.54	71.54	77.80%	31.82%	100.00%	14	$100.00	$299.98
6	1	900	900	Base Conventional Oven	44.85	44.85	100.00%	0.00%	100.00%	15	$0.00	$429.99
6	1	900	901	Convection Oven	44.85	44.85	100.00%	17.78%	100.00%	15	$120.00	$429.99

Commercial

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$1.51	$1.51
1	1	110	111	4' 4L T8 Premium, EB	5.29	4.77	100.00%	25.00%	16.67%	16	$0.50	$1.51
1	1	110	112	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	62.50%	16.67%	16	$0.74	$1.51
1	1	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	5.29	4.77	79.56%	30.00%	40.00%	9	$0.52	$1.51
1	1	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	40.00%	11	$3.93	$1.51
1	1	110	115	4' 2L T5HO, EB	5.29	4.77	100.00%	18.75%	16.67%	16	$0.29	$1.51
1	1	110	116	4' 4L T8, EB	5.29	4.77	100.00%	22.22%	16.67%	16	$0.21	$1.51
1	1	110	117	4' 3L T8, EB	5.29	4.77	100.00%	38.20%	16.67%	16	$0.10	$1.51
1	1	110	118	4' 3L T8 Premium, EB	5.29	4.77	100.00%	42.36%	16.67%	16	$0.32	$1.51
1	1	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$2.78	$2.78
1	1	120	121	4' 2L T8 Premium, EB	5.29	4.77	100.00%	25.00%	33.33%	16	$0.77	$2.78
1	1	120	122	4' 1L T8 Premium, EB, reflector	5.29	4.77	100.00%	61.11%	33.33%	16	$1.58	$2.78
1	1	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	5.29	4.77	79.56%	30.00%	40.00%	9	$0.45	$2.78
1	1	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	40.00%	11	$3.82	$2.78
1	1	120	125	4' 1L T5HO, EB	5.29	4.77	100.00%	13.90%	33.33%	16	$0.59	$2.78
1	1	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$1.82	$1.82
1	1	130	131	8' 2L T12, 60W, EB	5.29	4.77	26.59%	10.57%	25.00%	16	$0.17	$1.82
1	1	130	132	8' 1L T12, 60W, EB, reflector	5.29	4.77	100.00%	55.30%	25.00%	16	$0.79	$1.82
1	1	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	5.29	4.77	79.56%	30.00%	40.00%	9	$0.54	$1.82
1	1	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	40.00%	11	$4.09	$1.82
1	1	130	135	8' 2L T8, EB	5.29	4.77	100.00%	52.80%	50.00%	16	$0.36	$1.82
1	1	140	140	Base Incandescent Flood, 75W	5.29	5.29	100.00%	0.00%	100.00%	1	$3.66	$3.66
1	1	140	141	CFL Screw-in, Modular 18W	5.29	4.77	72.49%	65.30%	90.00%	5	$2.25	$3.66
1	1	150	150	Base Incandescent Flood, 150W PAR	5.29	5.29	100.00%	0.00%	100.00%	1	$1.76	$1.76
1	1	150	151	Halogen PAR Flood, 90W	5.29	5.29	100.00%	40.00%	10.00%	1	$0.18	$1.76
1	1	150	152	Metal Halide, 50W	5.29	5.29	93.86%	52.00%	45.00%	6	$9.40	$1.76
1	1	150	153	HPS, 50W	5.29	5.29	93.86%	56.00%	45.00%	6	$4.80	$1.76
1	1	160	160	Base 4' 3L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$0.55	$0.55
1	1	160	161	4' 3L T8, EB	5.29	4.77	100.00%	22.61%	75.00%	16	$0.05	$0.55
1	1	160	162	4' 3L T8 Premium, EB	5.29	4.77	100.00%	22.61%	75.00%	16	$0.13	$0.55
1	1	160	163	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	53.04%	40.00%	16	$0.28	$0.55
1	1	160	164	4' 1L T5HO, EB	5.29	4.77	100.00%	46.09%	75.00%	16	$0.05	$0.55
1	1	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	16	$1.69	$1.69
1	1	180	181	4' 4L T8 Premium, EB	4.24	3.81	100.00%	3.60%	100.00%	16	$0.30	$1.69
1	1	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	4.24	3.81	79.56%	30.00%	40.00%	9	$0.52	$1.69
1	1	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	4.24	3.60	100.00%	0.00%	100.00%	16	$3.15	$3.15
1	1	185	186	4' 3L T8 Premium, EB	4.24	3.81	100.00%	6.70%	100.00%	16	$0.43	$3.15
1	1	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	4.24	3.60	100.00%	0.00%	100.00%	16	$2.97	$2.97
1	1	190	191	4' 2L T8 Premium, EB	4.24	3.81	100.00%	8.50%	100.00%	16	$0.27	$2.97
1	1	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	4.24	3.81	79.56%	30.00%	40.00%	9	$0.45	$2.97

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	3.76	3.76	100.00%	0.00%	100.00%	20	$1.38	$1.38
1	1	200	201	Chiller Tune-Up / Diagnostics	3.76	3.76	90.00%	5.00%	100.00%	5	$0.11	$1.38
1	1	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	3.76	3.76	100.00%	10.00%	50.00%	10	$0.29	$1.38
1	1	200	203	Roof / Ceiling Insulation	3.76	3.76	8.70%	3.00%	50.00%	20	$0.33	$305.98
1	1	200	204	Cool Roofs (Reflective and Spray Evaporative)	3.76	3.76	100.00%	1.81%	90.00%	10	$0.24	$230.50
1	1	200	205	EMS Optimization	3.76	3.76	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	1	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	3.76	3.76	99.43%	9.26%	75.00%	30	$0.06	$40.43
1	1	200	207	Installation of Energy Management Systems	3.76	3.76	19.08%	10.00%	50.00%	10	$0.18	$1.38
1	1	200	208	Insulation of Pipes	3.76	3.76	50.00%	1.00%	50.00%	20	$0.00	$0.45
1	1	200	209	Installation of Chiller Economizers (water side)	3.76	3.76	56.87%	10.00%	50.00%	20	$0.59	$461.00
1	1	200	210	Optimize Chilled Water and Condenser Water Settings	3.76	3.76	50.00%	5.00%	33.00%	10	$0.20	$1.38
1	1	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	3.76	3.38	100.00%	7.50%	67.00%	15	$0.11	$2.15
1	1	200	212	Two-Speed Cooling Tower, 300 Tons	3.76	3.38	90.00%	14.00%	50.00%	15	$0.01	$2.15
1	1	200	213	VSD Cooling Tower, 300 Tons	3.76	3.38	90.00%	18.00%	50.00%	15	$0.07	$2.15
1	1	200	214	Primary/Secondary De-coupled Chilled Water System	3.76	3.38	80.00%	12.00%	50.00%	15	$0.45	$2.15
1	1	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	3.76	3.38		21.54%		15	$0.18	$2.15
1	1	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	3.76	3.38		27.69%		15	$0.60	$2.15
1	1	250	250	Base DX Packaged System, EER=10.3, 10 tons	6.51	6.51	100.00%	0.00%	100.00%	15	$2.36	$2.36
1	1	250	251	DX Tune-Up / Diagnostics	6.51	6.51	90.00%	10.00%	100.00%	3	$0.23	$2.36
1	1	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	6.51	5.63		8.85%		15	$0.29	$2.36
1	1	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	99.43%	5.00%	75.00%	30	$0.15	$69.11
1	1	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$0.87	$2.36
1	1	250	256	Duct Insulation	6.51	6.51	25.00%	3.00%	25.00%	20	$0.02	$35.72
1	1	250	257	Duct Repair and Sealing	6.51	6.51	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	1	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.29	$2.36
1	1	250	259	Roof / Ceiling Insulation	6.51	6.51	8.70%	3.00%	50.00%	20	$0.33	$523.02
1	1	250	260	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.81%	50.00%	10	$0.24	$394.00
1	1	250	261	Clock / Programmable Thermostat	6.51	6.51	58.45%	10.00%	100.00%	10	$0.06	$2.36
1	1	250	262	Installation of Air Side Economizers	6.51	6.51	30.37%	15.00%	100.00%	10	$0.59	$788.00
1	1	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	6.51	5.86	100.00%	0.00%	100.00%	15	$2.15	$2.15
1	1	280	281	Air-Cooled HP Package, 5 tons, SEER=11	6.51	5.86		9.09%		15	$0.11	$2.15
1	1	280	282	Air-Cooled HP Package, 5 tons, SEER=12	6.51	5.86		16.67%		15	$0.71	$2.15
1	1	280	283	DX Tune-Up / Diagnostics	6.51	6.51	90.00%	10.00%	100.00%	3	$0.23	$2.36
1	1	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	99.43%	5.00%	75.00%	30	$0.15	$69.11
1	1	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$0.87	$2.36
1	1	280	286	Duct Insulation	6.51	6.51	25.00%	3.00%	25.00%	20	$0.02	$35.72
1	1	280	287	Duct Repair and Sealing	6.51	6.51	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	1	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.29	$2.36
1	1	280	289	Roof / Ceiling Insulation	6.51	6.51	8.70%	3.00%	50.00%	20	$0.33	$523.02

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	280	290	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.81%	50.00%	10	$0.24	$394.00
1	1	280	291	Clock / Programmable Thermostat	6.51	6.51	58.45%	10.00%	100.00%	10	$0.06	$2.36
1	1	280	292	Installation of Air Side Economizers	6.51	6.51	30.37%	15.00%	100.00%	10	$0.59	$788.00
1	1	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	2.25	2.25		0.00%		15	$0.18	$0.18
1	1	400	401	Energy Efficient Fan & Pump Motors (ODP)	2.25	2.25		1.50%		15	$0.04	$0.18
1	1	400	402	VSD, ASD Fan & Pump Applications	2.25	2.25		30.00%		15	$0.21	$0.18
1	1	610	610	Base Office Equipment	1.59	1.59	100.00%	0.00%	100.00%	4	$1.46	$4.29
1	1	610	611	ENERGY STAR or Better Office Equipment: Computer	1.59	1.59	65.00%	24.69%	100.00%	4	$0.18	$4.29
1	1	610	621	ENERGY STAR or Better Office Equipment: Monitors	1.59	1.59	71.00%	21.94%	100.00%	4	$0.09	$4.29
1	1	610	623	Smart Networks	1.59	1.59	40.00%	9.14%	90.00%	4	$0.01	$4.29
1	1	610	631	ENERGY STAR or Better Office Equipment: Copiers	1.59	1.59	65.00%	4.84%	100.00%	4	$0.03	$0.40
1	1	610	641	ENERGY STAR or Better Office Equipment: Printers	1.59	1.59	65.00%	8.01%	100.00%	4	$0.10	$1.21
1	1	700	700	Base Water Heating	0.30	0.30	100.00%	0.00%	100.00%	15	$4.65	$4.65
1	1	700	701	Demand controlled circulating systems	0.30	0.30	93.16%	5.00%	50.00%	15	$0.91	$4.65
1	1	700	702	Heat Pump Water Heater	0.30	0.30	100.00%	30.00%	75.00%	15	$0.58	$4.65
1	1	700	703	High-Efficiency Water Heater (electric)	0.30	0.30		5.40%		15	$0.17	$4.65
1	1	700	704	Hot Water (SHW) Pipe Insulation	0.30	0.30	39.27%	5.00%	50.00%	15	$0.00	$0.98
1	1	800	800	Base Heating	0.79	0.79	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	1	800	802	Roof / Ceiling Insulation	0.79	0.79	12.95%	10.00%	50.00%	20	$0.33	$1.59
1	1	800	803	Duct Insulation	0.79	0.79	58.50%	2.00%	25.00%	20	$0.02	$1.59
1	1	800	804	Duct Repair and Sealing	0.79	0.79	50.00%	2.00%	25.00%	20	$0.01	$1.59
1	1	800	805	Clock / Programmable Thermostat	0.79	0.79	58.45%	30.00%	100.00%	10	$0.15	$2.40
1	1	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.79	0.79	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	2	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	5.89	5.89	100.00%	0.00%	100.00%	16	$1.68	$1.68
1	2	110	111	4' 4L T8 Premium, EB	5.89	5.30	100.00%	25.00%	16.67%	25	$0.55	$1.68
1	2	110	112	4' 2L T8 Premium, EB, reflector	5.89	5.30	100.00%	62.50%	16.67%	25	$0.83	$1.68
1	2	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	5.89	5.30	100.00%	30.00%	10.00%	14	$0.58	$1.68
1	2	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	5.89	5.30	100.00%	75.00%	50.00%	18	$4.37	$1.68
1	2	110	115	4' 2L T5HO, EB	5.89	5.30	100.00%	18.75%	16.67%	25	$0.32	$1.68
1	2	110	116	4' 4L T8, EB	5.89	5.30	100.00%	22.22%	16.67%	25	$0.23	$1.68
1	2	110	117	4' 3L T8, EB	5.89	5.30	100.00%	38.20%	16.67%	25	$0.11	$1.68
1	2	110	118	4' 3L T8 Premium, EB	5.89	5.30	100.00%	42.36%	16.67%	25	$0.35	$1.68
1	2	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	5.89	5.89	100.00%	0.00%	100.00%	16	$3.17	$3.17
1	2	120	121	4' 2L T8 Premium, EB	5.89	5.30	100.00%	25.00%	33.33%	25	$0.88	$3.17
1	2	120	122	4' 1L T8 Premium, EB, reflector	5.89	5.30	100.00%	61.11%	33.33%	25	$1.80	$3.17
1	2	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	5.89	5.30	100.00%	30.00%	10.00%	14	$0.52	$3.17
1	2	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	5.89	5.30	100.00%	75.00%	50.00%	18	$4.35	$3.17
1	2	120	125	4' 1L T5HO, EB	5.89	5.30	100.00%	13.90%	33.33%	25	$0.67	$3.17
1	2	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	5.89	5.89	100.00%	0.00%	100.00%	16	$2.23	$2.23
1	2	130	131	8' 2L T12, 60W, EB	5.89	5.30	95.41%	10.57%	25.00%	25	$0.21	$2.23
1	2	130	132	8' 1L T12, 60W, EB, reflector	5.89	5.30	100.00%	55.30%	25.00%	25	$0.96	$2.23
1	2	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	5.89	5.30	100.00%	30.00%	10.00%	14	$0.67	$2.23
1	2	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	5.89	5.30	100.00%	75.00%	20.00%	18	$5.02	$2.23

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	2	130	135	8' 2L T8, EB	5.89	5.30	100.00%	52.80%	50.00%	25	$0.44	$2.23
1	2	140	140	Base Incandescent Flood, 75W	5.89	5.89	100.00%	0.00%	100.00%	1	$4.55	$4.55
1	2	140	141	CFL Screw-in, Modular 18W	5.89	5.30	75.00%	65.30%	50.00%	7	$2.80	$4.55
1	2	150	150	Base Incandescent Flood, 150W PAR	5.89	5.89	100.00%	0.00%	100.00%	1	$1.88	$1.88
1	2	150	151	Halogen PAR Flood, 90W	5.89	5.89	99.28%	40.00%	10.00%	1	$0.19	$1.88
1	2	150	152	Metal Halide, 50W	5.89	5.89	91.60%	52.00%	45.00%	8	$10.05	$1.88
1	2	150	153	HPS, 50W	5.89	5.89	91.60%	56.00%	45.00%	8	$5.13	$1.88
1	2	160	160	Base 4' 3L T12, 34W, 1EEMAG	5.89	5.89	100.00%	0.00%	100.00%	10	$1.35	$1.35
1	2	160	161	4' 3L T8, EB	5.89	5.30	100.00%	22.61%	75.00%	25	$0.11	$1.35
1	2	160	162	4' 3L T8 Premium, EB	5.89	5.30	100.00%	22.61%	75.00%	25	$0.31	$1.35
1	2	160	163	4' 2L T8 Premium, EB, reflector	5.89	5.30	100.00%	53.04%	40.00%	25	$0.70	$1.35
1	2	160	164	4' 1L T5HO, EB	5.89	5.30	100.00%	46.09%	75.00%	25	$0.12	$1.35
1	2	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	4.71	4.71	100.00%	0.00%	100.00%	25	$1.88	$1.88
1	2	180	181	4' 4L T8 Premium, EB	4.71	4.24	100.00%	3.60%	100.00%	25	$0.34	$1.88
1	2	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	4.71	4.24	100.00%	30.00%	10.00%	14	$0.58	$1.88
1	2	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	4.71	4.00	100.00%	0.00%	100.00%	25	$3.59	$3.59
1	2	185	186	4' 3L T8 Premium, EB	4.71	4.24	100.00%	6.70%	100.00%	25	$0.49	$3.59
1	2	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	4.71	4.00	100.00%	0.00%	100.00%	25	$3.38	$3.38
1	2	190	191	4' 2L T8 Premium, EB	4.71	4.24	100.00%	8.50%	100.00%	25	$0.30	$3.38
1	2	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	4.71	4.24	100.00%	30.00%	10.00%	14	$0.52	$3.38
1	2	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	1.22	1.22	100.00%	0.00%	100.00%	20	$1.15	$1.15
1	2	200	201	Chiller Tune-Up / Diagnostics	1.22	1.22	90.00%	5.00%	100.00%	5	$0.09	$1.15
1	2	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.22	1.22	100.00%	10.00%	50.00%	10	$0.24	$1.15
1	2	200	203	Roof / Ceiling Insulation	1.22	1.22	100.00%	3.00%	50.00%	20	$0.47	$443.39
1	2	200	204	Cool Roofs (Reflective and Spray Evaporative)	1.22	1.22	100.00%	6.92%	90.00%	10	$0.47	$461.00
1	2	200	205	EMS Optimization	1.22	1.22	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	2	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	1.22	1.22	100.00%	10.32%	75.00%	30	$0.03	$21.21
1	2	200	207	Installation of Energy Management Systems	1.22	1.22	100.00%	10.00%	50.00%	10	$0.15	$1.15
1	2	200	208	Insulation of Pipes	1.22	1.22	50.00%	1.00%	50.00%	20	$0.03	$2.94
1	2	200	209	Installation of Chiller Economizers (water side)	1.22	1.22	100.00%	10.00%	50.00%	20	$0.59	$461.00
1	2	200	210	Optimize Chilled Water and Condenser Water Settings	1.22	1.22	50.00%	5.00%	33.00%	10	$0.17	$1.15
1	2	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	1.22	1.10	100.00%	7.50%	67.00%	15	$0.09	$1.79
1	2	200	212	Two-Speed Cooling Tower, 300 Tons	1.22	1.10	90.00%	14.00%	50.00%	15	$0.01	$1.79
1	2	200	213	VSD Cooling Tower, 300 Tons	1.22	1.10	90.00%	18.00%	50.00%	15	$0.06	$1.79
1	2	200	214	Primary/Secondary De-coupled Chilled Water System	1.22	1.10	80.00%	12.00%	50.00%	15	$0.38	$1.79
1	2	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	1.22	1.10		21.54%		15	$0.15	$1.79
1	2	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	1.22	1.10		27.69%		15	$0.50	$1.79
1	2	250	250	Base DX Packaged System, EER=10.3, 10 tons	2.11	2.11	100.00%	0.00%	100.00%	15	$1.97	$1.97
1	2	250	251	DX Tune-Up / Diagnostics	2.11	2.11	90.00%	10.00%	100.00%	3	$0.20	$1.97
1	2	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	2.11	1.82		8.85%		15	$0.24	$1.97
1	2	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.11	2.11	100.00%	5.00%	75.00%	30	$0.08	$36.25

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	2	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.11	2.11	95.00%	10.00%	25.00%	10	$0.73	$1.97
1	2	250	256	Duct Insulation	2.11	2.11	25.00%	3.00%	25.00%	20	$0.03	$62.52
1	2	250	257	Duct Repair and Sealing	2.11	2.11	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	2	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.11	2.11	100.00%	10.00%	50.00%	10	$0.24	$1.97
1	2	250	259	Roof / Ceiling Insulation	2.11	2.11	100.00%	3.00%	50.00%	20	$0.47	$757.89
1	2	250	260	Cool Roofs (Reflective and Spray Evaporative)	2.11	2.11	100.00%	6.92%	50.00%	10	$0.47	$788.00
1	2	250	261	Clock / Programmable Thermostat	2.11	2.11	50.00%	10.00%	100.00%	10	$0.05	$1.97
1	2	250	262	Installation of Air Side Economizers	2.11	2.11	92.26%	15.00%	100.00%	10	$0.59	$788.00
1	2	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	2.11	1.90	100.00%	0.00%	100.00%	15	$1.79	$1.79
1	2	280	281	Air-Cooled HP Package, 5 tons, SEER=11	2.11	1.90		9.09%		15	$0.09	$1.79
1	2	280	282	Air-Cooled HP Package, 5 tons, SEER=12	2.11	1.90		16.67%		15	$0.59	$1.79
1	2	280	283	DX Tune-Up / Diagnostics	2.11	2.11	90.00%	10.00%	100.00%	3	$0.20	$1.97
1	2	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.11	2.11	100.00%	5.00%	75.00%	30	$0.08	$36.25
1	2	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.11	2.11	95.00%	10.00%	25.00%	10	$0.73	$1.97
1	2	280	286	Duct Insulation	2.11	2.11	25.00%	3.00%	25.00%	20	$0.03	$62.52
1	2	280	287	Duct Repair and Sealing	2.11	2.11	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	2	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.11	2.11	100.00%	10.00%	50.00%	10	$0.24	$1.97
1	2	280	289	Roof / Ceiling Insulation	2.11	2.11	100.00%	3.00%	50.00%	20	$0.47	$757.89
1	2	280	290	Cool Roofs (Reflective and Spray Evaporative)	2.11	2.11	100.00%	6.92%	50.00%	10	$0.47	$788.00
1	2	280	291	Clock / Programmable Thermostat	2.11	2.11	50.00%	10.00%	100.00%	10	$0.05	$1.97
1	2	280	292	Installation of Air Side Economizers	2.11	2.11	92.26%	15.00%	100.00%	10	$0.59	$788.00
1	2	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.67	0.67		0.00%		15	$0.39	$0.39
1	2	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.67	0.67		1.50%		15	$0.08	$0.39
1	2	400	402	VSD, ASD Fan & Pump Applications	0.67	0.67		30.00%		15	$0.45	$0.39
1	2	610	610	Base Office Equipment	0.15	0.15	100.00%	0.00%	100.00%	4	$0.12	$0.34
1	2	610	611	ENERGY STAR or Better Office Equipment: Computer	0.15	0.15	65.00%	17.18%	100.00%	4	$0.01	$0.34
1	2	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.15	0.15	71.00%	15.26%	100.00%	4	$0.01	$0.34
1	2	610	623	Smart Networks	0.15	0.15	40.00%	6.36%	90.00%	4	$0.00	$0.34
1	2	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.15	0.15	65.00%	9.55%	100.00%	4	$0.01	$0.06
1	2	610	641	ENERGY STAR or Better Office Equipment: Printers	0.15	0.15	65.00%	14.55%	100.00%	4	$0.02	$0.24
1	2	700	700	Base Water Heating	0.44	0.44	100.00%	0.00%	100.00%	15	$20.00	$20.00
1	2	700	701	Demand controlled circulating systems	0.44	0.44	100.00%	5.00%	50.00%	15	$3.90	$20.00
1	2	700	702	Heat Pump Water Heater	0.44	0.44	100.00%	30.00%	75.00%	15	$2.49	$20.00
1	2	700	703	High-Efficiency Water Heater (electric)	0.44	0.44		5.40%		15	$0.72	$20.00
1	2	700	704	Hot Water (SHW) Pipe Insulation	0.44	0.44	100.00%	5.00%	50.00%	15	$0.03	$6.38
1	2	800	800	Base Heating	0.93	0.93	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	2	800	802	Roof / Ceiling Insulation	0.93	0.93	55.72%	10.00%	50.00%	20	$0.47	$2.31
1	2	800	803	Duct Insulation	0.93	0.93	84.90%	2.00%	25.00%	20	$0.01	$2.31
1	2	800	804	Duct Repair and Sealing	0.93	0.93	50.00%	2.00%	25.00%	20	$0.00	$2.31
1	2	800	805	Clock / Programmable Thermostat	0.93	0.93	50.00%	30.00%	100.00%	10	$0.15	$2.40

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	2	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.93	0.93	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	3	100	100	Base Cooking	52.39	52.39		0.00%		15	$1.93	$1.93
1	3	100	101	High-Efficiency Convection Oven	52.39	52.39		20.00%		15	$1.62	$1.93
1	3	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	8.74	8.74	100.00%	0.00%	100.00%	14	$1.54	$1.54
1	3	110	111	4' 4L T8 Premium, EB	8.74	7.86	100.00%	25.00%	16.67%	22	$0.51	$1.54
1	3	110	112	4' 2L T8 Premium, EB, reflector	8.74	7.86	100.00%	62.50%	16.67%	22	$0.76	$1.54
1	3	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	8.74	7.86	95.72%	30.00%	10.00%	13	$0.53	$1.54
1	3	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	8.74	7.86	100.00%	75.00%	12.00%	16	$4.01	$1.54
1	3	110	115	4' 2L T5HO, EB	8.74	7.86	100.00%	18.75%	16.67%	22	$0.29	$1.54
1	3	110	116	4' 4L T8, EB	8.74	7.86	100.00%	22.22%	16.67%	22	$0.21	$1.54
1	3	110	117	4' 3L T8, EB	8.74	7.86	100.00%	38.20%	16.67%	22	$0.10	$1.54
1	3	110	118	4' 3L T8 Premium, EB	8.74	7.86	100.00%	42.36%	16.67%	22	$0.32	$1.54
1	3	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	8.74	8.74	100.00%	0.00%	100.00%	14	$2.83	$2.83
1	3	120	121	4' 2L T8 Premium, EB	8.74	7.86	100.00%	25.00%	33.33%	22	$0.79	$2.83
1	3	120	122	4' 1L T8 Premium, EB, reflector	8.74	7.86	100.00%	61.11%	33.33%	22	$1.60	$2.83
1	3	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	8.74	7.86	95.72%	30.00%	10.00%	13	$0.46	$2.83
1	3	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	8.74	7.86	100.00%	75.00%	12.00%	16	$3.89	$2.83
1	3	120	125	4' 1L T5HO, EB	8.74	7.86	100.00%	13.90%	33.33%	22	$0.60	$2.83
1	3	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	8.74	8.74	100.00%	0.00%	100.00%	14	$1.94	$1.94
1	3	130	131	8' 2L T12, 60W, EB	8.74	7.86	68.10%	10.57%	25.00%	22	$0.18	$1.94
1	3	130	132	8' 1L T12, 60W, EB, reflector	8.74	7.86	100.00%	55.30%	25.00%	22	$0.84	$1.94
1	3	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	8.74	7.86	95.72%	30.00%	10.00%	13	$0.58	$1.94
1	3	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	8.74	7.86	100.00%	75.00%	12.00%	16	$4.37	$1.94
1	3	130	135	8' 2L T8, EB	8.74	7.86	100.00%	52.80%	50.00%	22	$0.38	$1.94
1	3	140	140	Base Incandescent Flood, 75W	8.74	8.74	100.00%	0.00%	100.00%	1	$3.78	$3.78
1	3	140	141	CFL Screw-in, Modular 18W	8.74	7.86	89.06%	65.30%	50.00%	6	$2.33	$3.78
1	3	150	150	Base Incandescent Flood, 150W PAR	8.74	8.74	100.00%	0.00%	100.00%	1	$1.86	$1.86
1	3	150	151	Halogen PAR Flood, 90W	8.74	8.74	100.00%	40.00%	10.00%	1	$0.19	$1.86
1	3	150	152	Metal Halide, 50W	8.74	8.74	90.41%	52.00%	45.00%	8	$9.99	$1.86
1	3	150	153	HPS, 50W	8.74	8.74	90.41%	56.00%	45.00%	8	$5.10	$1.86
1	3	160	160	Base 4' 3L T12, 34W, 1EEMAG	8.74	8.74	100.00%	0.00%	100.00%	10	$0.43	$0.43
1	3	160	161	4' 3L T8, EB	8.74	7.86	100.00%	22.61%	75.00%	22	$0.04	$0.43
1	3	160	162	4' 3L T8 Premium, EB	8.74	7.86	100.00%	22.61%	75.00%	22	$0.10	$0.43
1	3	160	163	4' 2L T8 Premium, EB, reflector	8.74	7.86	100.00%	53.04%	40.00%	22	$0.22	$0.43
1	3	160	164	4' 1L T5HO, EB	8.74	7.86	100.00%	46.09%	75.00%	22	$0.04	$0.43
1	3	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	6.99	6.99	100.00%	0.00%	100.00%	22	$1.73	$1.73
1	3	180	181	4' 4L T8 Premium, EB	6.99	6.29	100.00%	3.60%	100.00%	22	$0.31	$1.73
1	3	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	6.99	6.29	95.72%	30.00%	10.00%	13	$0.53	$1.73
1	3	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	6.99	5.94	100.00%	0.00%	100.00%	22	$3.21	$3.21
1	3	185	186	4' 3L T8 Premium, EB	6.99	6.29	100.00%	6.70%	100.00%	22	$0.43	$3.21
1	3	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	6.99	5.94	100.00%	0.00%	100.00%	22	$3.02	$3.02
1	3	190	191	4' 2L T8 Premium, EB	6.99	6.29	100.00%	8.50%	100.00%	22	$0.27	$3.02
1	3	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	6.99	6.29	95.72%	30.00%	10.00%	13	$0.46	$3.02

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	3	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	5.20	5.20	100.00%	0.00%	100.00%	20	$0.88	$0.88
1	3	200	201	Chiller Tune-Up / Diagnostics	5.20	5.20	90.00%	5.00%	100.00%	5	$0.07	$0.88
1	3	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	5.20	5.20	100.00%	10.00%	50.00%	10	$0.18	$0.88
1	3	200	203	Roof / Ceiling Insulation	5.20	5.20	100.00%	3.00%	50.00%	20	$0.45	$421.73
1	3	200	204	Cool Roofs (Reflective and Spray Evaporative)	5.20	5.20	100.00%	4.30%	90.00%	10	$0.47	$461.00
1	3	200	205	EMS Optimization	5.20	5.20	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	3	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	5.20	5.20	100.00%	5.40%	50.00%	30	$0.02	$13.11
1	3	200	207	Installation of Energy Management Systems	5.20	5.20	100.00%	10.00%	50.00%	10	$0.11	$0.88
1	3	200	208	Insulation of Pipes	5.20	5.20	50.00%	1.00%	50.00%	20	$0.02	$2.73
1	3	200	209	Installation of Chiller Economizers (water side)	5.20	5.20	100.00%	10.00%	50.00%	20	$0.59	$461.00
1	3	200	210	Optimize Chilled Water and Condenser Water Settings	5.20	5.20	50.00%	5.00%	33.00%	10	$0.13	$0.88
1	3	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	5.20	4.68	100.00%	7.50%	67.00%	15	$0.07	$1.36
1	3	200	212	Two-Speed Cooling Tower, 300 Tons	5.20	4.68	90.00%	14.00%	50.00%	15	$0.01	$1.36
1	3	200	213	VSD Cooling Tower, 300 Tons	5.20	4.68	90.00%	18.00%	50.00%	15	$0.05	$1.36
1	3	200	214	Primary/Secondary De-coupled Chilled Water System	5.20	4.68	80.00%	12.00%	50.00%	15	$0.29	$1.36
1	3	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	5.20	4.68		21.54%		15	$0.11	$1.36
1	3	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	5.20	4.68		27.69%		15	$0.38	$1.36
1	3	250	250	Base DX Packaged System, EER=10.3, 10 tons	9.00	9.00	100.00%	0.00%	100.00%	15	$1.50	$1.50
1	3	250	251	DX Tune-Up / Diagnostics	9.00	9.00	90.00%	10.00%	100.00%	3	$0.15	$1.50
1	3	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	9.00	7.78		8.85%		15	$0.18	$1.50
1	3	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	9.00	9.00	100.00%	5.00%	50.00%	30	$0.05	$22.41
1	3	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	9.00	9.00	95.00%	10.00%	25.00%	10	$0.55	$1.50
1	3	250	256	Duct Insulation	9.00	9.00	25.00%	3.00%	25.00%	20	$0.01	$24.50
1	3	250	257	Duct Repair and Sealing	9.00	9.00	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	3	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	9.00	9.00	100.00%	10.00%	50.00%	10	$0.18	$1.50
1	3	250	259	Roof / Ceiling Insulation	9.00	9.00	100.00%	3.00%	50.00%	20	$0.45	$720.87
1	3	250	260	Cool Roofs (Reflective and Spray Evaporative)	9.00	9.00	100.00%	4.30%	50.00%	10	$0.47	$788.00
1	3	250	261	Clock / Programmable Thermostat	9.00	9.00	80.40%	10.00%	100.00%	10	$0.04	$1.50
1	3	250	262	Installation of Air Side Economizers	9.00	9.00	55.37%	15.00%	100.00%	10	$0.59	$788.00
1	3	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	9.00	8.10	100.00%	0.00%	100.00%	15	$1.36	$1.36
1	3	280	281	Air-Cooled HP Package, 5 tons, SEER=11	9.00	8.10		9.09%		15	$0.07	$1.36
1	3	280	282	Air-Cooled HP Package, 5 tons, SEER=12	9.00	8.10		16.67%		15	$0.45	$1.36
1	3	280	283	DX Tune-Up / Diagnostics	9.00	9.00	90.00%	10.00%	100.00%	3	$0.15	$1.50
1	3	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	9.00	9.00	100.00%	5.00%	50.00%	30	$0.05	$22.41
1	3	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	9.00	9.00	95.00%	10.00%	25.00%	10	$0.55	$1.50
1	3	280	286	Duct Insulation	9.00	9.00	25.00%	3.00%	25.00%	20	$0.01	$24.50
1	3	280	287	Duct Repair and Sealing	9.00	9.00	50.00%	1.00%	50.00%	20	$0.04	$197.00
1	3	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	9.00	9.00	100.00%	10.00%	50.00%	10	$0.18	$1.50
1	3	280	289	Roof / Ceiling Insulation	9.00	9.00	100.00%	3.00%	50.00%	20	$0.45	$720.87

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	3	280	290	Cool Roofs (Reflective and Spray Evaporative)	9.00	9.00	100.00%	4.30%	50.00%	10	$0.47	$788.00
1	3	280	291	Clock / Programmable Thermostat	9.00	9.00	80.40%	10.00%	100.00%	10	$0.04	$1.50
1	3	280	292	Installation of Air Side Economizers	9.00	9.00	55.37%	15.00%	100.00%	10	$0.59	$788.00
1	3	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	3.96	3.96		0.00%		15	$0.07	$0.07
1	3	400	401	Energy Efficient Fan & Pump Motors (ODP)	3.96	3.96		1.50%		15	$0.01	$0.07
1	3	400	402	VSD, ASD Fan & Pump Applications	3.96	3.96		30.00%		15	$0.08	$0.07
1	3	500	500	Base Refrigeration System	5.80	5.80	100.00%	0.00%	100.00%	10	$2.00	$2.00
1	3	500	501	High Efficiency Case Fans	5.80	5.80	95.00%	11.98%	100.00%	16	$1.16	$2.00
1	3	500	502	Strip Curtains for Walk-Ins	5.80	5.80	30.00%	4.02%	100.00%	4	$0.05	$2.00
1	3	500	503	Night Covers for Display Cases	5.80	5.80	95.00%	5.80%	50.00%	5	$0.01	$2.00
1	3	500	504	Reduced Speed or Cycling of Evaporator Fans	5.80	5.80	80.00%	0.55%	100.00%	5	$0.09	$2.00
1	3	500	505	High-Efficiency Compressors	5.80	5.80	81.00%	6.83%	100.00%	10	$0.09	$2.00
1	3	500	506	Compressor VSD retrofit	5.80	5.80	95.00%	6.20%	50.00%	10	$0.41	$2.00
1	3	500	507	Installation of Floating Condenser Head Pressure Controls	5.80	5.80	44.37%	6.83%	100.00%	14	$0.12	$2.00
1	3	500	508	Refrigeration Commissioning	5.80	5.80	50.00%	5.00%	100.00%	3	$0.06	$2.00
1	3	500	509	Demand Control Defrost - Hot Gas	5.80	5.80	69.57%	2.51%	100.00%	10	$0.07	$2.00
1	3	500	510	Demand Control Defrost - Electric	5.80	5.80	47.98%	7.76%	100.00%	10	$0.04	$2.00
1	3	500	511	Anti-Sweat (Humidistat) Controls	5.80	5.80	47.98%	4.99%	100.00%	12	$0.02	$2.00
1	3	610	610	Base Office Equipment	0.23	0.23	100.00%	0.00%	100.00%	4	$0.24	$0.71
1	3	610	611	ENERGY STAR or Better Office Equipment: Computer	0.23	0.23	65.00%	18.39%	100.00%	4	$0.03	$0.71
1	3	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.23	0.23	71.00%	16.34%	100.00%	4	$0.02	$0.71
1	3	610	623	Smart Networks	0.23	0.23	40.00%	6.81%	90.00%	4	$0.00	$0.71
1	3	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.23	0.23	65.00%	7.82%	100.00%	4	$0.01	$0.13
1	3	610	641	ENERGY STAR or Better Office Equipment: Printers	0.23	0.23	65.00%	14.96%	100.00%	4	$0.04	$0.42
1	3	700	700	Base Water Heating	3.05	3.05	100.00%	0.00%	100.00%	15	$14.52	$14.52
1	3	700	701	Demand controlled circulating systems	3.05	3.05	100.00%	5.00%	50.00%	15	$2.83	$14.52
1	3	700	702	Heat Pump Water Heater	3.05	3.05	100.00%	30.00%	75.00%	15	$1.80	$14.52
1	3	700	703	High-Efficiency Water Heater (electric)	3.05	3.05		5.40%		15	$0.52	$14.52
1	3	700	704	Hot Water (SHW) Pipe Insulation	3.05	3.05	100.00%	5.00%	50.00%	15	$0.02	$5.91
1	3	800	800	Base Heating	7.23	7.23	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	3	800	802	Roof / Ceiling Insulation	7.23	7.23	67.01%	10.00%	50.00%	20	$0.45	$2.20
1	3	800	803	Duct Insulation	7.23	7.23	56.80%	2.00%	25.00%	20	$0.03	$2.20
1	3	800	804	Duct Repair and Sealing	7.23	7.23	50.00%	2.00%	25.00%	20	$0.01	$2.20
1	3	800	805	Clock / Programmable Thermostat	7.23	7.23	46.20%	30.00%	100.00%	10	$0.15	$2.40
1	3	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	7.23	7.23	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	4	100	100	Base Cooking	5.16	5.16		0.00%		15	$0.52	$0.52
1	4	100	101	High-Efficiency Convection Oven	5.16	5.16		20.00%		15	$0.44	$0.52
1	4	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	12.76	12.76	100.00%	0.00%	100.00%	7	$1.50	$1.50
1	4	110	111	4' 4L T8 Premium, EB	12.76	11.49	100.00%	25.00%	16.67%	12	$0.49	$1.50
1	4	110	112	4' 2L T8 Premium, EB, reflector	12.76	11.49	100.00%	62.50%	16.67%	12	$0.74	$1.50
1	4	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	12.76	11.49	100.00%	30.00%	10.00%	7	$0.52	$1.50
1	4	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	12.76	11.49	100.00%	75.00%	26.00%	8	$3.90	$1.50
1	4	110	115	4' 2L T5HO, EB	12.76	11.49	100.00%	18.75%	16.67%	12	$0.29	$1.50

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	4	110	116	4' 4L T8, EB	12.76	11.49	100.00%	22.22%	16.67%	12	$0.20	$1.50
1	4	110	117	4' 3L T8, EB	12.76	11.49	100.00%	38.20%	16.67%	12	$0.10	$1.50
1	4	110	118	4' 3L T8 Premium, EB	12.76	11.49	100.00%	42.36%	16.67%	12	$0.31	$1.50
1	4	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	12.76	12.76	100.00%	0.00%	100.00%	7	$2.73	$2.73
1	4	120	121	4' 2L T8 Premium, EB	12.76	11.49	100.00%	25.00%	33.33%	12	$0.76	$2.73
1	4	120	122	4' 1L T8 Premium, EB, reflector	12.76	11.49	100.00%	61.11%	33.33%	12	$1.55	$2.73
1	4	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	12.76	11.49	100.00%	30.00%	10.00%	7	$0.45	$2.73
1	4	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	12.76	11.49	100.00%	75.00%	26.00%	8	$3.75	$2.73
1	4	120	125	4' 1L T5HO, EB	12.76	11.49	100.00%	13.90%	33.33%	12	$0.58	$2.73
1	4	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	12.76	12.76	100.00%	0.00%	100.00%	7	$1.88	$1.88
1	4	130	131	8' 2L T12, 60W, EB	12.76	11.49	54.24%	10.57%	25.00%	12	$0.18	$1.88
1	4	130	132	8' 1L T12, 60W, EB, reflector	12.76	11.49	100.00%	55.30%	25.00%	12	$0.82	$1.88
1	4	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	12.76	11.49	100.00%	30.00%	10.00%	7	$0.56	$1.88
1	4	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	12.76	11.49	100.00%	75.00%	26.00%	8	$4.24	$1.88
1	4	130	135	8' 2L T8, EB	12.76	11.49	100.00%	52.80%	50.00%	12	$0.37	$1.88
1	4	140	140	Base Incandescent Flood, 75W	12.76	12.76	100.00%	0.00%	100.00%	1	$3.83	$3.83
1	4	140	141	CFL Screw-in, Modular 18W	12.76	11.49	95.37%	65.30%	90.00%	3	$2.36	$3.83
1	4	150	150	Base Incandescent Flood, 150W PAR	12.76	12.76	100.00%	0.00%	100.00%	1	$3.29	$3.29
1	4	150	151	Halogen PAR Flood, 90W	12.76	12.76	99.55%	40.00%	10.00%	1	$0.33	$3.29
1	4	150	152	Metal Halide, 50W	12.76	12.76	94.33%	52.00%	45.00%	4	$17.62	$3.29
1	4	150	153	HPS, 50W	12.76	12.76	94.33%	56.00%	45.00%	4	$8.99	$3.29
1	4	160	160	Base 4' 3L T12, 34W, 1EEMAG	12.76	12.76	100.00%	0.00%	100.00%	10	$0.67	$0.67
1	4	160	161	4' 3L T8, EB	12.76	11.49	100.00%	22.61%	75.00%	12	$0.06	$0.67
1	4	160	162	4' 3L T8 Premium, EB	12.76	11.49	100.00%	22.61%	75.00%	12	$0.16	$0.67
1	4	160	163	4' 2L T8 Premium, EB, reflector	12.76	11.49	100.00%	53.04%	40.00%	12	$0.35	$0.67
1	4	160	164	4' 1L T5HO, EB	12.76	11.49	100.00%	46.09%	75.00%	12	$0.06	$0.67
1	4	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	10.21	10.21	100.00%	0.00%	100.00%	12	$1.68	$1.68
1	4	180	181	4' 4L T8 Premium, EB	10.21	9.19	100.00%	3.60%	100.00%	12	$0.30	$1.68
1	4	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	10.21	9.19	100.00%	30.00%	10.00%	7	$0.52	$1.68
1	4	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	10.21	8.68	100.00%	0.00%	100.00%	12	$3.09	$3.09
1	4	185	186	4' 3L T8 Premium, EB	10.21	9.19	100.00%	6.70%	100.00%	12	$0.42	$3.09
1	4	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	10.21	8.68	100.00%	0.00%	100.00%	12	$2.91	$2.91
1	4	190	191	4' 2L T8 Premium, EB	10.21	9.19	100.00%	8.50%	100.00%	12	$0.26	$2.91
1	4	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	10.21	9.19	100.00%	30.00%	10.00%	7	$0.45	$2.91
1	4	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	6.72	6.72	100.00%	0.00%	100.00%	20	$1.50	$1.50
1	4	200	201	Chiller Tune-Up / Diagnostics	6.72	6.72	90.00%	5.00%	100.00%	5	$0.12	$1.50
1	4	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.72	6.72	100.00%	10.00%	50.00%	10	$0.32	$1.50
1	4	200	203	Roof / Ceiling Insulation	6.72	6.72	20.00%	3.00%	50.00%	20	$0.48	$452.64
1	4	200	204	Cool Roofs (Reflective and Spray Evaporative)	6.72	6.72	100.00%	4.30%	90.00%	10	$0.47	$461.00
1	4	200	205	EMS Optimization	6.72	6.72	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	4	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.72	6.72	100.00%	5.40%	75.00%	30	$0.03	$18.85
1	4	200	207	Installation of Energy Management Systems	6.72	6.72	100.00%	10.00%	50.00%	10	$0.20	$1.50
1	4	200	208	Insulation of Pipes	6.72	6.72	50.00%	1.00%	50.00%	20	$0.01	$1.07

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	4	200	209	Installation of Chiller Economizers (water side)	6.72	6.72	100.00%	10.00%	50.00%	20	$0.59	$461.00
1	4	200	210	Optimize Chilled Water and Condenser Water Settings	6.72	6.72	50.00%	5.00%	33.00%	10	$0.21	$1.50
1	4	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	6.72	6.04	100.00%	7.50%	67.00%	15	$0.11	$2.33
1	4	200	212	Two-Speed Cooling Tower, 300 Tons	6.72	6.04	90.00%	14.00%	50.00%	15	$0.01	$2.33
1	4	200	213	VSD Cooling Tower, 300 Tons	6.72	6.04	90.00%	18.00%	50.00%	15	$0.08	$2.33
1	4	200	214	Primary/Secondary De-coupled Chilled Water System	6.72	6.04	80.00%	12.00%	50.00%	15	$0.49	$2.33
1	4	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	6.72	6.04		21.54%		15	$0.20	$2.33
1	4	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	6.72	6.04		27.69%		15	$0.65	$2.33
1	4	250	250	Base DX Packaged System, EER=10.3, 10 tons	11.63	11.63	100.00%	0.00%	100.00%	15	$2.56	$2.56
1	4	250	251	DX Tune-Up / Diagnostics	11.63	11.63	90.00%	10.00%	100.00%	3	$0.25	$2.56
1	4	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	11.63	10.05		8.85%		15	$0.31	$2.56
1	4	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	11.63	11.63	100.00%	5.00%	75.00%	30	$0.07	$32.23
1	4	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	11.63	11.63	95.00%	10.00%	25.00%	10	$0.94	$2.56
1	4	250	256	Duct Insulation	11.63	11.63	25.00%	3.00%	25.00%	20	$0.01	$26.16
1	4	250	257	Duct Repair and Sealing	11.63	11.63	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	4	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	11.63	11.63	100.00%	10.00%	50.00%	10	$0.32	$2.56
1	4	250	259	Roof / Ceiling Insulation	11.63	11.63	20.00%	3.00%	50.00%	20	$0.48	$773.71
1	4	250	260	Cool Roofs (Reflective and Spray Evaporative)	11.63	11.63	100.00%	4.30%	50.00%	10	$0.47	$788.00
1	4	250	261	Clock / Programmable Thermostat	11.63	11.63	84.68%	10.00%	100.00%	10	$0.07	$2.56
1	4	250	262	Installation of Air Side Economizers	11.63	11.63	98.59%	15.00%	100.00%	10	$0.59	$788.00
1	4	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	11.63	10.47	100.00%	0.00%	100.00%	15	$2.33	$2.33
1	4	280	281	Air-Cooled HP Package, 5 tons, SEER=11	11.63	10.47		9.09%		15	$0.11	$2.33
1	4	280	282	Air-Cooled HP Package, 5 tons, SEER=12	11.63	10.47		16.67%		15	$0.76	$2.33
1	4	280	283	DX Tune-Up / Diagnostics	11.63	11.63	90.00%	10.00%	100.00%	3	$0.25	$2.56
1	4	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	11.63	11.63	100.00%	5.00%	75.00%	30	$0.07	$32.23
1	4	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	11.63	11.63	95.00%	10.00%	25.00%	10	$0.94	$2.56
1	4	280	286	Duct Insulation	11.63	11.63	25.00%	3.00%	25.00%	20	$0.01	$26.16
1	4	280	287	Duct Repair and Sealing	11.63	11.63	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	4	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	11.63	11.63	100.00%	10.00%	50.00%	10	$0.32	$2.56
1	4	280	289	Roof / Ceiling Insulation	11.63	11.63	20.00%	3.00%	50.00%	20	$0.48	$773.71
1	4	280	290	Cool Roofs (Reflective and Spray Evaporative)	11.63	11.63	100.00%	4.30%	50.00%	10	$0.47	$788.00
1	4	280	291	Clock / Programmable Thermostat	11.63	11.63	84.68%	10.00%	100.00%	10	$0.07	$2.56
1	4	280	292	Installation of Air Side Economizers	11.63	11.63	98.59%	15.00%	100.00%	10	$0.59	$788.00
1	4	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	5.40	5.40		0.00%		15	$0.23	$0.23
1	4	400	401	Energy Efficient Fan & Pump Motors (ODP)	5.40	5.40		1.50%		15	$0.05	$0.23
1	4	400	402	VSD, ASD Fan & Pump Applications	5.40	5.40		30.00%		15	$0.26	$0.23
1	4	500	500	Base Refrigeration System	24.18	24.18	100.00%	0.00%	100.00%	10	$2.00	$2.00
1	4	500	501	High Efficiency Case Fans	24.18	24.18	95.00%	11.98%	100.00%	16	$1.16	$2.00
1	4	500	502	Strip Curtains for Walk-Ins	24.18	24.18	30.00%	4.02%	100.00%	4	$0.05	$2.00
1	4	500	503	Night Covers for Display Cases	24.18	24.18	95.00%	5.80%	50.00%	5	$0.01	$2.00

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	4	500	504	Reduced Speed or Cycling of Evaporator Fans	24.18	24.18	80.00%	0.55%	100.00%	5	$0.09	$2.00
1	4	500	505	High-Efficiency Compressors	24.18	24.18	81.00%	6.83%	100.00%	10	$0.09	$2.00
1	4	500	506	Compressor VSD retrofit	24.18	24.18	95.00%	6.20%	50.00%	10	$0.41	$2.00
1	4	500	507	Installation of Floating Condenser Head Pressure Controls	24.18	24.18	44.37%	6.83%	100.00%	14	$0.12	$2.00
1	4	500	508	Refrigeration Commissioning	24.18	24.18	50.00%	5.00%	100.00%	3	$0.06	$2.00
1	4	500	509	Demand Control Defrost - Hot Gas	24.18	24.18	69.57%	2.51%	100.00%	10	$0.07	$2.00
1	4	500	510	Demand Control Defrost - Electric	24.18	24.18	47.98%	7.76%	100.00%	10	$0.04	$2.00
1	4	500	511	Anti-Sweat (Humidistat) Controls	24.18	24.18	47.98%	4.99%	100.00%	12	$0.02	$2.00
1	4	610	610	Base Office Equipment	0.41	0.41	100.00%	0.00%	100.00%	4	$0.09	$0.28
1	4	610	611	ENERGY STAR or Better Office Equipment: Computer	0.41	0.41	65.00%	17.86%	100.00%	4	$0.01	$0.28
1	4	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.41	0.41	71.00%	15.87%	100.00%	4	$0.01	$0.28
1	4	610	623	Smart Networks	0.41	0.41	40.00%	6.61%	90.00%	4	$0.00	$0.28
1	4	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.41	0.41	65.00%	9.74%	100.00%	4	$0.01	$0.15
1	4	610	641	ENERGY STAR or Better Office Equipment: Printers	0.41	0.41	65.00%	13.04%	100.00%	4	$0.01	$0.14
1	4	700	700	Base Water Heating	3.05	3.05	100.00%	0.00%	100.00%	15	$6.77	$6.77
1	4	700	701	Demand controlled circulating systems	3.05	3.05	100.00%	5.00%	50.00%	15	$1.32	$6.77
1	4	700	702	Heat Pump Water Heater	3.05	3.05	100.00%	30.00%	75.00%	15	$0.84	$6.77
1	4	700	703	High-Efficiency Water Heater (electric)	3.05	3.05		5.40%		15	$0.24	$6.77
1	4	700	704	Hot Water (SHW) Pipe Insulation	3.05	3.05	100.00%	5.00%	50.00%	15	$0.01	$2.32
1	4	800	800	Base Heating	1.37	1.37	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	4	800	802	Roof / Ceiling Insulation	1.37	1.37	85.03%	10.00%	50.00%	20	$0.48	$2.36
1	4	800	803	Duct Insulation	1.37	1.37	71.50%	2.00%	25.00%	20	$0.01	$2.36
1	4	800	804	Duct Repair and Sealing	1.37	1.37	50.00%	2.00%	25.00%	20	$0.01	$2.36
1	4	800	805	Clock / Programmable Thermostat	1.37	1.37	50.00%	30.00%	100.00%	10	$0.15	$2.40
1	4	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.37	1.37	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	5	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	2.94	2.94	100.00%	0.00%	100.00%	14	$0.75	$0.75
1	5	110	111	4' 4L T8 Premium, EB	2.94	2.65	100.00%	25.00%	16.67%	22	$0.25	$0.75
1	5	110	112	4' 2L T8 Premium, EB, reflector	2.94	2.65	100.00%	62.50%	16.67%	22	$0.37	$0.75
1	5	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.94	2.65	97.95%	30.00%	20.00%	12	$0.26	$0.75
1	5	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	2.94	2.65	100.00%	75.00%	40.00%	16	$1.95	$0.75
1	5	110	115	4' 2L T5HO, EB	2.94	2.65	100.00%	18.75%	16.67%	22	$0.14	$0.75
1	5	110	116	4' 4L T8, EB	2.94	2.65	100.00%	22.22%	16.67%	22	$0.10	$0.75
1	5	110	117	4' 3L T8, EB	2.94	2.65	100.00%	38.20%	16.67%	22	$0.05	$0.75
1	5	110	118	4' 3L T8 Premium, EB	2.94	2.65	100.00%	42.36%	16.67%	22	$0.16	$0.75
1	5	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	2.94	2.94	100.00%	0.00%	100.00%	14	$1.40	$1.40
1	5	120	121	4' 2L T8 Premium, EB	2.94	2.65	100.00%	25.00%	33.33%	22	$0.39	$1.40
1	5	120	122	4' 1L T8 Premium, EB, reflector	2.94	2.65	100.00%	61.11%	33.33%	22	$0.80	$1.40
1	5	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.94	2.65	97.95%	30.00%	20.00%	12	$0.23	$1.40
1	5	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	2.94	2.65	100.00%	75.00%	40.00%	16	$1.93	$1.40
1	5	120	125	4' 1L T5HO, EB	2.94	2.65	100.00%	13.90%	33.33%	22	$0.30	$1.40
1	5	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	2.94	2.94	100.00%	0.00%	100.00%	14	$1.06	$1.06
1	5	130	131	8' 2L T12, 60W, EB	2.94	2.65	84.67%	10.57%	25.00%	22	$0.10	$1.06
1	5	130	132	8' 1L T12, 60W, EB, reflector	2.94	2.65	100.00%	55.30%	25.00%	22	$0.46	$1.06

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	5	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	2.94	2.65	97.95%	30.00%	20.00%	12	$0.32	$1.06
1	5	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	2.94	2.65	100.00%	75.00%	40.00%	16	$2.39	$1.06
1	5	130	135	8' 2L T8, EB	2.94	2.65	100.00%	52.80%	50.00%	22	$0.21	$1.06
1	5	140	140	Base Incandescent Flood, 75W	2.94	2.94	100.00%	0.00%	100.00%	1	$2.17	$2.17
1	5	140	141	CFL Screw-in, Modular 18W	2.94	2.65	88.72%	65.30%	90.00%	6	$1.34	$2.17
1	5	150	150	Base Incandescent Flood, 150W PAR	2.94	2.94	100.00%	0.00%	100.00%	1	$0.99	$0.99
1	5	150	151	Halogen PAR Flood, 90W	2.94	2.94	100.00%	40.00%	10.00%	1	$0.10	$0.99
1	5	150	152	Metal Halide, 50W	2.94	2.94	90.21%	52.00%	45.00%	7	$5.28	$0.99
1	5	150	153	HPS, 50W	2.94	2.94	90.21%	56.00%	45.00%	7	$2.69	$0.99
1	5	160	160	Base 4' 3L T12, 34W, 1EEMAG	2.94	2.94	100.00%	0.00%	100.00%	10	$0.07	$0.07
1	5	160	161	4' 3L T8, EB	2.94	2.65	100.00%	22.61%	75.00%	22	$0.01	$0.07
1	5	160	162	4' 3L T8 Premium, EB	2.94	2.65	100.00%	22.61%	75.00%	22	$0.02	$0.07
1	5	160	163	4' 2L T8 Premium, EB, reflector	2.94	2.65	100.00%	53.04%	40.00%	22	$0.04	$0.07
1	5	160	164	4' 1L T5HO, EB	2.94	2.65	100.00%	46.09%	75.00%	22	$0.01	$0.07
1	5	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	2.36	2.36	100.00%	0.00%	100.00%	22	$0.84	$0.84
1	5	180	181	4' 4L T8 Premium, EB	2.36	2.12	100.00%	3.60%	100.00%	22	$0.15	$0.84
1	5	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.36	2.12	97.95%	30.00%	20.00%	12	$0.26	$0.84
1	5	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	2.36	2.00	100.00%	0.00%	100.00%	22	$1.59	$1.59
1	5	185	186	4' 3L T8 Premium, EB	2.36	2.12	100.00%	6.70%	100.00%	22	$0.22	$1.59
1	5	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	2.36	2.00	100.00%	0.00%	100.00%	22	$1.50	$1.50
1	5	190	191	4' 2L T8 Premium, EB	2.36	2.12	100.00%	8.50%	100.00%	22	$0.13	$1.50
1	5	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.36	2.12	97.95%	30.00%	20.00%	12	$0.23	$1.50
1	5	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	1.59	1.59	100.00%	0.00%	100.00%	20	$0.41	$0.41
1	5	200	201	Chiller Tune-Up / Diagnostics	1.59	1.59	90.00%	5.00%	100.00%	5	$0.03	$0.41
1	5	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.59	1.59	100.00%	10.00%	50.00%	10	$0.09	$0.41
1	5	200	203	Roof / Ceiling Insulation	1.59	1.59	20.00%	3.00%	50.00%	20	$0.45	$426.61
1	5	200	204	Cool Roofs (Reflective and Spray Evaporative)	1.59	1.59	100.00%	4.30%	90.00%	10	$0.47	$461.00
1	5	200	205	EMS Optimization	1.59	1.59	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	5	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	1.59	1.59	100.00%	5.40%	75.00%	30	$0.01	$7.87
1	5	200	207	Installation of Energy Management Systems	1.59	1.59	80.00%	10.00%	50.00%	10	$0.05	$0.41
1	5	200	208	Insulation of Pipes	1.59	1.59	50.00%	1.00%	50.00%	20	$0.00	$0.19
1	5	200	209	Installation of Chiller Economizers (water side)	1.59	1.59	100.00%	10.00%	50.00%	20	$0.59	$461.00
1	5	200	210	Optimize Chilled Water and Condenser Water Settings	1.59	1.59	50.00%	5.00%	33.00%	10	$0.06	$0.41
1	5	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	1.59	1.43	100.00%	7.50%	67.00%	15	$0.03	$0.64
1	5	200	212	Two-Speed Cooling Tower, 300 Tons	1.59	1.43	90.00%	14.00%	50.00%	15	$0.00	$0.64
1	5	200	213	VSD Cooling Tower, 300 Tons	1.59	1.43	90.00%	18.00%	50.00%	15	$0.02	$0.64
1	5	200	214	Primary/Secondary De-coupled Chilled Water System	1.59	1.43	80.00%	12.00%	50.00%	15	$0.14	$0.64
1	5	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	1.59	1.43		21.54%		15	$0.05	$0.64
1	5	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	1.59	1.43		27.69%		15	$0.18	$0.64
1	5	250	250	Base DX Packaged System, EER=10.3, 10 tons	2.75	2.75	100.00%	0.00%	100.00%	15	$0.71	$0.71
1	5	250	251	DX Tune-Up / Diagnostics	2.75	2.75	90.00%	10.00%	100.00%	3	$0.07	$0.71
1	5	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	2.75	2.38		8.85%		15	$0.09	$0.71

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	5	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.75	2.75	100.00%	5.00%	75.00%	30	$0.03	$13.45
1	5	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.75	2.75	95.00%	10.00%	25.00%	10	$0.26	$0.71
1	5	250	256	Duct Insulation	2.75	2.75	25.00%	3.00%	25.00%	20	$0.01	$12.08
1	5	250	257	Duct Repair and Sealing	2.75	2.75	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	5	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.75	2.75	100.00%	10.00%	50.00%	10	$0.09	$0.71
1	5	250	259	Roof / Ceiling Insulation	2.75	2.75	20.00%	3.00%	50.00%	20	$0.45	$729.22
1	5	250	260	Cool Roofs (Reflective and Spray Evaporative)	2.75	2.75	100.00%	4.30%	50.00%	10	$0.47	$788.00
1	5	250	261	Clock / Programmable Thermostat	2.75	2.75	46.56%	10.00%	100.00%	10	$0.02	$0.71
1	5	250	262	Installation of Air Side Economizers	2.75	2.75	53.45%	15.00%	100.00%	10	$0.59	$788.00
1	5	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	2.75	2.47	100.00%	0.00%	100.00%	15	$0.64	$0.64
1	5	280	281	Air-Cooled HP Package, 5 tons, SEER=11	2.75	2.47		9.09%		15	$0.03	$0.64
1	5	280	282	Air-Cooled HP Package, 5 tons, SEER=12	2.75	2.47		16.67%		15	$0.21	$0.64
1	5	280	283	DX Tune-Up / Diagnostics	2.75	2.75	90.00%	10.00%	100.00%	3	$0.07	$0.71
1	5	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.75	2.75	100.00%	5.00%	75.00%	30	$0.03	$13.45
1	5	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.75	2.75	95.00%	10.00%	25.00%	10	$0.26	$0.71
1	5	280	286	Duct Insulation	2.75	2.75	25.00%	3.00%	25.00%	20	$0.01	$12.08
1	5	280	287	Duct Repair and Sealing	2.75	2.75	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	5	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.75	2.75	100.00%	10.00%	50.00%	10	$0.09	$0.71
1	5	280	289	Roof / Ceiling Insulation	2.75	2.75	20.00%	3.00%	50.00%	20	$0.45	$729.22
1	5	280	290	Cool Roofs (Reflective and Spray Evaporative)	2.75	2.75	100.00%	4.30%	50.00%	10	$0.47	$788.00
1	5	280	291	Clock / Programmable Thermostat	2.75	2.75	46.56%	10.00%	100.00%	10	$0.02	$0.71
1	5	280	292	Installation of Air Side Economizers	2.75	2.75	53.45%	15.00%	100.00%	10	$0.59	$788.00
1	5	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	1.71	1.71		0.00%		15	$0.11	$0.11
1	5	400	401	Energy Efficient Fan & Pump Motors (ODP)	1.71	1.71		1.50%		15	$0.02	$0.11
1	5	400	402	VSD, ASD Fan & Pump Applications	1.71	1.71		30.00%		15	$0.13	$0.11
1	5	610	610	Base Office Equipment	0.15	0.15	100.00%	0.00%	100.00%	4	$0.79	$2.32
1	5	610	611	ENERGY STAR or Better Office Equipment: Computer	0.15	0.15	65.00%	20.96%	100.00%	4	$0.10	$2.32
1	5	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.15	0.15	71.00%	18.62%	100.00%	4	$0.05	$2.32
1	5	610	623	Smart Networks	0.15	0.15	40.00%	7.76%	90.00%	4	$0.00	$2.32
1	5	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.15	0.15	65.00%	7.07%	100.00%	4	$0.02	$0.25
1	5	610	641	ENERGY STAR or Better Office Equipment: Printers	0.15	0.15	65.00%	11.42%	100.00%	4	$0.06	$0.74
1	5	700	700	Base Water Heating	0.33	0.33	100.00%	0.00%	100.00%	15	$0.85	$0.85
1	5	700	701	Demand controlled circulating systems	0.33	0.33	100.00%	5.00%	50.00%	15	$0.17	$0.85
1	5	700	702	Heat Pump Water Heater	0.33	0.33	100.00%	30.00%	75.00%	15	$0.11	$0.85
1	5	700	703	High-Efficiency Water Heater (electric)	0.33	0.33		5.40%		15	$0.03	$0.85
1	5	700	704	Hot Water (SHW) Pipe Insulation	0.33	0.33	95.22%	5.00%	50.00%	15	$0.00	$0.42
1	5	800	800	Base Heating	0.79	0.79	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	5	800	802	Roof / Ceiling Insulation	0.79	0.79	33.67%	10.00%	50.00%	20	$0.45	$2.22
1	5	800	803	Duct Insulation	0.79	0.79	62.30%	2.00%	25.00%	20	$0.01	$2.22
1	5	800	804	Duct Repair and Sealing	0.79	0.79	50.00%	2.00%	25.00%	20	$0.00	$2.22

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	5	800	805	Clock / Programmable Thermostat	0.79	0.79	41.85%	30.00%	100.00%	10	$0.15	$2.40
1	5	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.79	0.79	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	6	100	100	Base Cooking	0.36	0.36		0.00%		15	$0.24	$0.24
1	6	100	101	High-Efficiency Convection Oven	0.36	0.36		20.00%		15	$0.20	$0.24
1	6	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	2.68	2.68	100.00%	0.00%	100.00%	22	$1.35	$1.35
1	6	110	111	4' 4L T8 Premium, EB	2.68	2.41	100.00%	25.00%	16.67%	34	$0.44	$1.35
1	6	110	112	4' 2L T8 Premium, EB, reflector	2.68	2.41	100.00%	62.50%	16.67%	34	$0.66	$1.35
1	6	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.68	2.41	94.74%	30.00%	50.00%	20	$0.47	$1.35
1	6	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	2.68	2.41	100.00%	75.00%	30.00%	24	$3.52	$1.35
1	6	110	115	4' 2L T5HO, EB	2.68	2.41	100.00%	18.75%	16.67%	34	$0.26	$1.35
1	6	110	116	4' 4L T8, EB	2.68	2.41	100.00%	22.22%	16.67%	34	$0.18	$1.35
1	6	110	117	4' 3L T8, EB	2.68	2.41	100.00%	38.20%	16.67%	34	$0.09	$1.35
1	6	110	118	4' 3L T8 Premium, EB	2.68	2.41	100.00%	42.36%	16.67%	34	$0.28	$1.35
1	6	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	2.68	2.68	100.00%	0.00%	100.00%	22	$2.46	$2.46
1	6	120	121	4' 2L T8 Premium, EB	2.68	2.41	100.00%	25.00%	33.33%	34	$0.69	$2.46
1	6	120	122	4' 1L T8 Premium, EB, reflector	2.68	2.41	100.00%	61.11%	33.33%	34	$1.40	$2.46
1	6	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.68	2.41	94.74%	30.00%	50.00%	20	$0.40	$2.46
1	6	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	2.68	2.41	100.00%	75.00%	30.00%	24	$3.38	$2.46
1	6	120	125	4' 1L T5HO, EB	2.68	2.41	100.00%	13.90%	33.33%	34	$0.52	$2.46
1	6	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	2.68	2.68	100.00%	0.00%	100.00%	22	$1.83	$1.83
1	6	130	131	8' 2L T12, 60W, EB	2.68	2.41	32.87%	10.57%	25.00%	34	$0.17	$1.83
1	6	130	132	8' 1L T12, 60W, EB, reflector	2.68	2.41	100.00%	55.30%	25.00%	34	$0.79	$1.83
1	6	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	2.68	2.41	94.74%	30.00%	50.00%	20	$0.55	$1.83
1	6	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	2.68	2.41	100.00%	75.00%	30.00%	24	$4.12	$1.83
1	6	130	135	8' 2L T8, EB	2.68	2.41	100.00%	52.80%	50.00%	34	$0.36	$1.83
1	6	140	140	Base Incandescent Flood, 75W	2.68	2.68	100.00%	0.00%	100.00%	1	$3.12	$3.12
1	6	140	141	CFL Screw-in, Modular 18W	2.68	2.41	88.39%	65.30%	90.00%	10	$1.92	$3.12
1	6	150	150	Base Incandescent Flood, 150W PAR	2.68	2.68	100.00%	0.00%	100.00%	1	$0.76	$0.76
1	6	150	151	Halogen PAR Flood, 90W	2.68	2.68	97.31%	40.00%	10.00%	1	$0.08	$0.76
1	6	150	152	Metal Halide, 50W	2.68	2.68	85.51%	52.00%	45.00%	12	$4.09	$0.76
1	6	150	153	HPS, 50W	2.68	2.68	85.51%	56.00%	45.00%	12	$2.09	$0.76
1	6	160	160	Base 4' 3L T12, 34W, 1EEMAG	2.68	2.68	100.00%	0.00%	100.00%	10	$0.45	$0.45
1	6	160	161	4' 3L T8, EB	2.68	2.41	100.00%	22.61%	75.00%	34	$0.04	$0.45
1	6	160	162	4' 3L T8 Premium, EB	2.68	2.41	100.00%	22.61%	75.00%	34	$0.10	$0.45
1	6	160	163	4' 2L T8 Premium, EB, reflector	2.68	2.41	100.00%	53.04%	40.00%	34	$0.23	$0.45
1	6	160	164	4' 1L T5HO, EB	2.68	2.41	100.00%	46.09%	75.00%	34	$0.04	$0.45
1	6	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	2.14	2.14	100.00%	0.00%	100.00%	34	$1.51	$1.51
1	6	180	181	4' 4L T8 Premium, EB	2.14	1.93	100.00%	3.60%	100.00%	34	$0.27	$1.51
1	6	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.14	1.93	94.74%	30.00%	50.00%	20	$0.47	$1.51
1	6	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	2.14	1.82	100.00%	0.00%	100.00%	34	$2.79	$2.79
1	6	185	186	4' 3L T8 Premium, EB	2.14	1.93	100.00%	6.70%	100.00%	34	$0.38	$2.79
1	6	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	2.14	1.82	100.00%	0.00%	100.00%	34	$2.62	$2.62
1	6	190	191	4' 2L T8 Premium, EB	2.14	1.93	100.00%	8.50%	100.00%	34	$0.24	$2.62

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	6	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.14	1.93	94.74%	30.00%	50.00%	20	$0.40	$2.62
1	6	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	0.30	0.30	100.00%	0.00%	100.00%	20	$1.04	$1.04
1	6	200	201	Chiller Tune-Up / Diagnostics	0.30	0.30	90.00%	5.00%	100.00%	5	$0.08	$1.04
1	6	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.30	0.30	100.00%	10.00%	50.00%	10	$0.22	$1.04
1	6	200	203	Roof / Ceiling Insulation	0.30	0.30	23.44%	3.00%	50.00%	20	$0.47	$439.21
1	6	200	204	Cool Roofs (Reflective and Spray Evaporative)	0.30	0.30	100.00%	6.14%	90.00%	10	$0.24	$230.50
1	6	200	205	EMS Optimization	0.30	0.30	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	6	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	0.30	0.30	66.00%	3.89%	75.00%	30	$0.02	$11.17
1	6	200	207	Installation of Energy Management Systems	0.30	0.30	70.68%	10.00%	50.00%	10	$0.14	$1.04
1	6	200	208	Insulation of Pipes	0.30	0.30	50.00%	1.00%	50.00%	20	$0.02	$1.74
1	6	200	209	Installation of Chiller Economizers (water side)	0.30	0.30	81.26%	10.00%	50.00%	20	$0.59	$461.00
1	6	200	210	Optimize Chilled Water and Condenser Water Settings	0.30	0.30	50.00%	5.00%	33.00%	10	$0.15	$1.04
1	6	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	0.30	0.27	100.00%	7.50%	67.00%	15	$0.08	$1.61
1	6	200	212	Two-Speed Cooling Tower, 300 Tons	0.30	0.27	90.00%	14.00%	50.00%	15	$0.01	$1.61
1	6	200	213	VSD Cooling Tower, 300 Tons	0.30	0.27	90.00%	18.00%	50.00%	15	$0.05	$1.61
1	6	200	214	Primary/Secondary De-coupled Chilled Water System	0.30	0.27	80.00%	12.00%	50.00%	15	$0.34	$1.61
1	6	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	0.30	0.27		21.54%		15	$0.14	$1.61
1	6	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	0.30	0.27		27.69%		15	$0.45	$1.61
1	6	250	250	Base DX Packaged System, EER=10.3, 10 tons	0.52	0.52	100.00%	0.00%	100.00%	15	$1.77	$1.77
1	6	250	251	DX Tune-Up / Diagnostics	0.52	0.52	90.00%	10.00%	100.00%	3	$0.18	$1.77
1	6	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	0.52	0.45		8.85%		15	$0.21	$1.77
1	6	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	0.52	0.52	66.00%	5.00%	75.00%	30	$0.04	$19.09
1	6	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	0.52	0.52	95.00%	10.00%	25.00%	10	$0.65	$1.77
1	6	250	256	Duct Insulation	0.52	0.52	25.00%	3.00%	25.00%	20	$0.01	$13.37
1	6	250	257	Duct Repair and Sealing	0.52	0.52	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	6	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.52	0.52	100.00%	10.00%	50.00%	10	$0.22	$1.77
1	6	250	259	Roof / Ceiling Insulation	0.52	0.52	23.44%	3.00%	50.00%	20	$0.47	$750.76
1	6	250	260	Cool Roofs (Reflective and Spray Evaporative)	0.52	0.52	100.00%	6.14%	50.00%	10	$0.24	$394.00
1	6	250	261	Clock / Programmable Thermostat	0.52	0.52	41.07%	10.00%	100.00%	10	$0.05	$1.77
1	6	250	262	Installation of Air Side Economizers	0.52	0.52	41.07%	15.00%	100.00%	10	$0.59	$788.00
1	6	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	0.52	0.47	100.00%	0.00%	100.00%	15	$1.61	$1.61
1	6	280	281	Air-Cooled HP Package, 5 tons, SEER=11	0.52	0.47		9.09%		15	$0.08	$1.61
1	6	280	282	Air-Cooled HP Package, 5 tons, SEER=12	0.52	0.47		16.67%		15	$0.53	$1.61
1	6	280	283	DX Tune-Up / Diagnostics	0.52	0.52	90.00%	10.00%	100.00%	3	$0.18	$1.77
1	6	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	0.52	0.52	66.00%	5.00%	75.00%	30	$0.04	$19.09
1	6	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	0.52	0.52	95.00%	10.00%	25.00%	10	$0.65	$1.77
1	6	280	286	Duct Insulation	0.52	0.52	25.00%	3.00%	25.00%	20	$0.01	$13.37
1	6	280	287	Duct Repair and Sealing	0.52	0.52	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	6	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.52	0.52	100.00%	10.00%	50.00%	10	$0.22	$1.77

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	6	280	289	Roof / Ceiling Insulation	0.52	0.52	23.44%	3.00%	50.00%	20	$0.47	$750.76
1	6	280	290	Cool Roofs (Reflective and Spray Evaporative)	0.52	0.52	100.00%	6.14%	50.00%	10	$0.24	$394.00
1	6	280	291	Clock / Programmable Thermostat	0.52	0.52	41.07%	10.00%	100.00%	10	$0.05	$1.77
1	6	280	292	Installation of Air Side Economizers	0.52	0.52	41.07%	15.00%	100.00%	10	$0.59	$788.00
1	6	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.75	0.75		0.00%		15	$0.09	$0.09
1	6	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.75	0.75		1.50%		15	$0.02	$0.09
1	6	400	402	VSD, ASD Fan & Pump Applications	0.75	0.75		30.00%		15	$0.10	$0.09
1	6	610	610	Base Office Equipment	0.11	0.11	100.00%	0.00%	100.00%	4	$0.93	$2.72
1	6	610	611	ENERGY STAR or Better Office Equipment: Computer	0.11	0.11	65.00%	19.52%	100.00%	4	$0.12	$2.72
1	6	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.11	0.11	71.00%	17.34%	100.00%	4	$0.06	$2.72
1	6	610	623	Smart Networks	0.11	0.11	40.00%	7.22%	90.00%	4	$0.00	$2.72
1	6	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.11	0.11	65.00%	8.96%	100.00%	4	$0.01	$0.17
1	6	610	641	ENERGY STAR or Better Office Equipment: Printers	0.11	0.11	65.00%	11.20%	100.00%	4	$0.06	$0.75
1	6	700	700	Base Water Heating	0.64	0.64	100.00%	0.00%	100.00%	15	$20.37	$20.37
1	6	700	701	Demand controlled circulating systems	0.64	0.64	100.00%	5.00%	50.00%	15	$3.97	$20.37
1	6	700	702	Heat Pump Water Heater	0.64	0.64	87.24%	30.00%	75.00%	15	$2.53	$20.37
1	6	700	703	High-Efficiency Water Heater (electric)	0.64	0.64		5.40%		15	$0.73	$20.37
1	6	700	704	Hot Water (SHW) Pipe Insulation	0.64	0.64	9.88%	5.00%	50.00%	15	$0.02	$3.77
1	6	800	800	Base Heating	9.71	9.71	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	6	800	802	Roof / Ceiling Insulation	9.71	9.71	44.94%	10.00%	50.00%	20	$0.47	$2.29
1	6	800	803	Duct Insulation	9.71	9.71	71.80%	2.00%	25.00%	20	$0.01	$2.29
1	6	800	804	Duct Repair and Sealing	9.71	9.71	50.00%	2.00%	25.00%	20	$0.00	$2.29
1	6	800	805	Clock / Programmable Thermostat	9.71	9.71	41.07%	30.00%	100.00%	10	$0.15	$2.40
1	6	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	9.71	9.71	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	7	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	5.29	5.29	100.00%	0.00%	100.00%	21	$1.27	$1.27
1	7	110	111	4' 4L T8 Premium, EB	5.29	4.77	100.00%	25.00%	16.67%	32	$0.42	$1.27
1	7	110	112	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	62.50%	16.67%	32	$0.62	$1.27
1	7	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	5.29	4.77	90.00%	30.00%	50.00%	19	$0.44	$1.27
1	7	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	30.00%	23	$3.30	$1.27
1	7	110	115	4' 2L T5HO, EB	5.29	4.77	100.00%	18.75%	16.67%	32	$0.24	$1.27
1	7	110	116	4' 4L T8, EB	5.29	4.77	100.00%	22.22%	16.67%	32	$0.17	$1.27
1	7	110	117	4' 3L T8, EB	5.29	4.77	100.00%	38.20%	16.67%	32	$0.08	$1.27
1	7	110	118	4' 3L T8 Premium, EB	5.29	4.77	100.00%	42.36%	16.67%	32	$0.27	$1.27
1	7	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	21	$2.34	$2.34
1	7	120	121	4' 2L T8 Premium, EB	5.29	4.77	100.00%	25.00%	33.33%	32	$0.65	$2.34
1	7	120	122	4' 1L T8 Premium, EB, reflector	5.29	4.77	100.00%	61.11%	33.33%	32	$1.32	$2.34
1	7	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	5.29	4.77	90.00%	30.00%	50.00%	19	$0.38	$2.34
1	7	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	30.00%	23	$3.21	$2.34
1	7	120	125	4' 1L T5HO, EB	5.29	4.77	100.00%	13.90%	33.33%	32	$0.49	$2.34
1	7	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	21	$1.64	$1.64
1	7	130	131	8' 2L T12, 60W, EB	5.29	4.77	50.00%	10.57%	25.00%	32	$0.16	$1.64
1	7	130	132	8' 1L T12, 60W, EB, reflector	5.29	4.77	100.00%	55.30%	25.00%	32	$0.71	$1.64
1	7	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	5.29	4.77	90.00%	30.00%	50.00%	19	$0.49	$1.64

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	7	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	30.00%	23	$3.70	$1.64
1	7	130	135	8' 2L T8, EB	5.29	4.77	100.00%	52.80%	50.00%	32	$0.32	$1.64
1	7	140	140	Base Incandescent Flood, 75W	5.29	5.29	100.00%	0.00%	100.00%	1	$3.09	$3.09
1	7	140	141	CFL Screw-in, Modular 18W	5.29	4.77	85.00%	65.30%	90.00%	9	$1.90	$3.09
1	7	150	150	Base Incandescent Flood, 150W PAR	5.29	5.29	100.00%	0.00%	100.00%	1	$1.40	$1.40
1	7	150	151	Halogen PAR Flood, 90W	5.29	5.29	95.00%	40.00%	10.00%	1	$0.14	$1.40
1	7	150	152	Metal Halide, 50W	5.29	5.29	90.00%	52.00%	45.00%	11	$7.51	$1.40
1	7	150	153	HPS, 50W	5.29	5.29	90.00%	56.00%	45.00%	11	$3.83	$1.40
1	7	160	160	Base 4' 3L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$0.09	$0.09
1	7	160	161	4' 3L T8, EB	5.29	4.77	100.00%	22.61%	75.00%	32	$0.01	$0.09
1	7	160	162	4' 3L T8 Premium, EB	5.29	4.77	100.00%	22.61%	75.00%	32	$0.02	$0.09
1	7	160	163	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	53.04%	40.00%	32	$0.05	$0.09
1	7	160	164	4' 1L T5HO, EB	5.29	4.77	100.00%	46.09%	75.00%	32	$0.01	$0.09
1	7	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	32	$1.42	$1.42
1	7	180	181	4' 4L T8 Premium, EB	4.24	3.81	100.00%	3.60%	100.00%	32	$0.25	$1.42
1	7	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	4.24	3.81	90.00%	30.00%	50.00%	19	$0.44	$1.42
1	7	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	4.24	3.60	100.00%	0.00%	100.00%	32	$2.65	$2.65
1	7	185	186	4' 3L T8 Premium, EB	4.24	3.81	100.00%	6.70%	100.00%	32	$0.36	$2.65
1	7	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	4.24	3.60	100.00%	0.00%	100.00%	32	$2.49	$2.49
1	7	190	191	4' 2L T8 Premium, EB	4.24	3.81	100.00%	8.50%	100.00%	32	$0.22	$2.49
1	7	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	4.24	3.81	90.00%	30.00%	50.00%	19	$0.38	$2.49
1	7	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	3.76	3.76	100.00%	0.00%	100.00%	20	$2.07	$2.07
1	7	200	201	Chiller Tune-Up / Diagnostics	3.76	3.76	90.00%	5.00%	100.00%	5	$0.17	$2.07
1	7	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	3.76	3.76	100.00%	10.00%	50.00%	10	$0.44	$2.07
1	7	200	203	Roof / Ceiling Insulation	3.76	3.76	20.00%	3.00%	50.00%	20	$0.30	$277.59
1	7	200	204	Cool Roofs (Reflective and Spray Evaporative)	3.76	3.76	100.00%	1.35%	90.00%	10	$0.20	$199.77
1	7	200	205	EMS Optimization	3.76	3.76	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	7	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	3.76	3.76	66.00%	3.96%	75.00%	30	$0.04	$28.82
1	7	200	207	Installation of Energy Management Systems	3.76	3.76	50.00%	10.00%	50.00%	10	$0.27	$2.07
1	7	200	208	Insulation of Pipes	3.76	3.76	50.00%	1.00%	50.00%	20	$0.03	$2.92
1	7	200	209	Installation of Chiller Economizers (water side)	3.76	3.76	100.00%	10.00%	50.00%	20	$0.59	$461.00
1	7	200	210	Optimize Chilled Water and Condenser Water Settings	3.76	3.76	50.00%	5.00%	33.00%	10	$0.30	$2.07
1	7	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	3.76	3.38	100.00%	7.50%	67.00%	15	$0.16	$3.22
1	7	200	212	Two-Speed Cooling Tower, 300 Tons	3.76	3.38	90.00%	14.00%	50.00%	15	$0.01	$3.22
1	7	200	213	VSD Cooling Tower, 300 Tons	3.76	3.38	90.00%	18.00%	50.00%	15	$0.11	$3.22
1	7	200	214	Primary/Secondary De-coupled Chilled Water System	3.76	3.38	80.00%	12.00%	50.00%	15	$0.68	$3.22
1	7	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	3.76	3.38		21.54%		15	$0.27	$3.22
1	7	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	3.76	3.38		27.69%		15	$0.90	$3.22
1	7	250	250	Base DX Packaged System, EER=10.3, 10 tons	6.51	6.51	100.00%	0.00%	100.00%	15	$3.55	$3.55
1	7	250	251	DX Tune-Up / Diagnostics	6.51	6.51	90.00%	10.00%	100.00%	3	$0.35	$3.55
1	7	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	6.51	5.63		8.85%		15	$0.43	$3.55
1	7	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	66.00%	5.00%	75.00%	30	$0.11	$49.27

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	7	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$1.31	$3.55
1	7	250	256	Duct Insulation	6.51	6.51	25.00%	3.00%	25.00%	20	$0.01	$11.43
1	7	250	257	Duct Repair and Sealing	6.51	6.51	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	7	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.44	$3.55
1	7	250	259	Roof / Ceiling Insulation	6.51	6.51	20.00%	3.00%	50.00%	20	$0.30	$474.49
1	7	250	260	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.35%	50.00%	10	$0.20	$341.47
1	7	250	261	Clock / Programmable Thermostat	6.51	6.51	30.00%	10.00%	100.00%	10	$0.09	$3.55
1	7	250	262	Installation of Air Side Economizers	6.51	6.51	100.00%	15.00%	100.00%	10	$0.59	$788.00
1	7	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	6.51	5.86	100.00%	0.00%	100.00%	15	$3.22	$3.22
1	7	280	281	Air-Cooled HP Package, 5 tons, SEER=11	6.51	5.86		9.09%		15	$0.16	$3.22
1	7	280	282	Air-Cooled HP Package, 5 tons, SEER=12	6.51	5.86		16.67%		15	$1.06	$3.22
1	7	280	283	DX Tune-Up / Diagnostics	6.51	6.51	90.00%	10.00%	100.00%	3	$0.35	$3.55
1	7	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	66.00%	5.00%	75.00%	30	$0.11	$49.27
1	7	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$1.31	$3.55
1	7	280	286	Duct Insulation	6.51	6.51	25.00%	3.00%	25.00%	20	$0.01	$11.43
1	7	280	287	Duct Repair and Sealing	6.51	6.51	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	7	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.44	$3.55
1	7	280	289	Roof / Ceiling Insulation	6.51	6.51	20.00%	3.00%	50.00%	20	$0.30	$474.49
1	7	280	290	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.35%	50.00%	10	$0.20	$341.47
1	7	280	291	Clock / Programmable Thermostat	6.51	6.51	30.00%	10.00%	100.00%	10	$0.09	$3.55
1	7	280	292	Installation of Air Side Economizers	6.51	6.51	100.00%	15.00%	100.00%	10	$0.59	$788.00
1	7	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.98	0.98		0.00%		15	$0.11	$0.11
1	7	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.98	0.98		1.50%		15	$0.02	$0.11
1	7	400	402	VSD, ASD Fan & Pump Applications	0.98	0.98		30.00%		15	$0.13	$0.11
1	7	610	610	Base Office Equipment	0.32	0.32	100.00%	0.00%	100.00%	4	$0.25	$0.74
1	7	610	611	ENERGY STAR or Better Office Equipment: Computer	0.32	0.32	65.00%	21.55%	100.00%	4	$0.03	$0.74
1	7	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.32	0.32	71.00%	19.15%	100.00%	4	$0.02	$0.74
1	7	610	623	Smart Networks	0.32	0.32	40.00%	7.98%	90.00%	4	$0.00	$0.74
1	7	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.32	0.32	65.00%	6.25%	100.00%	4	$0.00	$0.04
1	7	610	641	ENERGY STAR or Better Office Equipment: Printers	0.32	0.32	65.00%	11.58%	100.00%	4	$0.02	$0.22
1	7	700	700	Base Water Heating	0.64	0.64	100.00%	0.00%	100.00%	15	$36.19	$36.19
1	7	700	701	Demand controlled circulating systems	0.64	0.64	100.00%	5.00%	50.00%	15	$7.06	$36.19
1	7	700	702	Heat Pump Water Heater	0.64	0.64	100.00%	30.00%	75.00%	15	$4.50	$36.19
1	7	700	703	High-Efficiency Water Heater (electric)	0.64	0.64		5.40%		15	$1.30	$36.19
1	7	700	704	Hot Water (SHW) Pipe Insulation	0.64	0.64	80.00%	5.00%	50.00%	15	$0.03	$6.34
1	7	800	800	Base Heating	0.79	0.79	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	7	800	802	Roof / Ceiling Insulation	0.79	0.79	40.00%	10.00%	50.00%	20	$0.30	$1.45
1	7	800	803	Duct Insulation	0.79	0.79	73.80%	2.00%	25.00%	20	$0.01	$1.45
1	7	800	804	Duct Repair and Sealing	0.79	0.79	50.00%	2.00%	25.00%	20	$0.00	$1.45
1	7	800	805	Clock / Programmable Thermostat	0.79	0.79	70.00%	30.00%	100.00%	10	$0.15	$2.40

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	7	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.79	0.79	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	8	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	10.77	10.77	100.00%	0.00%	100.00%	8	$1.48	$1.48
1	8	110	111	4' 4L T8 Premium, EB	10.77	9.69	100.00%	25.00%	16.67%	12	$0.48	$1.48
1	8	110	112	4' 2L T8 Premium, EB, reflector	10.77	9.69	100.00%	62.50%	16.67%	12	$0.72	$1.48
1	8	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	10.77	9.69	90.00%	30.00%	50.00%	7	$0.51	$1.48
1	8	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	10.77	9.69	100.00%	75.00%	10.00%	8	$3.84	$1.48
1	8	110	115	4' 2L T5HO, EB	10.77	9.69	100.00%	18.75%	16.67%	12	$0.28	$1.48
1	8	110	116	4' 4L T8, EB	10.77	9.69	100.00%	22.22%	16.67%	12	$0.20	$1.48
1	8	110	117	4' 3L T8, EB	10.77	9.69	100.00%	38.20%	16.67%	12	$0.09	$1.48
1	8	110	118	4' 3L T8 Premium, EB	10.77	9.69	100.00%	42.36%	16.67%	12	$0.31	$1.48
1	8	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	10.77	10.77	100.00%	0.00%	100.00%	8	$2.72	$2.72
1	8	120	121	4' 2L T8 Premium, EB	10.77	9.69	100.00%	25.00%	33.33%	12	$0.76	$2.72
1	8	120	122	4' 1L T8 Premium, EB, reflector	10.77	9.69	100.00%	61.11%	33.33%	12	$1.54	$2.72
1	8	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	10.77	9.69	90.00%	30.00%	50.00%	7	$0.44	$2.72
1	8	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	10.77	9.69	100.00%	75.00%	10.00%	8	$3.74	$2.72
1	8	120	125	4' 1L T5HO, EB	10.77	9.69	100.00%	13.90%	33.33%	12	$0.58	$2.72
1	8	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	10.77	10.77	100.00%	0.00%	100.00%	8	$1.77	$1.77
1	8	130	131	8' 2L T12, 60W, EB	10.77	9.69	50.00%	10.57%	25.00%	12	$0.17	$1.77
1	8	130	132	8' 1L T12, 60W, EB, reflector	10.77	9.69	100.00%	55.30%	25.00%	12	$0.77	$1.77
1	8	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	10.77	9.69	90.00%	30.00%	50.00%	7	$0.53	$1.77
1	8	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	10.77	9.69	100.00%	75.00%	10.00%	8	$3.99	$1.77
1	8	130	135	8' 2L T8, EB	10.77	9.69	100.00%	52.80%	50.00%	12	$0.35	$1.77
1	8	140	140	Base Incandescent Flood, 75W	10.77	10.77	100.00%	0.00%	100.00%	1	$3.72	$3.72
1	8	140	141	CFL Screw-in, Modular 18W	10.77	9.69	85.00%	65.30%	90.00%	3	$2.29	$3.72
1	8	150	150	Base Incandescent Flood, 150W PAR	10.77	10.77	100.00%	0.00%	100.00%	1	$1.04	$1.04
1	8	150	151	Halogen PAR Flood, 90W	10.77	10.77	95.00%	40.00%	10.00%	1	$0.10	$1.04
1	8	150	152	Metal Halide, 50W	10.77	10.77	90.00%	52.00%	45.00%	4	$5.59	$1.04
1	8	150	153	HPS, 50W	10.77	10.77	90.00%	56.00%	45.00%	4	$2.85	$1.04
1	8	160	160	Base 4' 3L T12, 34W, 1EEMAG	10.77	10.77	100.00%	0.00%	100.00%	10	$0.14	$0.14
1	8	160	161	4' 3L T8, EB	10.77	9.69	100.00%	22.61%	75.00%	12	$0.01	$0.14
1	8	160	162	4' 3L T8 Premium, EB	10.77	9.69	100.00%	22.61%	75.00%	12	$0.03	$0.14
1	8	160	163	4' 2L T8 Premium, EB, reflector	10.77	9.69	100.00%	53.04%	40.00%	12	$0.07	$0.14
1	8	160	164	4' 1L T5HO, EB	10.77	9.69	100.00%	46.09%	75.00%	12	$0.01	$0.14
1	8	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	8.62	8.62	100.00%	0.00%	100.00%	12	$1.65	$1.65
1	8	180	181	4' 4L T8 Premium, EB	8.62	7.75	100.00%	3.60%	100.00%	12	$0.30	$1.65
1	8	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	8.62	7.75	90.00%	30.00%	50.00%	7	$0.51	$1.65
1	8	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	8.62	7.32	100.00%	0.00%	100.00%	12	$3.08	$3.08
1	8	185	186	4' 3L T8 Premium, EB	8.62	7.75	100.00%	6.70%	100.00%	12	$0.42	$3.08
1	8	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	8.62	7.32	100.00%	0.00%	100.00%	12	$2.90	$2.90
1	8	190	191	4' 2L T8 Premium, EB	8.62	7.75	100.00%	8.50%	100.00%	12	$0.26	$2.90
1	8	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	8.62	7.75	90.00%	30.00%	50.00%	7	$0.44	$2.90
1	8	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	8.98	8.98	100.00%	0.00%	100.00%	20	$2.07	$2.07
1	8	200	201	Chiller Tune-Up / Diagnostics	8.98	8.98	90.00%	5.00%	100.00%	5	$0.17	$2.07

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	8	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	8.98	8.98	100.00%	10.00%	50.00%	10	$0.44	$2.07
1	8	200	203	Roof / Ceiling Insulation	8.98	8.98	20.00%	3.00%	50.00%	20	$0.43	$402.37
1	8	200	204	Cool Roofs (Reflective and Spray Evaporative)	8.98	8.98	100.00%	0.64%	90.00%	10	$0.16	$153.67
1	8	200	205	EMS Optimization	8.98	8.98	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	8	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	8.98	8.98	66.00%	1.17%	75.00%	30	$0.01	$9.28
1	8	200	207	Installation of Energy Management Systems	8.98	8.98	75.00%	10.00%	50.00%	10	$0.27	$2.07
1	8	200	208	Insulation of Pipes	8.98	8.98	50.00%	1.00%	50.00%	20	$0.01	$1.08
1	8	200	209	Installation of Chiller Economizers (water side)	8.98	8.98	100.00%	10.00%	50.00%	20	$0.59	$461.00
1	8	200	210	Optimize Chilled Water and Condenser Water Settings	8.98	8.98	50.00%	5.00%	33.00%	10	$0.30	$2.07
1	8	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	8.98	8.08	100.00%	7.50%	67.00%	15	$0.16	$3.22
1	8	200	212	Two-Speed Cooling Tower, 300 Tons	8.98	8.08	90.00%	14.00%	50.00%	15	$0.01	$3.22
1	8	200	213	VSD Cooling Tower, 300 Tons	8.98	8.08	90.00%	18.00%	50.00%	15	$0.11	$3.22
1	8	200	214	Primary/Secondary De-coupled Chilled Water System	8.98	8.08	80.00%	12.00%	50.00%	15	$0.68	$3.22
1	8	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	8.98	8.08		21.54%		15	$0.27	$3.22
1	8	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	8.98	8.08		27.69%		15	$0.90	$3.22
1	8	250	250	Base DX Packaged System, EER=10.3, 10 tons	15.55	15.55	100.00%	0.00%	100.00%	15	$3.55	$3.55
1	8	250	251	DX Tune-Up / Diagnostics	15.55	15.55	90.00%	10.00%	100.00%	3	$0.35	$3.55
1	8	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	15.55	13.44		8.85%		15	$0.43	$3.55
1	8	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	15.55	15.55	66.00%	5.00%	75.00%	30	$0.03	$15.85
1	8	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	15.55	15.55	95.00%	10.00%	25.00%	10	$1.31	$3.55
1	8	250	256	Duct Insulation	15.55	15.55	25.00%	3.00%	25.00%	20	$0.01	$11.22
1	8	250	257	Duct Repair and Sealing	15.55	15.55	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	8	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	15.55	15.55	100.00%	10.00%	50.00%	10	$0.44	$3.55
1	8	250	259	Roof / Ceiling Insulation	15.55	15.55	20.00%	3.00%	50.00%	20	$0.43	$687.78
1	8	250	260	Cool Roofs (Reflective and Spray Evaporative)	15.55	15.55	100.00%	0.64%	50.00%	10	$0.16	$262.67
1	8	250	261	Clock / Programmable Thermostat	15.55	15.55	60.00%	10.00%	100.00%	10	$0.09	$3.55
1	8	250	262	Installation of Air Side Economizers	15.55	15.55	40.00%	15.00%	100.00%	10	$0.59	$788.00
1	8	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	15.55	13.99	100.00%	0.00%	100.00%	15	$3.22	$3.22
1	8	280	281	Air-Cooled HP Package, 5 tons, SEER=11	15.55	13.99		9.09%		15	$0.16	$3.22
1	8	280	282	Air-Cooled HP Package, 5 tons, SEER=12	15.55	13.99		16.67%		15	$1.06	$3.22
1	8	280	283	DX Tune-Up / Diagnostics	15.55	15.55	90.00%	10.00%	100.00%	3	$0.35	$3.55
1	8	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	15.55	15.55	66.00%	5.00%	75.00%	30	$0.03	$15.85
1	8	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	15.55	15.55	95.00%	10.00%	25.00%	10	$1.31	$3.55
1	8	280	286	Duct Insulation	15.55	15.55	25.00%	3.00%	25.00%	20	$0.01	$11.22
1	8	280	287	Duct Repair and Sealing	15.55	15.55	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	8	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	15.55	15.55	100.00%	10.00%	50.00%	10	$0.44	$3.55
1	8	280	289	Roof / Ceiling Insulation	15.55	15.55	20.00%	3.00%	50.00%	20	$0.43	$687.78
1	8	280	290	Cool Roofs (Reflective and Spray Evaporative)	15.55	15.55	100.00%	0.64%	50.00%	10	$0.16	$262.67
1	8	280	291	Clock / Programmable Thermostat	15.55	15.55	60.00%	10.00%	100.00%	10	$0.09	$3.55

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	8	280	292	Installation of Air Side Economizers	15.55	15.55	40.00%	15.00%	100.00%	10	$0.59	$788.00
1	8	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	2.67	2.67		0.00%		15	$0.13	$0.13
1	8	400	401	Energy Efficient Fan & Pump Motors (ODP)	2.67	2.67		1.50%		15	$0.03	$0.13
1	8	400	402	VSD, ASD Fan & Pump Applications	2.67	2.67		30.00%		15	$0.15	$0.13
1	8	610	610	Base Office Equipment	0.52	0.52	100.00%	0.00%	100.00%	4	$0.89	$2.62
1	8	610	611	ENERGY STAR or Better Office Equipment: Computer	0.52	0.52	65.00%	17.36%	100.00%	4	$0.11	$2.62
1	8	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.52	0.52	71.00%	15.43%	100.00%	4	$0.06	$2.62
1	8	610	623	Smart Networks	0.52	0.52	40.00%	6.43%	90.00%	4	$0.00	$2.62
1	8	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.52	0.52	65.00%	10.21%	100.00%	4	$0.04	$0.47
1	8	610	641	ENERGY STAR or Better Office Equipment: Printers	0.52	0.52	65.00%	13.23%	100.00%	4	$0.11	$1.30
1	8	700	700	Base Water Heating	1.25	1.25	100.00%	0.00%	100.00%	15	$31.82	$31.82
1	8	700	701	Demand controlled circulating systems	1.25	1.25	90.00%	5.00%	50.00%	15	$6.20	$31.82
1	8	700	702	Heat Pump Water Heater	1.25	1.25	100.00%	30.00%	75.00%	15	$3.95	$31.82
1	8	700	703	High-Efficiency Water Heater (electric)	1.25	1.25		5.40%		15	$1.15	$31.82
1	8	700	704	Hot Water (SHW) Pipe Insulation	1.25	1.25	80.00%	5.00%	50.00%	15	$0.01	$2.33
1	8	800	800	Base Heating	4.58	4.58	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	8	800	802	Roof / Ceiling Insulation	4.58	4.58	40.00%	10.00%	50.00%	20	$0.43	$2.09
1	8	800	803	Duct Insulation	4.58	4.58	70.30%	2.00%	25.00%	20	$0.01	$2.09
1	8	800	804	Duct Repair and Sealing	4.58	4.58	50.00%	2.00%	25.00%	20	$0.00	$2.09
1	8	800	805	Clock / Programmable Thermostat	4.58	4.58	70.00%	30.00%	100.00%	10	$0.15	$2.40
1	8	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.58	4.58	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	9	100	100	Base Cooking	1.62	1.62		0.00%		15	$0.11	$0.11
1	9	100	101	High-Efficiency Convection Oven	1.62	1.62		20.00%		15	$0.09	$0.11
1	9	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	3.01	3.01	100.00%	0.00%	100.00%	17	$0.74	$0.74
1	9	110	111	4' 4L T8 Premium, EB	3.01	2.71	100.00%	25.00%	16.67%	26	$0.24	$0.74
1	9	110	112	4' 2L T8 Premium, EB, reflector	3.01	2.71	100.00%	62.50%	16.67%	26	$0.36	$0.74
1	9	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	3.01	2.71	89.63%	30.00%	20.00%	15	$0.26	$0.74
1	9	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	3.01	2.71	100.00%	75.00%	30.00%	19	$1.92	$0.74
1	9	110	115	4' 2L T5HO, EB	3.01	2.71	100.00%	18.75%	16.67%	26	$0.14	$0.74
1	9	110	116	4' 4L T8, EB	3.01	2.71	100.00%	22.22%	16.67%	26	$0.10	$0.74
1	9	110	117	4' 3L T8, EB	3.01	2.71	100.00%	38.20%	16.67%	26	$0.05	$0.74
1	9	110	118	4' 3L T8 Premium, EB	3.01	2.71	100.00%	42.36%	16.67%	26	$0.15	$0.74
1	9	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	3.01	3.01	100.00%	0.00%	100.00%	17	$1.37	$1.37
1	9	120	121	4' 2L T8 Premium, EB	3.01	2.71	100.00%	25.00%	33.33%	26	$0.38	$1.37
1	9	120	122	4' 1L T8 Premium, EB, reflector	3.01	2.71	100.00%	61.11%	33.33%	26	$0.78	$1.37
1	9	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	3.01	2.71	89.63%	30.00%	20.00%	15	$0.22	$1.37
1	9	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	3.01	2.71	100.00%	75.00%	30.00%	19	$1.89	$1.37
1	9	120	125	4' 1L T5HO, EB	3.01	2.71	100.00%	13.90%	33.33%	26	$0.29	$1.37
1	9	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	3.01	3.01	100.00%	0.00%	100.00%	17	$0.92	$0.92
1	9	130	131	8' 2L T12, 60W, EB	3.01	2.71	79.87%	10.57%	25.00%	26	$0.09	$0.92
1	9	130	132	8' 1L T12, 60W, EB, reflector	3.01	2.71	100.00%	55.30%	25.00%	26	$0.40	$0.92
1	9	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	3.01	2.71	89.63%	30.00%	20.00%	15	$0.28	$0.92
1	9	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	3.01	2.71	100.00%	75.00%	30.00%	19	$2.07	$0.92

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	9	130	135	8' 2L T8, EB	3.01	2.71	100.00%	52.80%	50.00%	26	$0.18	$0.92
1	9	140	140	Base Incandescent Flood, 75W	3.01	3.01	100.00%	0.00%	100.00%	1	$2.01	$2.01
1	9	140	141	CFL Screw-in, Modular 18W	3.01	2.71	72.51%	65.30%	70.00%	8	$1.24	$2.01
1	9	150	150	Base Incandescent Flood, 150W PAR	3.01	3.01	100.00%	0.00%	100.00%	1	$0.73	$0.73
1	9	150	151	Halogen PAR Flood, 90W	3.01	3.01	98.98%	40.00%	10.00%	1	$0.07	$0.73
1	9	150	152	Metal Halide, 50W	3.01	3.01	92.23%	52.00%	45.00%	9	$3.88	$0.73
1	9	150	153	HPS, 50W	3.01	3.01	92.23%	56.00%	45.00%	9	$1.98	$0.73
1	9	160	160	Base 4' 3L T12, 34W, 1EEMAG	3.01	3.01	100.00%	0.00%	100.00%	10	$0.22	$0.22
1	9	160	161	4' 3L T8, EB	3.01	2.71	100.00%	22.61%	75.00%	26	$0.02	$0.22
1	9	160	162	4' 3L T8 Premium, EB	3.01	2.71	100.00%	22.61%	75.00%	26	$0.05	$0.22
1	9	160	163	4' 2L T8 Premium, EB, reflector	3.01	2.71	100.00%	53.04%	40.00%	26	$0.11	$0.22
1	9	160	164	4' 1L T5HO, EB	3.01	2.71	100.00%	46.09%	75.00%	26	$0.02	$0.22
1	9	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	2.41	2.41	100.00%	0.00%	100.00%	26	$0.83	$0.83
1	9	180	181	4' 4L T8 Premium, EB	2.41	2.17	100.00%	3.60%	100.00%	26	$0.15	$0.83
1	9	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.41	2.17	89.63%	30.00%	20.00%	15	$0.26	$0.83
1	9	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	2.41	2.05	100.00%	0.00%	100.00%	26	$1.56	$1.56
1	9	185	186	4' 3L T8 Premium, EB	2.41	2.17	100.00%	6.70%	100.00%	26	$0.21	$1.56
1	9	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	2.41	2.05	100.00%	0.00%	100.00%	26	$1.46	$1.46
1	9	190	191	4' 2L T8 Premium, EB	2.41	2.17	100.00%	8.50%	100.00%	26	$0.13	$1.46
1	9	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.41	2.17	89.63%	30.00%	20.00%	15	$0.22	$1.46
1	9	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	1.50	1.50	100.00%	0.00%	100.00%	20	$2.19	$2.19
1	9	200	201	Chiller Tune-Up / Diagnostics	1.50	1.50	90.00%	5.00%	100.00%	5	$0.18	$2.19
1	9	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.50	1.50	100.00%	10.00%	50.00%	10	$0.46	$2.19
1	9	200	203	Roof / Ceiling Insulation	1.50	1.50	34.57%	3.00%	50.00%	20	$0.21	$198.57
1	9	200	204	Cool Roofs (Reflective and Spray Evaporative)	1.50	1.50	100.00%	0.39%	90.00%	10	$0.04	$38.42
1	9	200	205	EMS Optimization	1.50	1.50	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	9	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	1.50	1.50	92.94%	7.03%	75.00%	30	$0.06	$43.56
1	9	200	207	Installation of Energy Management Systems	1.50	1.50	37.46%	10.00%	50.00%	10	$0.29	$2.19
1	9	200	208	Insulation of Pipes	1.50	1.50	50.00%	1.00%	50.00%	20	$0.03	$3.98
1	9	200	209	Installation of Chiller Economizers (water side)	1.50	1.50	40.07%	10.00%	50.00%	20	$0.59	$461.00
1	9	200	210	Optimize Chilled Water and Condenser Water Settings	1.50	1.50	50.00%	5.00%	33.00%	10	$0.31	$2.19
1	9	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	1.50	1.35	100.00%	7.50%	67.00%	15	$0.17	$3.40
1	9	200	212	Two-Speed Cooling Tower, 300 Tons	1.50	1.35	90.00%	14.00%	50.00%	15	$0.01	$3.40
1	9	200	213	VSD Cooling Tower, 300 Tons	1.50	1.35	90.00%	18.00%	50.00%	15	$0.11	$3.40
1	9	200	214	Primary/Secondary De-coupled Chilled Water System	1.50	1.35	80.00%	12.00%	50.00%	15	$0.71	$3.40
1	9	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	1.50	1.35		21.54%		15	$0.29	$3.40
1	9	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	1.50	1.35		27.69%		15	$0.95	$3.40
1	9	250	250	Base DX Packaged System, EER=10.3, 10 tons	2.60	2.60	100.00%	0.00%	100.00%	15	$3.74	$3.74
1	9	250	251	DX Tune-Up / Diagnostics	2.60	2.60	90.00%	10.00%	100.00%	3	$0.37	$3.74
1	9	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	2.60	2.24		8.85%		15	$0.45	$3.74
1	9	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.60	2.60	92.94%	5.00%	75.00%	30	$0.16	$74.47

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	9	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.60	2.60	95.00%	10.00%	25.00%	10	$1.38	$3.74
1	9	250	255	Occupancy Sensor for room HVAC units	2.60	2.60	100.00%	35.00%	51.00%	15	$0.30	$2.40
1	9	250	256	Duct Insulation	2.60	2.60	25.00%	3.00%	25.00%	20	$0.01	$24.79
1	9	250	257	Duct Repair and Sealing	2.60	2.60	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	9	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.60	2.60	100.00%	10.00%	50.00%	10	$0.46	$3.74
1	9	250	259	Roof / Ceiling Insulation	2.60	2.60	34.57%	3.00%	50.00%	20	$0.21	$339.41
1	9	250	260	Cool Roofs (Reflective and Spray Evaporative)	2.60	2.60	100.00%	0.39%	50.00%	10	$0.04	$65.67
1	9	250	261	Clock / Programmable Thermostat	2.60	2.60	80.00%	10.00%	100.00%	10	$0.10	$3.74
1	9	250	262	Installation of Air Side Economizers	2.60	2.60	40.00%	15.00%	100.00%	10	$0.59	$788.00
1	9	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	2.60	2.34	100.00%	0.00%	100.00%	15	$3.40	$3.40
1	9	280	281	Air-Cooled HP Package, 5 tons, SEER=11	2.60	2.34		9.09%		15	$0.17	$3.40
1	9	280	282	Air-Cooled HP Package, 5 tons, SEER=12	2.60	2.34		16.67%		15	$1.12	$3.40
1	9	280	283	DX Tune-Up / Diagnostics	2.60	2.60	90.00%	10.00%	100.00%	3	$0.37	$3.74
1	9	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.60	2.60	92.94%	5.00%	75.00%	30	$0.16	$74.47
1	9	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.60	2.60	95.00%	10.00%	25.00%	10	$1.38	$3.74
1	9	280	286	Duct Insulation	2.60	2.60	25.00%	3.00%	25.00%	20	$0.01	$24.79
1	9	280	287	Duct Repair and Sealing	2.60	2.60	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	9	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.60	2.60	100.00%	10.00%	50.00%	10	$0.46	$3.74
1	9	280	289	Roof / Ceiling Insulation	2.60	2.60	34.57%	3.00%	50.00%	20	$0.21	$339.41
1	9	280	290	Cool Roofs (Reflective and Spray Evaporative)	2.60	2.60	100.00%	0.39%	50.00%	10	$0.04	$65.67
1	9	280	291	Clock / Programmable Thermostat	2.60	2.60	80.00%	10.00%	100.00%	10	$0.10	$3.74
1	9	280	292	Installation of Air Side Economizers	2.60	2.60	40.00%	15.00%	100.00%	10	$0.59	$788.00
1	9	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.60	0.60		0.00%		15	$0.09	$0.09
1	9	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.60	0.60		1.50%		15	$0.02	$0.09
1	9	400	402	VSD, ASD Fan & Pump Applications	0.60	0.60		30.00%		15	$0.10	$0.09
1	9	610	610	Base Office Equipment	0.10	0.10	100.00%	0.00%	100.00%	4	$0.08	$0.23
1	9	610	611	ENERGY STAR or Better Office Equipment: Computer	0.10	0.10	65.00%	12.24%	100.00%	4	$0.01	$0.23
1	9	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.10	0.10	71.00%	10.87%	100.00%	4	$0.00	$0.23
1	9	610	623	Smart Networks	0.10	0.10	40.00%	4.53%	90.00%	4	$0.00	$0.23
1	9	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.10	0.10	65.00%	20.18%	100.00%	4	$0.00	$0.03
1	9	610	641	ENERGY STAR or Better Office Equipment: Printers	0.10	0.10	65.00%	7.56%	100.00%	4	$0.01	$0.12
1	9	700	700	Base Water Heating	1.74	1.74	100.00%	0.00%	100.00%	15	$27.95	$27.95
1	9	700	701	Demand controlled circulating systems	1.74	1.74	100.00%	5.00%	50.00%	15	$5.45	$27.95
1	9	700	702	Heat Pump Water Heater	1.74	1.74	100.00%	30.00%	75.00%	15	$3.47	$27.95
1	9	700	703	High-Efficiency Water Heater (electric)	1.74	1.74		5.40%		15	$1.01	$27.95
1	9	700	704	Hot Water (SHW) Pipe Insulation	1.74	1.74	100.00%	5.00%	50.00%	15	$0.03	$8.64
1	9	800	800	Base Heating	4.84	4.84	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	9	800	801	Occupancy Sensor for room HVAC units	4.84	4.84	100.00%	35.00%	51.00%	15	$0.20	$2.40
1	9	800	802	Roof / Ceiling Insulation	4.84	4.84	62.26%	10.00%	50.00%	20	$0.21	$1.03
1	9	800	803	Duct Insulation	4.84	4.84	79.10%	2.00%	25.00%	20	$0.01	$1.03

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	9	800	804	Duct Repair and Sealing	4.84	4.84	50.00%	2.00%	25.00%	20	$0.01	$1.03
1	9	800	805	Clock / Programmable Thermostat	4.84	4.84	59.44%	30.00%	100.00%	10	$0.15	$2.40
1	9	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.84	4.84	100.00%	5.00%	50.00%	15	$0.28	$2.40
1	10	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	2.12	2.12	100.00%	0.00%	100.00%	23	$1.42	$1.42
1	10	110	111	4' 4L T8 Premium, EB	2.12	1.91	100.00%	25.00%	16.67%	36	$0.46	$1.42
1	10	110	112	4' 2L T8 Premium, EB, reflector	2.12	1.91	100.00%	62.50%	16.67%	36	$0.70	$1.42
1	10	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.12	1.91	95.02%	30.00%	20.00%	21	$0.49	$1.42
1	10	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	2.12	1.91	100.00%	75.00%	30.00%	26	$3.69	$1.42
1	10	110	115	4' 2L T5HO, EB	2.12	1.91	100.00%	18.75%	16.67%	36	$0.27	$1.42
1	10	110	116	4' 4L T8, EB	2.12	1.91	100.00%	22.22%	16.67%	36	$0.19	$1.42
1	10	110	117	4' 3L T8, EB	2.12	1.91	100.00%	38.20%	16.67%	36	$0.09	$1.42
1	10	110	118	4' 3L T8 Premium, EB	2.12	1.91	100.00%	42.36%	16.67%	36	$0.30	$1.42
1	10	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	2.12	2.12	100.00%	0.00%	100.00%	23	$2.63	$2.63
1	10	120	121	4' 2L T8 Premium, EB	2.12	1.91	100.00%	25.00%	33.33%	36	$0.73	$2.63
1	10	120	122	4' 1L T8 Premium, EB, reflector	2.12	1.91	100.00%	61.11%	33.33%	36	$1.49	$2.63
1	10	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.12	1.91	95.02%	30.00%	20.00%	21	$0.43	$2.63
1	10	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	2.12	1.91	100.00%	75.00%	30.00%	26	$3.62	$2.63
1	10	120	125	4' 1L T5HO, EB	2.12	1.91	100.00%	13.90%	33.33%	36	$0.56	$2.63
1	10	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	2.12	2.12	100.00%	0.00%	100.00%	23	$1.79	$1.79
1	10	130	131	8' 2L T12, 60W, EB	2.12	1.91	46.17%	10.57%	25.00%	36	$0.17	$1.79
1	10	130	132	8' 1L T12, 60W, EB, reflector	2.12	1.91	100.00%	55.30%	25.00%	36	$0.77	$1.79
1	10	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	2.12	1.91	95.02%	30.00%	20.00%	21	$0.53	$1.79
1	10	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	2.12	1.91	100.00%	75.00%	30.00%	26	$4.03	$1.79
1	10	130	135	8' 2L T8, EB	2.12	1.91	100.00%	52.80%	50.00%	36	$0.35	$1.79
1	10	140	140	Base Incandescent Flood, 75W	2.12	2.12	100.00%	0.00%	100.00%	1	$3.96	$3.96
1	10	140	141	CFL Screw-in, Modular 18W	2.12	1.91	95.29%	65.30%	90.00%	10	$2.44	$3.96
1	10	150	150	Base Incandescent Flood, 150W PAR	2.12	2.12	100.00%	0.00%	100.00%	1	$1.92	$1.92
1	10	150	151	Halogen PAR Flood, 90W	2.12	2.12	98.69%	40.00%	10.00%	1	$0.19	$1.92
1	10	150	152	Metal Halide, 50W	2.12	2.12	97.99%	52.00%	45.00%	12	$10.29	$1.92
1	10	150	153	HPS, 50W	2.12	2.12	97.99%	56.00%	45.00%	12	$5.25	$1.92
1	10	160	160	Base 4' 3L T12, 34W, 1EEMAG	2.12	2.12	100.00%	0.00%	100.00%	10	$0.36	$0.36
1	10	160	161	4' 3L T8, EB	2.12	1.91	100.00%	22.61%	75.00%	36	$0.03	$0.36
1	10	160	162	4' 3L T8 Premium, EB	2.12	1.91	100.00%	22.61%	75.00%	36	$0.08	$0.36
1	10	160	163	4' 2L T8 Premium, EB, reflector	2.12	1.91	100.00%	53.04%	40.00%	36	$0.19	$0.36
1	10	160	164	4' 1L T5HO, EB	2.12	1.91	100.00%	46.09%	75.00%	36	$0.03	$0.36
1	10	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	1.70	1.70	100.00%	0.00%	100.00%	36	$1.59	$1.59
1	10	180	181	4' 4L T8 Premium, EB	1.70	1.53	100.00%	3.60%	100.00%	36	$0.28	$1.59
1	10	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	1.70	1.53	95.02%	30.00%	20.00%	21	$0.49	$1.59
1	10	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	1.70	1.44	100.00%	0.00%	100.00%	36	$2.99	$2.99
1	10	185	186	4' 3L T8 Premium, EB	1.70	1.53	100.00%	6.70%	100.00%	36	$0.41	$2.99
1	10	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	1.70	1.44	100.00%	0.00%	100.00%	36	$2.81	$2.81
1	10	190	191	4' 2L T8 Premium, EB	1.70	1.53	100.00%	8.50%	100.00%	36	$0.25	$2.81
1	10	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	1.70	1.53	95.02%	30.00%	20.00%	21	$0.43	$2.81

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	10	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	2.54	2.54	100.00%	0.00%	100.00%	20	$0.92	$0.92
1	10	200	201	Chiller Tune-Up / Diagnostics	2.54	2.54	90.00%	5.00%	100.00%	5	$0.08	$0.92
1	10	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.54	2.54	100.00%	10.00%	50.00%	10	$0.19	$0.92
1	10	200	203	Roof / Ceiling Insulation	2.54	2.54	40.19%	3.00%	50.00%	20	$0.44	$414.96
1	10	200	204	Cool Roofs (Reflective and Spray Evaporative)	2.54	2.54	100.00%	12.96%	90.00%	10	$0.47	$461.00
1	10	200	205	EMS Optimization	2.54	2.54	75.00%	1.00%	100.00%	5	$0.00	$0.00
1	10	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.54	2.54	76.27%	2.47%	75.00%	30	$0.02	$13.11
1	10	200	207	Installation of Energy Management Systems	2.54	2.54	100.00%	10.00%	50.00%	10	$0.12	$0.92
1	10	200	208	Insulation of Pipes	2.54	2.54	50.00%	1.00%	50.00%	20	$0.01	$1.08
1	10	200	209	Installation of Chiller Economizers (water side)	2.54	2.54	76.27%	10.00%	50.00%	20	$0.59	$461.00
1	10	200	210	Optimize Chilled Water and Condenser Water Settings	2.54	2.54	50.00%	5.00%	33.00%	10	$0.13	$0.92
1	10	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	2.54	2.29	100.00%	7.50%	67.00%	15	$0.07	$1.43
1	10	200	212	Two-Speed Cooling Tower, 300 Tons	2.54	2.29	90.00%	14.00%	50.00%	15	$0.01	$1.43
1	10	200	213	VSD Cooling Tower, 300 Tons	2.54	2.29	90.00%	18.00%	50.00%	15	$0.05	$1.43
1	10	200	214	Primary/Secondary De-coupled Chilled Water System	2.54	2.29	80.00%	12.00%	50.00%	15	$0.30	$1.43
1	10	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	2.54	2.29		21.54%		15	$0.12	$1.43
1	10	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	2.54	2.29		27.69%		15	$0.40	$1.43
1	10	250	250	Base DX Packaged System, EER=10.3, 10 tons	4.40	4.40	100.00%	0.00%	100.00%	15	$1.58	$1.58
1	10	250	251	DX Tune-Up / Diagnostics	4.40	4.40	90.00%	10.00%	100.00%	3	$0.16	$1.58
1	10	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	4.40	3.81		8.85%		15	$0.19	$1.58
1	10	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	4.40	4.40	76.27%	5.00%	75.00%	30	$0.05	$22.41
1	10	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	4.40	4.40	95.00%	10.00%	25.00%	10	$0.58	$1.58
1	10	250	256	Duct Insulation	4.40	4.40	25.00%	3.00%	25.00%	20	$0.01	$24.64
1	10	250	257	Duct Repair and Sealing	4.40	4.40	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	10	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.40	4.40	100.00%	10.00%	50.00%	10	$0.19	$1.58
1	10	250	259	Roof / Ceiling Insulation	4.40	4.40	40.19%	3.00%	50.00%	20	$0.44	$709.31
1	10	250	260	Cool Roofs (Reflective and Spray Evaporative)	4.40	4.40	100.00%	12.96%	50.00%	10	$0.47	$788.00
1	10	250	261	Clock / Programmable Thermostat	4.40	4.40	35.94%	10.00%	100.00%	10	$0.04	$1.58
1	10	250	262	Installation of Air Side Economizers	4.40	4.40	79.66%	15.00%	100.00%	10	$0.59	$788.00
1	10	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	4.40	3.96	100.00%	0.00%	100.00%	15	$1.43	$1.43
1	10	280	281	Air-Cooled HP Package, 5 tons, SEER=11	4.40	3.96		9.09%		15	$0.07	$1.43
1	10	280	282	Air-Cooled HP Package, 5 tons, SEER=12	4.40	3.96		16.67%		15	$0.47	$1.43
1	10	280	283	DX Tune-Up / Diagnostics	4.40	4.40	90.00%	10.00%	100.00%	3	$0.16	$1.58
1	10	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	4.40	4.40	76.27%	5.00%	75.00%	30	$0.05	$22.41
1	10	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	4.40	4.40	95.00%	10.00%	25.00%	10	$0.58	$1.58
1	10	280	286	Duct Insulation	4.40	4.40	25.00%	3.00%	25.00%	20	$0.01	$24.64
1	10	280	287	Duct Repair and Sealing	4.40	4.40	50.00%	1.00%	25.00%	20	$0.04	$197.00
1	10	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.40	4.40	100.00%	10.00%	50.00%	10	$0.19	$1.58
1	10	280	289	Roof / Ceiling Insulation	4.40	4.40	40.19%	3.00%	50.00%	20	$0.44	$709.31

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	10	280	290	Cool Roofs (Reflective and Spray Evaporative)	4.40	4.40	100.00%	12.96%	50.00%	10	$0.47	$788.00
1	10	280	291	Clock / Programmable Thermostat	4.40	4.40	35.94%	10.00%	100.00%	10	$0.04	$1.58
1	10	280	292	Installation of Air Side Economizers	4.40	4.40	79.66%	15.00%	100.00%	10	$0.59	$788.00
1	10	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	1.89	1.89		0.00%		15	$0.28	$0.28
1	10	400	401	Energy Efficient Fan & Pump Motors (ODP)	1.89	1.89		1.50%		15	$0.06	$0.28
1	10	400	402	VSD, ASD Fan & Pump Applications	1.89	1.89		30.00%		15	$0.33	$0.28
1	10	610	610	Base Office Equipment	0.09	0.09	100.00%	0.00%	100.00%	4	$1.16	$3.42
1	10	610	611	ENERGY STAR or Better Office Equipment: Computer	0.09	0.09	65.00%	18.60%	100.00%	4	$0.15	$3.42
1	10	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.09	0.09	71.00%	16.52%	100.00%	4	$0.07	$3.42
1	10	610	623	Smart Networks	0.09	0.09	40.00%	6.88%	90.00%	4	$0.01	$3.42
1	10	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.09	0.09	65.00%	11.44%	100.00%	4	$0.04	$0.50
1	10	610	641	ENERGY STAR or Better Office Equipment: Printers	0.09	0.09	65.00%	9.16%	100.00%	4	$0.11	$1.24
1	10	700	700	Base Water Heating	2.25	2.25	100.00%	0.00%	100.00%	15	$27.30	$27.30
1	10	700	701	Demand controlled circulating systems	2.25	2.25	100.00%	5.00%	50.00%	15	$5.32	$27.30
1	10	700	702	Heat Pump Water Heater	2.25	2.25	100.00%	30.00%	75.00%	15	$3.39	$27.30
1	10	700	703	High-Efficiency Water Heater (electric)	2.25	2.25		5.40%		15	$0.98	$27.30
1	10	700	704	Hot Water (SHW) Pipe Insulation	2.25	2.25	100.00%	5.00%	50.00%	15	$0.01	$2.34
1	10	800	800	Base Heating	4.58	4.58	100.00%	0.00%	100.00%	20	$2.40	$2.40
1	10	800	802	Roof / Ceiling Insulation	4.58	4.58	13.38%	10.00%	50.00%	20	$0.44	$2.16
1	10	800	803	Duct Insulation	4.58	4.58	83.40%	2.00%	25.00%	20	$0.01	$2.16
1	10	800	804	Duct Repair and Sealing	4.58	4.58	50.00%	2.00%	25.00%	20	$0.00	$2.16
1	10	800	805	Clock / Programmable Thermostat	4.58	4.58	41.75%	30.00%	100.00%	10	$0.15	$2.40
1	10	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.58	4.58	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	1	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$1.51	$1.51
2	1	110	111	4' 4L T8 Premium, EB	5.29	4.77	100.00%	25.00%	16.67%	16	$0.50	$1.51
2	1	110	112	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	62.50%	16.67%	16	$0.74	$1.51
2	1	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	5.29	4.77	79.56%	30.00%	40.00%	9	$0.52	$1.51
2	1	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	40.00%	11	$3.93	$1.51
2	1	110	115	4' 2L T5HO, EB	5.29	4.77	100.00%	18.75%	16.67%	16	$0.29	$1.51
2	1	110	116	4' 4L T8, EB	5.29	4.77	100.00%	22.22%	16.67%	16	$0.21	$1.51
2	1	110	117	4' 3L T8, EB	5.29	4.77	100.00%	38.20%	16.67%	16	$0.10	$1.51
2	1	110	118	4' 3L T8 Premium, EB	5.29	4.77	100.00%	42.36%	16.67%	16	$0.32	$1.51
2	1	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$2.78	$2.78
2	1	120	121	4' 2L T8 Premium, EB	5.29	4.77	100.00%	25.00%	33.33%	16	$0.77	$2.78
2	1	120	122	4' 1L T8 Premium, EB, reflector	5.29	4.77	100.00%	61.11%	33.33%	16	$1.58	$2.78
2	1	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	5.29	4.77	79.56%	30.00%	40.00%	9	$0.45	$2.78
2	1	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	40.00%	11	$3.82	$2.78
2	1	120	125	4' 1L T5HO, EB	5.29	4.77	100.00%	13.90%	33.33%	16	$0.59	$2.78
2	1	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$1.82	$1.82
2	1	130	131	8' 2L T12, 60W, EB	5.29	4.77	26.59%	10.57%	25.00%	16	$0.17	$1.82
2	1	130	132	8' 1L T12, 60W, EB, reflector	5.29	4.77	100.00%	55.30%	25.00%	16	$0.79	$1.82
2	1	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	5.29	4.77	79.56%	30.00%	60.12%	9	$0.54	$1.82
2	1	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	40.00%	11	$4.09	$1.82

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	1	130	135	8' 2L T8, EB	5.29	4.77	100.00%	52.80%	50.00%	16	$0.36	$1.82
2	1	140	140	Base Incandescent Flood, 75W	5.29	5.29	100.00%	0.00%	100.00%	1	$3.66	$3.66
2	1	140	141	CFL Screw-in, Modular 18W	5.29	4.77	72.49%	65.30%	90.00%	5	$2.25	$3.66
2	1	150	150	Base Incandescent Flood, 150W PAR	5.29	5.29	100.00%	0.00%	100.00%	1	$1.76	$1.76
2	1	150	151	Halogen PAR Flood, 90W	5.29	5.29	100.00%	40.00%	10.00%	1	$0.18	$1.76
2	1	150	152	Metal Halide, 50W	5.29	5.29	93.86%	52.00%	45.00%	6	$9.40	$1.76
2	1	150	153	HPS, 50W	5.29	5.29	93.86%	56.00%	45.00%	6	$4.80	$1.76
2	1	160	160	Base 4' 3L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$0.55	$0.55
2	1	160	161	4' 3L T8, EB	5.29	4.77	100.00%	22.61%	25.00%	16	$0.05	$0.55
2	1	160	162	4' 3L T8 Premium, EB	5.29	4.77	100.00%	22.61%	25.00%	16	$0.13	$0.55
2	1	160	163	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	53.04%	25.00%	16	$0.28	$0.55
2	1	160	164	4' 1L T5HO, EB	5.29	4.77	100.00%	46.09%	25.00%	16	$0.05	$0.55
2	1	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	16	$1.69	$1.69
2	1	180	181	4' 4L T8 Premium, EB	4.24	3.81	100.00%	3.60%	100.00%	16	$0.30	$1.69
2	1	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	4.24	3.81	79.56%	30.00%	40.00%	9	$0.52	$1.69
2	1	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	16	$3.15	$3.15
2	1	185	186	4' 3L T8 Premium, EB	4.24	3.81	100.00%	6.70%	100.00%	16	$0.43	$3.15
2	1	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	4.24	3.60	100.00%	0.00%	100.00%	16	$2.97	$2.97
2	1	190	191	4' 2L T8 Premium, EB	4.24	3.81	100.00%	8.50%	100.00%	16	$0.27	$2.97
2	1	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	4.24	3.81	79.56%	30.00%	40.00%	9	$0.45	$2.97
2	1	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	3.76	3.76	100.00%	0.00%	100.00%	20	$1.38	$1.38
2	1	200	201	Chiller Tune-Up / Diagnostics	3.76	3.76	10.00%	5.00%	100.00%	5	$0.11	$1.38
2	1	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	3.76	3.76	100.00%	10.00%	50.00%	10	$0.29	$1.38
2	1	200	203	Roof / Ceiling Insulation	3.76	3.76	8.70%	3.00%	50.00%	20	$0.33	$305.98
2	1	200	204	Cool Roofs (Reflective and Spray Evaporative)	3.76	3.76	100.00%	1.81%	90.00%	10	$0.24	$230.50
2	1	200	205	EMS Optimization	3.76	3.76	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	1	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	3.76	3.76	99.43%	9.26%	75.00%	30	$0.06	$40.43
2	1	200	207	Installation of Energy Management Systems	3.76	3.76	19.08%	10.00%	50.00%	10	$0.18	$1.38
2	1	200	208	Insulation of Pipes	3.76	3.76	50.00%	1.00%	50.00%	20	$0.00	$0.45
2	1	200	209	Installation of Chiller Economizers (water side)	3.76	3.76	56.87%	10.00%	50.00%	20	$0.59	$461.00
2	1	200	210	Optimize Chilled Water and Condenser Water Settings	3.76	3.76	50.00%	5.00%	33.00%	10	$0.20	$1.38
2	1	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	3.76	3.76	90.00%	7.50%	67.00%	15	$0.11	$2.15
2	1	200	212	Two-Speed Cooling Tower, 300 Tons	3.76	3.76	90.00%	14.00%	50.00%	15	$0.01	$2.15
2	1	200	213	VSD Cooling Tower, 300 Tons	3.76	3.76	90.00%	18.00%	50.00%	15	$0.07	$2.15
2	1	200	214	Primary/Secondary De-coupled Chilled Water System	3.76	3.76	80.00%	12.00%	50.00%	15	$0.45	$2.15
2	1	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	3.76	3.76		21.54%		15	$0.18	$2.15
2	1	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	3.76	3.76		27.69%		15	$0.60	$2.15
2	1	250	250	Base DX Packaged System, EER=10.3, 10 tons	6.51	6.51	100.00%	0.00%	100.00%	15	$2.36	$2.36
2	1	250	251	DX Tune-Up / Diagnostics	6.51	6.51	10.00%	10.00%	100.00%	3	$0.23	$2.36
2	1	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	6.51	6.51		8.85%		15	$0.29	$2.36
2	1	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	99.43%	5.00%	75.00%	30	$0.15	$69.11

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	1	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$0.87	$2.36
2	1	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.29	$2.36
2	1	250	259	Roof / Ceiling Insulation	6.51	6.51	8.70%	3.00%	50.00%	20	$0.33	$523.02
2	1	250	260	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.81%	50.00%	10	$0.24	$394.00
2	1	250	261	Clock / Programmable Thermostat	6.51	6.51	29.22%	10.00%	100.00%	10	$0.06	$2.36
2	1	250	262	Installation of Air Side Economizers	6.51	6.51	30.37%	15.00%	100.00%	10	$0.59	$788.00
2	1	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	6.51	6.51	100.00%	0.00%	100.00%	15	$2.15	$2.15
2	1	280	281	Air-Cooled HP Package, 5 tons, SEER=11	6.51	6.51		9.09%		15	$0.11	$2.15
2	1	280	282	Air-Cooled HP Package, 5 tons, SEER=12	6.51	6.51		16.67%		15	$0.71	$2.15
2	1	280	283	DX Tune-Up / Diagnostics	6.51	6.51	10.00%	10.00%	100.00%	3	$0.23	$2.36
2	1	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	99.43%	5.00%	75.00%	30	$0.15	$69.11
2	1	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$0.87	$2.36
2	1	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.29	$2.36
2	1	280	289	Roof / Ceiling Insulation	6.51	6.51	8.70%	3.00%	50.00%	20	$0.33	$523.02
2	1	280	290	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.81%	50.00%	10	$0.24	$394.00
2	1	280	291	Clock / Programmable Thermostat	6.51	6.51	29.22%	10.00%	100.00%	10	$0.06	$2.36
2	1	280	292	Installation of Air Side Economizers	6.51	6.51	30.37%	15.00%	100.00%	10	$0.59	$788.00
2	1	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	2.25	2.25		0.00%		15	$0.18	$0.18
2	1	400	401	Energy Efficient Fan & Pump Motors (ODP)	2.25	2.25		1.50%		15	$0.04	$0.18
2	1	400	402	VSD, ASD Fan & Pump Applications	2.25	2.25		30.00%		15	$0.21	$0.18
2	1	610	610	Base Office Equipment	1.59	1.59	100.00%	0.00%	100.00%	4	$1.46	$4.29
2	1	610	611	ENERGY STAR or Better Office Equipment: Computer	1.59	1.59	65.00%	24.69%	100.00%	4	$0.18	$4.29
2	1	610	621	ENERGY STAR or Better Office Equipment: Monitors	1.59	1.59	71.00%	21.94%	100.00%	4	$0.09	$4.29
2	1	610	623	Smart Networks	1.59	1.59	40.00%	9.14%	90.00%	4	$0.01	$4.29
2	1	610	631	ENERGY STAR or Better Office Equipment: Copiers	1.59	1.59	33.00%	4.84%	100.00%	4	$0.03	$0.40
2	1	610	641	ENERGY STAR or Better Office Equipment: Printers	1.59	1.59	99.00%	8.01%	100.00%	4	$0.10	$1.21
2	1	700	700	Base Water Heating	0.30	0.30	100.00%	0.00%	100.00%	15	$4.65	$4.65
2	1	700	701	Demand controlled circulating systems	0.30	0.30	93.16%	5.00%	50.00%	15	$0.91	$4.65
2	1	700	702	Heat Pump Water Heater	0.30	0.30	100.00%	30.00%	75.00%	15	$0.58	$4.65
2	1	700	703	High-Efficiency Water Heater (electric)	0.30	0.30		5.40%		15	$0.17	$4.65
2	1	700	704	Hot Water (SHW) Pipe Insulation	0.30	0.30	39.27%	5.00%	50.00%	15	$0.00	$0.98
2	1	800	800	Base Heating	0.79	0.79	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	1	800	802	Roof / Ceiling Insulation	0.79	0.79	12.95%	10.00%	50.00%	20	$0.33	$1.59
2	1	800	805	Clock / Programmable Thermostat	0.79	0.79	29.22%	30.00%	100.00%	10	$0.15	$2.40
2	1	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.79	0.79	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	2	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	5.89	5.89	100.00%	0.00%	100.00%	16	$1.68	$1.68
2	2	110	111	4' 4L T8 Premium, EB	5.89	5.30	100.00%	25.00%	16.67%	25	$0.55	$1.68
2	2	110	112	4' 2L T8 Premium, EB, reflector	5.89	5.30	100.00%	62.50%	16.67%	25	$0.83	$1.68
2	2	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	5.89	5.30	100.00%	30.00%	10.00%	14	$0.58	$1.68
2	2	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	5.89	5.30	100.00%	75.00%	50.00%	18	$4.37	$1.68

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	2	110	115	4' 2L T5HO, EB	5.89	5.30	100.00%	18.75%	16.67%	25	$0.32	$1.68
2	2	110	116	4' 4L T8, EB	5.89	5.30	100.00%	22.22%	16.67%	25	$0.23	$1.68
2	2	110	117	4' 3L T8, EB	5.89	5.30	100.00%	38.20%	16.67%	25	$0.11	$1.68
2	2	110	118	4' 3L T8 Premium, EB	5.89	5.30	100.00%	42.36%	16.67%	25	$0.35	$1.68
2	2	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	5.89	5.89	100.00%	0.00%	100.00%	16	$3.17	$3.17
2	2	120	121	4' 2L T8 Premium, EB	5.89	5.30	100.00%	25.00%	33.33%	25	$0.88	$3.17
2	2	120	122	4' 1L T8 Premium, EB, reflector	5.89	5.30	100.00%	61.11%	33.33%	25	$1.80	$3.17
2	2	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	5.89	5.30	100.00%	30.00%	10.00%	14	$0.52	$3.17
2	2	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	5.89	5.30	100.00%	75.00%	50.00%	18	$4.35	$3.17
2	2	120	125	4' 1L T5HO, EB	5.89	5.30	100.00%	13.90%	33.33%	25	$0.67	$3.17
2	2	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	5.89	5.89	100.00%	0.00%	100.00%	16	$2.23	$2.23
2	2	130	131	8' 2L T12, 60W, EB	5.89	5.30	95.41%	10.57%	25.00%	25	$0.21	$2.23
2	2	130	132	8' 1L T12, 60W, EB, reflector	5.89	5.30	100.00%	55.30%	25.00%	25	$0.96	$2.23
2	2	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	5.89	5.30	100.00%	30.00%	10.00%	14	$0.67	$2.23
2	2	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	5.89	5.30	100.00%	75.00%	20.00%	18	$5.02	$2.23
2	2	130	135	8' 2L T8, EB	5.89	5.30	100.00%	52.80%	50.00%	25	$0.44	$2.23
2	2	140	140	Base Incandescent Flood, 75W	5.89	5.89	100.00%	0.00%	100.00%	1	$4.55	$4.55
2	2	140	141	CFL Screw-in, Modular 18W	5.89	5.30	75.00%	65.30%	50.00%	7	$2.80	$4.55
2	2	150	150	Base Incandescent Flood, 150W PAR	5.89	5.89	100.00%	0.00%	100.00%	1	$1.88	$1.88
2	2	150	151	Halogen PAR Flood, 90W	5.89	5.89	99.28%	40.00%	10.00%	1	$0.19	$1.88
2	2	150	152	Metal Halide, 50W	5.89	5.89	91.60%	52.00%	45.00%	8	$10.05	$1.88
2	2	150	153	HPS, 50W	5.89	5.89	91.60%	56.00%	45.00%	8	$5.13	$1.88
2	2	160	160	Base 4' 3L T12, 34W, 1EEMAG	5.89	5.89	100.00%	0.00%	100.00%	10	$1.35	$1.35
2	2	160	161	4' 3L T8, EB	5.89	5.30	100.00%	22.61%	25.00%	25	$0.11	$1.35
2	2	160	162	4' 3L T8 Premium, EB	5.89	5.30	100.00%	22.61%	25.00%	25	$0.31	$1.35
2	2	160	163	4' 2L T8 Premium, EB, reflector	5.89	5.30	100.00%	53.04%	25.00%	25	$0.70	$1.35
2	2	160	164	4' 1L T5HO, EB	5.89	5.30	100.00%	46.09%	25.00%	25	$0.12	$1.35
2	2	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	4.71	4.71	100.00%	0.00%	100.00%	25	$1.88	$1.88
2	2	180	181	4' 4L T8 Premium, EB	4.71	4.24	100.00%	3.60%	100.00%	25	$0.34	$1.88
2	2	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	4.71	4.24	100.00%	30.00%	10.00%	14	$0.58	$1.88
2	2	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	4.71	4.71	100.00%	0.00%	100.00%	25	$3.59	$3.59
2	2	185	186	4' 3L T8 Premium, EB	4.71	4.24	100.00%	6.70%	100.00%	25	$0.49	$3.59
2	2	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	4.71	4.00	100.00%	0.00%	100.00%	25	$3.38	$3.38
2	2	190	191	4' 2L T8 Premium, EB	4.71	4.24	100.00%	8.50%	100.00%	25	$0.30	$3.38
2	2	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	4.71	4.24	100.00%	30.00%	10.00%	14	$0.52	$3.38
2	2	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	1.22	1.22	100.00%	0.00%	100.00%	20	$1.15	$1.15
2	2	200	201	Chiller Tune-Up / Diagnostics	1.22	1.22	10.00%	5.00%	100.00%	5	$0.09	$1.15
2	2	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.22	1.22	100.00%	10.00%	50.00%	10	$0.24	$1.15
2	2	200	203	Roof / Ceiling Insulation	1.22	1.22	100.00%	3.00%	50.00%	20	$0.47	$443.39
2	2	200	204	Cool Roofs (Reflective and Spray Evaporative)	1.22	1.22	100.00%	6.92%	90.00%	10	$0.47	$461.00
2	2	200	205	EMS Optimization	1.22	1.22	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	2	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	1.22	1.22	100.00%	10.32%	75.00%	30	$0.03	$21.21
2	2	200	207	Installation of Energy Management Systems	1.22	1.22	100.00%	10.00%	50.00%	10	$0.15	$1.15

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	2	200	208	Insulation of Pipes	1.22	1.22	50.00%	1.00%	50.00%	20	$0.03	$2.94
2	2	200	209	Installation of Chiller Economizers (water side)	1.22	1.22	100.00%	10.00%	50.00%	20	$0.59	$461.00
2	2	200	210	Optimize Chilled Water and Condenser Water Settings	1.22	1.22	50.00%	5.00%	33.00%	10	$0.17	$1.15
2	2	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	1.22	1.22	90.00%	7.50%	67.00%	15	$0.09	$1.79
2	2	200	212	Two-Speed Cooling Tower, 300 Tons	1.22	1.22	90.00%	14.00%	50.00%	15	$0.01	$1.79
2	2	200	213	VSD Cooling Tower, 300 Tons	1.22	1.22	90.00%	18.00%	50.00%	15	$0.06	$1.79
2	2	200	214	Primary/Secondary De-coupled Chilled Water System	1.22	1.22	80.00%	12.00%	50.00%	15	$0.38	$1.79
2	2	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	1.22	1.22		21.54%		15	$0.15	$1.79
2	2	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	1.22	1.22		27.69%		15	$0.50	$1.79
2	2	250	250	Base DX Packaged System, EER=10.3, 10 tons	2.11	2.11	100.00%	0.00%	100.00%	15	$1.97	$1.97
2	2	250	251	DX Tune-Up / Diagnostics	2.11	2.11	10.00%	10.00%	100.00%	3	$0.20	$1.97
2	2	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	2.11	2.11		8.85%		15	$0.24	$1.97
2	2	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.11	2.11	100.00%	5.00%	75.00%	30	$0.08	$36.25
2	2	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.11	2.11	95.00%	10.00%	25.00%	10	$0.73	$1.97
2	2	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.11	2.11	100.00%	10.00%	50.00%	10	$0.24	$1.97
2	2	250	259	Roof / Ceiling Insulation	2.11	2.11	100.00%	3.00%	50.00%	20	$0.47	$757.89
2	2	250	260	Cool Roofs (Reflective and Spray Evaporative)	2.11	2.11	100.00%	6.92%	50.00%	10	$0.47	$788.00
2	2	250	261	Clock / Programmable Thermostat	2.11	2.11	25.00%	10.00%	100.00%	10	$0.05	$1.97
2	2	250	262	Installation of Air Side Economizers	2.11	2.11	92.26%	15.00%	100.00%	10	$0.59	$788.00
2	2	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	2.11	2.11	100.00%	0.00%	100.00%	15	$1.79	$1.79
2	2	280	281	Air-Cooled HP Package, 5 tons, SEER=11	2.11	2.11		9.09%		15	$0.09	$1.79
2	2	280	282	Air-Cooled HP Package, 5 tons, SEER=12	2.11	2.11		16.67%		15	$0.59	$1.79
2	2	280	283	DX Tune-Up / Diagnostics	2.11	2.11	10.00%	10.00%	100.00%	3	$0.20	$1.97
2	2	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.11	2.11	100.00%	5.00%	75.00%	30	$0.08	$36.25
2	2	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.11	2.11	95.00%	10.00%	25.00%	10	$0.73	$1.97
2	2	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.11	2.11	100.00%	10.00%	50.00%	10	$0.24	$1.97
2	2	280	289	Roof / Ceiling Insulation	2.11	2.11	100.00%	3.00%	50.00%	20	$0.47	$757.89
2	2	280	290	Cool Roofs (Reflective and Spray Evaporative)	2.11	2.11	100.00%	6.92%	50.00%	10	$0.47	$788.00
2	2	280	291	Clock / Programmable Thermostat	2.11	2.11	25.00%	10.00%	100.00%	10	$0.05	$1.97
2	2	280	292	Installation of Air Side Economizers	2.11	2.11	92.26%	15.00%	100.00%	10	$0.59	$788.00
2	2	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.67	0.67		0.00%		15	$0.39	$0.39
2	2	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.67	0.67		1.50%		15	$0.08	$0.39
2	2	400	402	VSD, ASD Fan & Pump Applications	0.67	0.67		30.00%		15	$0.45	$0.39
2	2	610	610	Base Office Equipment	0.15	0.15	100.00%	0.00%	100.00%	4	$0.12	$0.34
2	2	610	611	ENERGY STAR or Better Office Equipment: Computer	0.15	0.15	65.00%	17.18%	100.00%	4	$0.01	$0.34
2	2	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.15	0.15	71.00%	15.26%	100.00%	4	$0.01	$0.34
2	2	610	623	Smart Networks	0.15	0.15	40.00%	6.36%	90.00%	4	$0.00	$0.34
2	2	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.15	0.15	33.00%	9.55%	100.00%	4	$0.01	$0.06
2	2	610	641	ENERGY STAR or Better Office Equipment: Printers	0.15	0.15	99.00%	14.55%	100.00%	4	$0.02	$0.24
2	2	700	700	Base Water Heating	0.44	0.44	100.00%	0.00%	100.00%	15	$20.00	$20.00

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	2	700	701	Demand controlled circulating systems	0.44	0.44	100.00%	5.00%	50.00%	15	$3.90	$20.00
2	2	700	702	Heat Pump Water Heater	0.44	0.44	100.00%	30.00%	75.00%	15	$2.49	$20.00
2	2	700	703	High-Efficiency Water Heater (electric)	0.44	0.44		5.40%		15	$0.72	$20.00
2	2	700	704	Hot Water (SHW) Pipe Insulation	0.44	0.44	100.00%	5.00%	50.00%	15	$0.03	$6.38
2	2	800	800	Base Heating	0.93	0.93	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	2	800	802	Roof / Ceiling Insulation	0.93	0.93	55.72%	10.00%	50.00%	20	$0.47	$2.31
2	2	800	805	Clock / Programmable Thermostat	0.93	0.93	25.00%	30.00%	100.00%	10	$0.15	$2.40
2	2	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.93	0.93	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	3	100	100	Base Cooking	52.39	52.39		0.00%		15	$1.93	$1.93
2	3	100	101	High-Efficiency Convection Oven	52.39	52.39		20.00%		15	$1.62	$1.93
2	3	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	8.74	8.74	100.00%	0.00%	100.00%	14	$1.54	$1.54
2	3	110	111	4' 4L T8 Premium, EB	8.74	7.86	100.00%	25.00%	16.67%	22	$0.51	$1.54
2	3	110	112	4' 2L T8 Premium, EB, reflector	8.74	7.86	100.00%	62.50%	16.67%	22	$0.76	$1.54
2	3	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	8.74	7.86	95.72%	30.00%	10.00%	13	$0.53	$1.54
2	3	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	8.74	7.86	100.00%	75.00%	12.00%	16	$4.01	$1.54
2	3	110	115	4' 2L T5HO, EB	8.74	7.86	100.00%	18.75%	16.67%	22	$0.29	$1.54
2	3	110	116	4' 4L T8, EB	8.74	7.86	100.00%	22.22%	16.67%	22	$0.21	$1.54
2	3	110	117	4' 3L T8, EB	8.74	7.86	100.00%	38.20%	16.67%	22	$0.10	$1.54
2	3	110	118	4' 3L T8 Premium, EB	8.74	7.86	100.00%	42.36%	16.67%	22	$0.32	$1.54
2	3	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	8.74	8.74	100.00%	0.00%	100.00%	14	$2.83	$2.83
2	3	120	121	4' 2L T8 Premium, EB	8.74	7.86	100.00%	25.00%	33.33%	22	$0.79	$2.83
2	3	120	122	4' 1L T8 Premium, EB, reflector	8.74	7.86	100.00%	61.11%	33.33%	22	$1.60	$2.83
2	3	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	8.74	7.86	95.72%	30.00%	10.00%	13	$0.46	$2.83
2	3	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	8.74	7.86	100.00%	75.00%	12.00%	16	$3.89	$2.83
2	3	120	125	4' 1L T5HO, EB	8.74	7.86	100.00%	13.90%	33.33%	22	$0.60	$2.83
2	3	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	8.74	8.74	100.00%	0.00%	100.00%	14	$1.94	$1.94
2	3	130	131	8' 2L T12, 60W, EB	8.74	7.86	68.10%	10.57%	25.00%	22	$0.18	$1.94
2	3	130	132	8' 1L T12, 60W, EB, reflector	8.74	7.86	100.00%	55.30%	25.00%	22	$0.84	$1.94
2	3	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	8.74	7.86	95.72%	30.00%	10.00%	13	$0.58	$1.94
2	3	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	8.74	7.86	100.00%	75.00%	12.00%	16	$4.37	$1.94
2	3	130	135	8' 2L T8, EB	8.74	7.86	100.00%	52.80%	50.00%	22	$0.38	$1.94
2	3	140	140	Base Incandescent Flood, 75W	8.74	8.74	100.00%	0.00%	100.00%	1	$3.78	$3.78
2	3	140	141	CFL Screw-in, Modular 18W	8.74	7.86	89.06%	65.30%	50.00%	6	$2.33	$3.78
2	3	150	150	Base Incandescent Flood, 150W PAR	8.74	8.74	100.00%	0.00%	100.00%	1	$1.86	$1.86
2	3	150	151	Halogen PAR Flood, 90W	8.74	8.74	100.00%	40.00%	10.00%	1	$0.19	$1.86
2	3	150	152	Metal Halide, 50W	8.74	8.74	90.41%	52.00%	45.00%	8	$9.99	$1.86
2	3	150	153	HPS, 50W	8.74	8.74	90.41%	56.00%	45.00%	8	$5.10	$1.86
2	3	160	160	Base 4' 3L T12, 34W, 1EEMAG	8.74	8.74	100.00%	0.00%	100.00%	10	$0.43	$0.43
2	3	160	161	4' 3L T8, EB	8.74	7.86	100.00%	22.61%	25.00%	22	$0.04	$0.43
2	3	160	162	4' 3L T8 Premium, EB	8.74	7.86	100.00%	22.61%	25.00%	22	$0.10	$0.43
2	3	160	163	4' 2L T8 Premium, EB, reflector	8.74	7.86	100.00%	53.04%	25.00%	22	$0.22	$0.43
2	3	160	164	4' 1L T5HO, EB	8.74	7.86	100.00%	46.09%	25.00%	22	$0.04	$0.43
2	3	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	6.99	6.99	100.00%	0.00%	100.00%	22	$1.73	$1.73

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	3	180	181	4' 4L T8 Premium, EB	6.99	6.29	100.00%	3.60%	100.00%	22	$0.31	$1.73
2	3	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	6.99	6.29	95.72%	30.00%	10.00%	13	$0.53	$1.73
2	3	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	6.99	6.99	100.00%	0.00%	100.00%	22	$3.21	$3.21
2	3	185	186	4' 3L T8 Premium, EB	6.99	6.29	100.00%	6.70%	100.00%	22	$0.43	$3.21
2	3	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	6.99	5.94	100.00%	0.00%	100.00%	22	$3.02	$3.02
2	3	190	191	4' 2L T8 Premium, EB	6.99	6.29	100.00%	8.50%	100.00%	22	$0.27	$3.02
2	3	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	6.99	6.29	95.72%	30.00%	10.00%	13	$0.46	$3.02
2	3	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	5.20	5.20	100.00%	0.00%	100.00%	20	$0.88	$0.88
2	3	200	201	Chiller Tune-Up / Diagnostics	5.20	5.20	10.00%	5.00%	100.00%	5	$0.07	$0.88
2	3	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	5.20	5.20	100.00%	10.00%	50.00%	10	$0.18	$0.88
2	3	200	203	Roof / Ceiling Insulation	5.20	5.20	100.00%	3.00%	50.00%	20	$0.45	$421.73
2	3	200	204	Cool Roofs (Reflective and Spray Evaporative)	5.20	5.20	100.00%	4.30%	90.00%	10	$0.47	$461.00
2	3	200	205	EMS Optimization	5.20	5.20	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	3	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	5.20	5.20	100.00%	5.40%	50.00%	30	$0.02	$13.11
2	3	200	207	Installation of Energy Management Systems	5.20	5.20	100.00%	10.00%	50.00%	10	$0.11	$0.88
2	3	200	208	Insulation of Pipes	5.20	5.20	50.00%	1.00%	50.00%	20	$0.02	$2.73
2	3	200	209	Installation of Chiller Economizers (water side)	5.20	5.20	100.00%	10.00%	50.00%	20	$0.59	$461.00
2	3	200	210	Optimize Chilled Water and Condenser Water Settings	5.20	5.20	50.00%	5.00%	33.00%	10	$0.13	$0.88
2	3	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	5.20	5.20	90.00%	7.50%	67.00%	15	$0.07	$1.36
2	3	200	212	Two-Speed Cooling Tower, 300 Tons	5.20	5.20	90.00%	14.00%	50.00%	15	$0.01	$1.36
2	3	200	213	VSD Cooling Tower, 300 Tons	5.20	5.20	90.00%	18.00%	50.00%	15	$0.05	$1.36
2	3	200	214	Primary/Secondary De-coupled Chilled Water System	5.20	5.20	80.00%	12.00%	50.00%	15	$0.29	$1.36
2	3	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	5.20	5.20		21.54%		15	$0.11	$1.36
2	3	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	5.20	5.20		27.69%		15	$0.38	$1.36
2	3	250	250	Base DX Packaged System, EER=10.3, 10 tons	9.00	9.00	100.00%	0.00%	100.00%	15	$1.50	$1.50
2	3	250	251	DX Tune-Up / Diagnostics	9.00	9.00	10.00%	10.00%	100.00%	3	$0.15	$1.50
2	3	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	9.00	9.00		8.85%		15	$0.18	$1.50
2	3	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	9.00	9.00	100.00%	5.00%	50.00%	30	$0.05	$22.41
2	3	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	9.00	9.00	95.00%	10.00%	25.00%	10	$0.55	$1.50
2	3	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	9.00	9.00	100.00%	10.00%	50.00%	10	$0.18	$1.50
2	3	250	259	Roof / Ceiling Insulation	9.00	9.00	100.00%	3.00%	50.00%	20	$0.45	$720.87
2	3	250	260	Cool Roofs (Reflective and Spray Evaporative)	9.00	9.00	100.00%	4.30%	50.00%	10	$0.47	$788.00
2	3	250	261	Clock / Programmable Thermostat	9.00	9.00	40.20%	10.00%	100.00%	10	$0.04	$1.50
2	3	250	262	Installation of Air Side Economizers	9.00	9.00	55.37%	15.00%	100.00%	10	$0.59	$788.00
2	3	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	9.00	9.00	100.00%	0.00%	100.00%	15	$1.36	$1.36
2	3	280	281	Air-Cooled HP Package, 5 tons, SEER=11	9.00	9.00		9.09%		15	$0.07	$1.36
2	3	280	282	Air-Cooled HP Package, 5 tons, SEER=12	9.00	9.00		16.67%		15	$0.45	$1.36
2	3	280	283	DX Tune-Up / Diagnostics	9.00	9.00	10.00%	10.00%	100.00%	3	$0.15	$1.50
2	3	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	9.00	9.00	100.00%	5.00%	50.00%	30	$0.05	$22.41
2	3	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	9.00	9.00	95.00%	10.00%	25.00%	10	$0.55	$1.50

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	3	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	9.00	9.00	100.00%	10.00%	50.00%	10	$0.18	$1.50
2	3	280	289	Roof / Ceiling Insulation	9.00	9.00	100.00%	3.00%	50.00%	20	$0.45	$720.87
2	3	280	290	Cool Roofs (Reflective and Spray Evaporative)	9.00	9.00	100.00%	4.30%	50.00%	10	$0.47	$788.00
2	3	280	291	Clock / Programmable Thermostat	9.00	9.00	40.20%	10.00%	100.00%	10	$0.04	$1.50
2	3	280	292	Installation of Air Side Economizers	9.00	9.00	55.37%	15.00%	100.00%	10	$0.59	$788.00
2	3	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	3.96	3.96		0.00%		15	$0.07	$0.07
2	3	400	401	Energy Efficient Fan & Pump Motors (ODP)	3.96	3.96		1.50%		15	$0.01	$0.07
2	3	400	402	VSD, ASD Fan & Pump Applications	3.96	3.96		30.00%		15	$0.08	$0.07
2	3	500	500	Base Refrigeration System	5.80	5.80	100.00%	0.00%	100.00%	10	$2.00	$2.00
2	3	500	501	High Efficiency Case Fans	5.80	5.80	95.00%	11.98%	100.00%	16	$1.16	$2.00
2	3	500	502	Strip Curtains for Walk-Ins	5.80	5.80	30.00%	4.02%	100.00%	4	$0.05	$2.00
2	3	500	503	Night Covers for Display Cases	5.80	5.80	95.00%	5.80%	50.00%	5	$0.01	$2.00
2	3	500	504	Reduced Speed or Cycling of Evaporator Fans	5.80	5.80	80.00%	0.55%	100.00%	5	$0.09	$2.00
2	3	500	505	High-Efficiency Compressors	5.80	5.80	81.00%	6.83%	100.00%	10	$0.09	$2.00
2	3	500	506	Compressor VSD retrofit	5.80	5.80	95.00%	6.20%	50.00%	10	$0.41	$2.00
2	3	500	507	Installation of Floating Condenser Head Pressure Controls	5.80	5.80	44.37%	6.83%	100.00%	14	$0.12	$2.00
2	3	500	508	Refrigeration Commissioning	5.80	5.80	50.00%	5.00%	100.00%	3	$0.06	$2.00
2	3	500	509	Demand Control Defrost - Hot Gas	5.80	5.80	69.57%	2.51%	100.00%	10	$0.07	$2.00
2	3	500	510	Demand Control Defrost - Electric	5.80	5.80	47.98%	7.76%	100.00%	10	$0.04	$2.00
2	3	500	511	Anti-Sweat (Humidistat) Controls	5.80	5.80	47.98%	4.99%	100.00%	12	$0.02	$2.00
2	3	610	610	Base Office Equipment	0.23	0.23	100.00%	0.00%	100.00%	4	$0.24	$0.71
2	3	610	611	ENERGY STAR or Better Office Equipment: Computer	0.23	0.23	65.00%	18.39%	100.00%	4	$0.03	$0.71
2	3	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.23	0.23	71.00%	16.34%	100.00%	4	$0.02	$0.71
2	3	610	623	Smart Networks	0.23	0.23	40.00%	6.81%	90.00%	4	$0.00	$0.71
2	3	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.23	0.23	33.00%	7.82%	100.00%	4	$0.01	$0.13
2	3	610	641	ENERGY STAR or Better Office Equipment: Printers	0.23	0.23	99.00%	14.96%	100.00%	4	$0.04	$0.42
2	3	700	700	Base Water Heating	3.05	3.05	100.00%	0.00%	100.00%	15	$14.52	$14.52
2	3	700	701	Demand controlled circulating systems	3.05	3.05	100.00%	5.00%	50.00%	15	$2.83	$14.52
2	3	700	702	Heat Pump Water Heater	3.05	3.05	100.00%	30.00%	75.00%	15	$1.80	$14.52
2	3	700	703	High-Efficiency Water Heater (electric)	3.05	3.05		5.40%		15	$0.52	$14.52
2	3	700	704	Hot Water (SHW) Pipe Insulation	3.05	3.05	100.00%	5.00%	50.00%	15	$0.02	$5.91
2	3	800	800	Base Heating	7.23	7.23	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	3	800	802	Roof / Ceiling Insulation	7.23	7.23	67.01%	10.00%	50.00%	20	$0.45	$2.20
2	3	800	805	Clock / Programmable Thermostat	7.23	7.23	23.10%	30.00%	100.00%	10	$0.15	$2.40
2	3	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	7.23	7.23	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	4	100	100	Base Cooking	5.16	5.16		0.00%		15	$0.52	$0.52
2	4	100	101	High-Efficiency Convection Oven	5.16	5.16		20.00%		15	$0.44	$0.52
2	4	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	12.76	12.76	100.00%	0.00%	100.00%	7	$1.50	$1.50
2	4	110	111	4' 4L T8 Premium, EB	12.76	11.49	100.00%	25.00%	16.67%	12	$0.49	$1.50
2	4	110	112	4' 2L T8 Premium, EB, reflector	12.76	11.49	100.00%	62.50%	16.67%	12	$0.74	$1.50
2	4	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	12.76	11.49	100.00%	30.00%	10.00%	7	$0.52	$1.50
2	4	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	12.76	11.49	100.00%	75.00%	26.00%	8	$3.90	$1.50

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	4	110	115	4' 2L T5HO, EB	12.76	11.49	100.00%	18.75%	16.67%	12	$0.29	$1.50
2	4	110	116	4' 4L T8, EB	12.76	11.49	100.00%	22.22%	16.67%	12	$0.20	$1.50
2	4	110	117	4' 3L T8, EB	12.76	11.49	100.00%	38.20%	16.67%	12	$0.10	$1.50
2	4	110	118	4' 3L T8 Premium, EB	12.76	11.49	100.00%	42.36%	16.67%	12	$0.31	$1.50
2	4	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	12.76	12.76	100.00%	0.00%	100.00%	7	$2.73	$2.73
2	4	120	121	4' 2L T8 Premium, EB	12.76	11.49	100.00%	25.00%	33.33%	12	$0.76	$2.73
2	4	120	122	4' 1L T8 Premium, EB, reflector	12.76	11.49	100.00%	61.11%	33.33%	12	$1.55	$2.73
2	4	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	12.76	11.49	100.00%	30.00%	10.00%	7	$0.45	$2.73
2	4	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	12.76	11.49	100.00%	75.00%	26.00%	8	$3.75	$2.73
2	4	120	125	4' 1L T5HO, EB	12.76	11.49	100.00%	13.90%	33.33%	12	$0.58	$2.73
2	4	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	12.76	12.76	100.00%	0.00%	100.00%	7	$1.88	$1.88
2	4	130	131	8' 2L T12, 60W, EB	12.76	11.49	54.24%	10.57%	25.00%	12	$0.18	$1.88
2	4	130	132	8' 1L T12, 60W, EB, reflector	12.76	11.49	100.00%	55.30%	25.00%	12	$0.82	$1.88
2	4	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	12.76	11.49	100.00%	30.00%	10.00%	7	$0.56	$1.88
2	4	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	12.76	11.49	100.00%	75.00%	26.00%	8	$4.24	$1.88
2	4	130	135	8' 2L T8, EB	12.76	11.49	100.00%	52.80%	50.00%	12	$0.37	$1.88
2	4	140	140	Base Incandescent Flood, 75W	12.76	12.76	100.00%	0.00%	100.00%	1	$3.83	$3.83
2	4	140	141	CFL Screw-in, Modular 18W	12.76	11.49	95.37%	65.30%	90.00%	3	$2.36	$3.83
2	4	150	150	Base Incandescent Flood, 150W PAR	12.76	12.76	100.00%	0.00%	100.00%	1	$3.29	$3.29
2	4	150	151	Halogen PAR Flood, 90W	12.76	12.76	99.55%	40.00%	10.00%	1	$0.33	$3.29
2	4	150	152	Metal Halide, 50W	12.76	12.76	94.33%	52.00%	45.00%	4	$17.62	$3.29
2	4	150	153	HPS, 50W	12.76	12.76	94.33%	56.00%	45.00%	4	$8.99	$3.29
2	4	160	160	Base 4' 3L T12, 34W, 1EEMAG	12.76	12.76	100.00%	0.00%	100.00%	10	$0.67	$0.67
2	4	160	161	4' 3L T8, EB	12.76	11.49	100.00%	22.61%	25.00%	12	$0.06	$0.67
2	4	160	162	4' 3L T8 Premium, EB	12.76	11.49	100.00%	22.61%	25.00%	12	$0.16	$0.67
2	4	160	163	4' 2L T8 Premium, EB, reflector	12.76	11.49	100.00%	53.04%	25.00%	12	$0.35	$0.67
2	4	160	164	4' 1L T5HO, EB	12.76	11.49	100.00%	46.09%	25.00%	12	$0.06	$0.67
2	4	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	10.21	10.21	100.00%	0.00%	100.00%	12	$1.68	$1.68
2	4	180	181	4' 4L T8 Premium, EB	10.21	9.19	100.00%	3.60%	100.00%	12	$0.30	$1.68
2	4	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	10.21	9.19	100.00%	30.00%	10.00%	7	$0.52	$1.68
2	4	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	10.21	10.21	100.00%	0.00%	100.00%	12	$3.09	$3.09
2	4	185	186	4' 3L T8 Premium, EB	10.21	9.19	100.00%	6.70%	100.00%	12	$0.42	$3.09
2	4	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	10.21	8.68	100.00%	0.00%	100.00%	12	$2.91	$2.91
2	4	190	191	4' 2L T8 Premium, EB	10.21	9.19	100.00%	8.50%	100.00%	12	$0.26	$2.91
2	4	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	10.21	9.19	100.00%	30.00%	10.00%	7	$0.45	$2.91
2	4	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	6.72	6.72	100.00%	0.00%	100.00%	20	$1.50	$1.50
2	4	200	201	Chiller Tune-Up / Diagnostics	6.72	6.72	10.00%	5.00%	100.00%	5	$0.12	$1.50
2	4	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.72	6.72	100.00%	10.00%	50.00%	10	$0.32	$1.50
2	4	200	203	Roof / Ceiling Insulation	6.72	6.72	20.00%	3.00%	50.00%	20	$0.48	$452.64
2	4	200	204	Cool Roofs (Reflective and Spray Evaporative)	6.72	6.72	100.00%	4.30%	90.00%	10	$0.47	$461.00
2	4	200	205	EMS Optimization	6.72	6.72	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	4	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.72	6.72	100.00%	5.40%	75.00%	30	$0.03	$18.85
2	4	200	207	Installation of Energy Management Systems	6.72	6.72	100.00%	10.00%	50.00%	10	$0.20	$1.50

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	4	200	208	Insulation of Pipes	6.72	6.72	50.00%	1.00%	50.00%	20	$0.01	$1.07
2	4	200	209	Installation of Chiller Economizers (water side)	6.72	6.72	100.00%	10.00%	50.00%	20	$0.59	$461.00
2	4	200	210	Optimize Chilled Water and Condenser Water Settings	6.72	6.72	50.00%	5.00%	33.00%	10	$0.21	$1.50
2	4	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	6.72	6.72	90.00%	7.50%	67.00%	15	$0.11	$2.33
2	4	200	212	Two-Speed Cooling Tower, 300 Tons	6.72	6.72	90.00%	14.00%	50.00%	15	$0.01	$2.33
2	4	200	213	VSD Cooling Tower, 300 Tons	6.72	6.72	90.00%	18.00%	50.00%	15	$0.08	$2.33
2	4	200	214	Primary/Secondary De-coupled Chilled Water System	6.72	6.72	80.00%	12.00%	50.00%	15	$0.49	$2.33
2	4	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	6.72	6.72		21.54%		15	$0.20	$2.33
2	4	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	6.72	6.72		27.69%		15	$0.65	$2.33
2	4	250	250	Base DX Packaged System, EER=10.3, 10 tons	11.63	11.63	100.00%	0.00%	100.00%	15	$2.56	$2.56
2	4	250	251	DX Tune-Up / Diagnostics	11.63	11.63	10.00%	10.00%	100.00%	3	$0.25	$2.56
2	4	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	11.63	11.63		8.85%		15	$0.31	$2.56
2	4	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	11.63	11.63	100.00%	5.00%	75.00%	30	$0.07	$32.23
2	4	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	11.63	11.63	95.00%	10.00%	25.00%	10	$0.94	$2.56
2	4	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	11.63	11.63	100.00%	10.00%	50.00%	10	$0.32	$2.56
2	4	250	259	Roof / Ceiling Insulation	11.63	11.63	20.00%	3.00%	50.00%	20	$0.48	$773.71
2	4	250	260	Cool Roofs (Reflective and Spray Evaporative)	11.63	11.63	100.00%	4.30%	50.00%	10	$0.47	$788.00
2	4	250	261	Clock / Programmable Thermostat	11.63	11.63	42.34%	10.00%	100.00%	10	$0.07	$2.56
2	4	250	262	Installation of Air Side Economizers	11.63	11.63	98.59%	15.00%	100.00%	10	$0.59	$788.00
2	4	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	11.63	11.63	100.00%	0.00%	100.00%	15	$2.33	$2.33
2	4	280	281	Air-Cooled HP Package, 5 tons, SEER=11	11.63	11.63		9.09%		15	$0.11	$2.33
2	4	280	282	Air-Cooled HP Package, 5 tons, SEER=12	11.63	11.63		16.67%		15	$0.76	$2.33
2	4	280	283	DX Tune-Up / Diagnostics	11.63	11.63	10.00%	10.00%	100.00%	3	$0.25	$2.56
2	4	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	11.63	11.63	100.00%	5.00%	75.00%	30	$0.07	$32.23
2	4	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	11.63	11.63	95.00%	10.00%	25.00%	10	$0.94	$2.56
2	4	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	11.63	11.63	100.00%	10.00%	50.00%	10	$0.32	$2.56
2	4	280	289	Roof / Ceiling Insulation	11.63	11.63	20.00%	3.00%	50.00%	20	$0.48	$773.71
2	4	280	290	Cool Roofs (Reflective and Spray Evaporative)	11.63	11.63	100.00%	4.30%	50.00%	10	$0.47	$788.00
2	4	280	291	Clock / Programmable Thermostat	11.63	11.63	42.34%	10.00%	100.00%	10	$0.07	$2.56
2	4	280	292	Installation of Air Side Economizers	11.63	11.63	98.59%	15.00%	100.00%	10	$0.59	$788.00
2	4	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	5.40	5.40		0.00%		15	$0.23	$0.23
2	4	400	401	Energy Efficient Fan & Pump Motors (ODP)	5.40	5.40		1.50%		15	$0.05	$0.23
2	4	400	402	VSD, ASD Fan & Pump Applications	5.40	5.40		30.00%		15	$0.26	$0.23
2	4	500	500	Base Refrigeration System	24.18	24.18	100.00%	0.00%	100.00%	10	$2.00	$2.00
2	4	500	501	High Efficiency Case Fans	24.18	24.18	95.00%	11.98%	100.00%	16	$1.16	$2.00
2	4	500	502	Strip Curtains for Walk-Ins	24.18	24.18	30.00%	4.02%	100.00%	4	$0.05	$2.00
2	4	500	503	Night Covers for Display Cases	24.18	24.18	95.00%	5.80%	50.00%	5	$0.01	$2.00
2	4	500	504	Reduced Speed or Cycling of Evaporator Fans	24.18	24.18	80.00%	0.55%	100.00%	5	$0.09	$2.00
2	4	500	505	High-Efficiency Compressors	24.18	24.18	81.00%	6.83%	100.00%	10	$0.09	$2.00
2	4	500	506	Compressor VSD retrofit	24.18	24.18	95.00%	6.20%	50.00%	10	$0.41	$2.00

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	4	500	507	Installation of Floating Condenser Head Pressure Controls	24.18	24.18	44.37%	6.83%	100.00%	14	$0.12	$2.00
2	4	500	508	Refrigeration Commissioning	24.18	24.18	50.00%	5.00%	100.00%	3	$0.06	$2.00
2	4	500	509	Demand Control Defrost - Hot Gas	24.18	24.18	69.57%	2.51%	100.00%	10	$0.07	$2.00
2	4	500	510	Demand Control Defrost - Electric	24.18	24.18	47.98%	7.76%	100.00%	10	$0.04	$2.00
2	4	500	511	Anti-Sweat (Humidistat) Controls	24.18	24.18	47.98%	4.99%	100.00%	12	$0.02	$2.00
2	4	610	610	Base Office Equipment	0.41	0.41	100.00%	0.00%	100.00%	4	$0.09	$0.28
2	4	610	611	ENERGY STAR or Better Office Equipment: Computer	0.41	0.41	65.00%	17.86%	100.00%	4	$0.01	$0.28
2	4	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.41	0.41	71.00%	15.87%	100.00%	4	$0.01	$0.28
2	4	610	623	Smart Networks	0.41	0.41	40.00%	6.61%	90.00%	4	$0.00	$0.28
2	4	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.41	0.41	33.00%	9.74%	100.00%	4	$0.01	$0.15
2	4	610	641	ENERGY STAR or Better Office Equipment: Printers	0.41	0.41	99.00%	13.04%	100.00%	4	$0.01	$0.14
2	4	700	700	Base Water Heating	3.05	3.05	100.00%	0.00%	100.00%	15	$6.77	$6.77
2	4	700	701	Demand controlled circulating systems	3.05	3.05	100.00%	5.00%	50.00%	15	$1.32	$6.77
2	4	700	702	Heat Pump Water Heater	3.05	3.05	100.00%	30.00%	75.00%	15	$0.84	$6.77
2	4	700	703	High-Efficiency Water Heater (electric)	3.05	3.05		5.40%		15	$0.24	$6.77
2	4	700	704	Hot Water (SHW) Pipe Insulation	3.05	3.05	100.00%	5.00%	50.00%	15	$0.01	$2.32
2	4	800	800	Base Heating	1.37	1.37	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	4	800	802	Roof / Ceiling Insulation	1.37	1.37	85.03%	10.00%	50.00%	20	$0.48	$2.36
2	4	800	805	Clock / Programmable Thermostat	1.37	1.37	25.00%	30.00%	100.00%	10	$0.15	$2.40
2	4	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.37	1.37	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	5	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	2.94	2.94	100.00%	0.00%	100.00%	14	$0.75	$0.75
2	5	110	111	4' 4L T8 Premium, EB	2.94	2.65	100.00%	25.00%	16.67%	22	$0.25	$0.75
2	5	110	112	4' 2L T8 Premium, EB, reflector	2.94	2.65	100.00%	62.50%	16.67%	22	$0.37	$0.75
2	5	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.94	2.65	97.95%	30.00%	20.00%	12	$0.26	$0.75
2	5	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	2.94	2.65	100.00%	75.00%	40.00%	16	$1.95	$0.75
2	5	110	115	4' 2L T5HO, EB	2.94	2.65	100.00%	18.75%	16.67%	22	$0.14	$0.75
2	5	110	116	4' 4L T8, EB	2.94	2.65	100.00%	22.22%	16.67%	22	$0.10	$0.75
2	5	110	117	4' 3L T8, EB	2.94	2.65	100.00%	38.20%	16.67%	22	$0.05	$0.75
2	5	110	118	4' 3L T8 Premium, EB	2.94	2.65	100.00%	42.36%	16.67%	22	$0.16	$0.75
2	5	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	2.94	2.94	100.00%	0.00%	100.00%	14	$1.40	$1.40
2	5	120	121	4' 2L T8 Premium, EB	2.94	2.65	100.00%	25.00%	33.33%	22	$0.39	$1.40
2	5	120	122	4' 1L T8 Premium, EB, reflector	2.94	2.65	100.00%	61.11%	33.33%	22	$0.80	$1.40
2	5	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.94	2.65	97.95%	30.00%	20.00%	12	$0.23	$1.40
2	5	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	2.94	2.65	100.00%	75.00%	40.00%	16	$1.93	$1.40
2	5	120	125	4' 1L T5HO, EB	2.94	2.65	100.00%	13.90%	33.33%	22	$0.30	$1.40
2	5	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	2.94	2.94	100.00%	0.00%	100.00%	14	$1.06	$1.06
2	5	130	131	8' 2L T12, 60W, EB	2.94	2.65	84.67%	10.57%	25.00%	22	$0.10	$1.06
2	5	130	132	8' 1L T12, 60W, EB, reflector	2.94	2.65	100.00%	55.30%	25.00%	22	$0.46	$1.06
2	5	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	2.94	2.65	97.95%	30.00%	20.00%	12	$0.32	$1.06
2	5	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	2.94	2.65	100.00%	75.00%	40.00%	16	$2.39	$1.06
2	5	130	135	8' 2L T8, EB	2.94	2.65	100.00%	52.80%	50.00%	22	$0.21	$1.06
2	5	140	140	Base Incandescent Flood, 75W	2.94	2.94	100.00%	0.00%	100.00%	1	$2.17	$2.17
2	5	140	141	CFL Screw-in, Modular 18W	2.94	2.65	88.72%	65.30%	90.00%	6	$1.34	$2.17

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	5	150	150	Base Incandescent Flood, 150W PAR	2.94	2.94	100.00%	0.00%	100.00%	1	$0.99	$0.99
2	5	150	151	Halogen PAR Flood, 90W	2.94	2.94	100.00%	40.00%	10.00%	1	$0.10	$0.99
2	5	150	152	Metal Halide, 50W	2.94	2.94	90.21%	52.00%	45.00%	7	$5.28	$0.99
2	5	150	153	HPS, 50W	2.94	2.94	90.21%	56.00%	45.00%	7	$2.69	$0.99
2	5	160	160	Base 4' 3L T12, 34W, 1EEMAG	2.94	2.94	100.00%	0.00%	100.00%	10	$0.07	$0.07
2	5	160	161	4' 3L T8, EB	2.94	2.65	100.00%	22.61%	25.00%	22	$0.01	$0.07
2	5	160	162	4' 3L T8 Premium, EB	2.94	2.65	100.00%	22.61%	25.00%	22	$0.02	$0.07
2	5	160	163	4' 2L T8 Premium, EB, reflector	2.94	2.65	100.00%	53.04%	25.00%	22	$0.04	$0.07
2	5	160	164	4' 1L T5HO, EB	2.94	2.65	100.00%	46.09%	25.00%	22	$0.01	$0.07
2	5	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	2.36	2.36	100.00%	0.00%	100.00%	22	$0.84	$0.84
2	5	180	181	4' 4L T8 Premium, EB	2.36	2.12	100.00%	3.60%	100.00%	22	$0.15	$0.84
2	5	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.36	2.12	97.95%	30.00%	20.00%	12	$0.26	$0.84
2	5	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	2.36	2.36	100.00%	0.00%	100.00%	22	$1.59	$1.59
2	5	185	186	4' 3L T8 Premium, EB	2.36	2.12	100.00%	6.70%	100.00%	22	$0.22	$1.59
2	5	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	2.36	2.36	100.00%	0.00%	100.00%	22	$1.50	$1.50
2	5	190	191	4' 2L T8 Premium, EB	2.36	2.12	100.00%	8.50%	100.00%	22	$0.13	$1.50
2	5	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.36	2.12	97.95%	30.00%	20.00%	12	$0.23	$1.50
2	5	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	1.59	1.59	100.00%	0.00%	100.00%	20	$0.41	$0.41
2	5	200	201	Chiller Tune-Up / Diagnostics	1.59	1.59	10.00%	5.00%	100.00%	5	$0.03	$0.41
2	5	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.59	1.59	100.00%	10.00%	50.00%	10	$0.09	$0.41
2	5	200	203	Roof / Ceiling Insulation	1.59	1.59	20.00%	3.00%	50.00%	20	$0.45	$426.61
2	5	200	204	Cool Roofs (Reflective and Spray Evaporative)	1.59	1.59	100.00%	4.30%	90.00%	10	$0.47	$461.00
2	5	200	205	EMS Optimization	1.59	1.59	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	5	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	1.59	1.59	100.00%	5.40%	75.00%	30	$0.01	$7.87
2	5	200	207	Installation of Energy Management Systems	1.59	1.59	80.00%	10.00%	50.00%	10	$0.05	$0.41
2	5	200	208	Insulation of Pipes	1.59	1.59	50.00%	1.00%	50.00%	20	$0.00	$0.19
2	5	200	209	Installation of Chiller Economizers (water side)	1.59	1.59	100.00%	10.00%	50.00%	20	$0.59	$461.00
2	5	200	210	Optimize Chilled Water and Condenser Water Settings	1.59	1.59	50.00%	5.00%	33.00%	10	$0.06	$0.41
2	5	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	1.59	1.59	90.00%	7.50%	67.00%	15	$0.03	$0.64
2	5	200	212	Two-Speed Cooling Tower, 300 Tons	1.59	1.59	90.00%	14.00%	50.00%	15	$0.00	$0.64
2	5	200	213	VSD Cooling Tower, 300 Tons	1.59	1.59	90.00%	18.00%	50.00%	15	$0.02	$0.64
2	5	200	214	Primary/Secondary De-coupled Chilled Water System	1.59	1.59	80.00%	12.00%	50.00%	15	$0.14	$0.64
2	5	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	1.59	1.59		21.54%		15	$0.05	$0.64
2	5	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	1.59	1.59		27.69%		15	$0.18	$0.64
2	5	250	250	Base DX Packaged System, EER=10.3, 10 tons	2.75	2.75	100.00%	0.00%	100.00%	15	$0.71	$0.71
2	5	250	251	DX Tune-Up / Diagnostics	2.75	2.75	10.00%	10.00%	100.00%	3	$0.07	$0.71
2	5	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	2.75	2.75		8.85%		15	$0.09	$0.71
2	5	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.75	2.75	100.00%	5.00%	75.00%	30	$0.03	$13.45
2	5	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.75	2.75	95.00%	10.00%	25.00%	10	$0.26	$0.71
2	5	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.75	2.75	100.00%	10.00%	50.00%	10	$0.09	$0.71

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	5	250	259	Roof / Ceiling Insulation	2.75	2.75	20.00%	3.00%	50.00%	20	$0.45	$729.22
2	5	250	260	Cool Roofs (Reflective and Spray Evaporative)	2.75	2.75	100.00%	4.30%	50.00%	10	$0.47	$788.00
2	5	250	261	Clock / Programmable Thermostat	2.75	2.75	23.28%	10.00%	100.00%	10	$0.02	$0.71
2	5	250	262	Installation of Air Side Economizers	2.75	2.75	53.45%	15.00%	100.00%	10	$0.59	$788.00
2	5	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	2.75	2.75	100.00%	0.00%	100.00%	15	$0.64	$0.64
2	5	280	281	Air-Cooled HP Package, 5 tons, SEER=11	2.75	2.75		9.09%		15	$0.03	$0.64
2	5	280	282	Air-Cooled HP Package, 5 tons, SEER=12	2.75	2.75		16.67%		15	$0.21	$0.64
2	5	280	283	DX Tune-Up / Diagnostics	2.75	2.75	10.00%	10.00%	100.00%	3	$0.07	$0.71
2	5	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.75	2.75	100.00%	5.00%	75.00%	30	$0.03	$13.45
2	5	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.75	2.75	95.00%	10.00%	25.00%	10	$0.26	$0.71
2	5	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.75	2.75	100.00%	10.00%	50.00%	10	$0.09	$0.71
2	5	280	289	Roof / Ceiling Insulation	2.75	2.75	20.00%	3.00%	50.00%	20	$0.45	$729.22
2	5	280	290	Cool Roofs (Reflective and Spray Evaporative)	2.75	2.75	100.00%	4.30%	50.00%	10	$0.47	$788.00
2	5	280	291	Clock / Programmable Thermostat	2.75	2.75	23.28%	10.00%	100.00%	10	$0.02	$0.71
2	5	280	292	Installation of Air Side Economizers	2.75	2.75	53.45%	15.00%	100.00%	10	$0.59	$788.00
2	5	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	1.71	1.71		0.00%		15	$0.11	$0.11
2	5	400	401	Energy Efficient Fan & Pump Motors (ODP)	1.71	1.71		1.50%		15	$0.02	$0.11
2	5	400	402	VSD, ASD Fan & Pump Applications	1.71	1.71		30.00%		15	$0.13	$0.11
2	5	610	610	Base Office Equipment	0.15	0.15	100.00%	0.00%	100.00%	4	$0.79	$2.32
2	5	610	611	ENERGY STAR or Better Office Equipment: Computer	0.15	0.15	65.00%	20.96%	100.00%	4	$0.10	$2.32
2	5	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.15	0.15	71.00%	18.62%	100.00%	4	$0.05	$2.32
2	5	610	623	Smart Networks	0.15	0.15	40.00%	7.76%	90.00%	4	$0.00	$2.32
2	5	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.15	0.15	33.00%	7.07%	100.00%	4	$0.02	$0.25
2	5	610	641	ENERGY STAR or Better Office Equipment: Printers	0.15	0.15	99.00%	11.42%	100.00%	4	$0.06	$0.74
2	5	700	700	Base Water Heating	0.33	0.33	100.00%	0.00%	100.00%	15	$0.85	$0.85
2	5	700	701	Demand controlled circulating systems	0.33	0.33	100.00%	5.00%	50.00%	15	$0.17	$0.85
2	5	700	702	Heat Pump Water Heater	0.33	0.33	100.00%	30.00%	75.00%	15	$0.11	$0.85
2	5	700	703	High-Efficiency Water Heater (electric)	0.33	0.33		5.40%		15	$0.03	$0.85
2	5	700	704	Hot Water (SHW) Pipe Insulation	0.33	0.33	95.22%	5.00%	50.00%	15	$0.00	$0.42
2	5	800	800	Base Heating	0.79	0.79	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	5	800	802	Roof / Ceiling Insulation	0.79	0.79	33.67%	10.00%	50.00%	20	$0.45	$2.22
2	5	800	805	Clock / Programmable Thermostat	0.79	0.79	20.92%	30.00%	100.00%	10	$0.15	$2.40
2	5	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.79	0.79	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	6	100	100	Base Cooking	0.36	0.36		0.00%		15	$0.24	$0.24
2	6	100	101	High-Efficiency Convection Oven	0.36	0.36		20.00%		15	$0.20	$0.24
2	6	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	2.68	2.68	100.00%	0.00%	100.00%	22	$1.35	$1.35
2	6	110	111	4' 4L T8 Premium, EB	2.68	2.41	100.00%	25.00%	16.67%	34	$0.44	$1.35
2	6	110	112	4' 2L T8 Premium, EB, reflector	2.68	2.41	100.00%	62.50%	16.67%	34	$0.66	$1.35
2	6	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.68	2.41	94.74%	30.00%	50.00%	20	$0.47	$1.35
2	6	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	2.68	2.41	100.00%	75.00%	30.00%	24	$3.52	$1.35
2	6	110	115	4' 2L T5HO, EB	2.68	2.41	100.00%	18.75%	16.67%	34	$0.26	$1.35

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	6	110	116	4' 4L T8, EB	2.68	2.41	100.00%	22.22%	16.67%	34	$0.18	$1.35
2	6	110	117	4' 3L T8, EB	2.68	2.41	100.00%	38.20%	16.67%	34	$0.09	$1.35
2	6	110	118	4' 3L T8 Premium, EB	2.68	2.41	100.00%	42.36%	16.67%	34	$0.28	$1.35
2	6	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	2.68	2.68	100.00%	0.00%	100.00%	22	$2.46	$2.46
2	6	120	121	4' 2L T8 Premium, EB	2.68	2.41	100.00%	25.00%	33.33%	34	$0.69	$2.46
2	6	120	122	4' 1L T8 Premium, EB, reflector	2.68	2.41	100.00%	61.11%	33.33%	34	$1.40	$2.46
2	6	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.68	2.41	94.74%	30.00%	50.00%	20	$0.40	$2.46
2	6	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	2.68	2.41	100.00%	75.00%	30.00%	24	$3.38	$2.46
2	6	120	125	4' 1L T5HO, EB	2.68	2.41	100.00%	13.90%	33.33%	34	$0.52	$2.46
2	6	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	2.68	2.68	100.00%	0.00%	100.00%	22	$1.83	$1.83
2	6	130	131	8' 2L T12, 60W, EB	2.68	2.41	32.87%	10.57%	25.00%	34	$0.17	$1.83
2	6	130	132	8' 1L T12, 60W, EB, reflector	2.68	2.41	100.00%	55.30%	25.00%	34	$0.79	$1.83
2	6	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	2.68	2.41	94.74%	30.00%	50.00%	20	$0.55	$1.83
2	6	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	2.68	2.41	100.00%	75.00%	30.00%	24	$4.12	$1.83
2	6	130	135	8' 2L T8, EB	2.68	2.41	100.00%	52.80%	50.00%	34	$0.36	$1.83
2	6	140	140	Base Incandescent Flood, 75W	2.68	2.68	100.00%	0.00%	100.00%	1	$3.12	$3.12
2	6	140	141	CFL Screw-in, Modular 18W	2.68	2.41	88.39%	65.30%	90.00%	10	$1.92	$3.12
2	6	150	150	Base Incandescent Flood, 150W PAR	2.68	2.68	100.00%	0.00%	100.00%	1	$0.76	$0.76
2	6	150	151	Halogen PAR Flood, 90W	2.68	2.68	97.31%	40.00%	10.00%	1	$0.08	$0.76
2	6	150	152	Metal Halide, 50W	2.68	2.68	85.51%	52.00%	45.00%	12	$4.09	$0.76
2	6	150	153	HPS, 50W	2.68	2.68	85.51%	56.00%	45.00%	12	$2.09	$0.76
2	6	160	160	Base 4' 3L T12, 34W, 1EEMAG	2.68	2.68	100.00%	0.00%	100.00%	10	$0.45	$0.45
2	6	160	161	4' 3L T8, EB	2.68	2.41	100.00%	22.61%	25.00%	34	$0.04	$0.45
2	6	160	162	4' 3L T8 Premium, EB	2.68	2.41	100.00%	22.61%	25.00%	34	$0.10	$0.45
2	6	160	163	4' 2L T8 Premium, EB, reflector	2.68	2.41	100.00%	53.04%	25.00%	34	$0.23	$0.45
2	6	160	164	4' 1L T5HO, EB	2.68	2.41	100.00%	46.09%	25.00%	34	$0.04	$0.45
2	6	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	2.14	2.14	100.00%	0.00%	100.00%	34	$1.51	$1.51
2	6	180	181	4' 4L T8 Premium, EB	2.14	1.93	100.00%	3.60%	100.00%	34	$0.27	$1.51
2	6	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.14	1.93	94.74%	30.00%	50.00%	20	$0.47	$1.51
2	6	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	2.14	2.14	100.00%	0.00%	100.00%	34	$2.79	$2.79
2	6	185	186	4' 3L T8 Premium, EB	2.14	1.93	100.00%	6.70%	100.00%	34	$0.38	$2.79
2	6	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	2.14	2.14	100.00%	0.00%	100.00%	34	$2.62	$2.62
2	6	190	191	4' 2L T8 Premium, EB	2.14	1.93	100.00%	8.50%	100.00%	34	$0.24	$2.62
2	6	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.14	1.93	94.74%	30.00%	50.00%	20	$0.40	$2.62
2	6	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	0.30	0.30	100.00%	0.00%	100.00%	20	$1.04	$1.04
2	6	200	201	Chiller Tune-Up / Diagnostics	0.30	0.30	10.00%	5.00%	100.00%	5	$0.08	$1.04
2	6	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.30	0.30	100.00%	10.00%	50.00%	10	$0.22	$1.04
2	6	200	203	Roof / Ceiling Insulation	0.30	0.30	23.44%	3.00%	50.00%	20	$0.47	$439.21
2	6	200	204	Cool Roofs (Reflective and Spray Evaporative)	0.30	0.30	100.00%	6.14%	90.00%	10	$0.24	$230.50
2	6	200	205	EMS Optimization	0.30	0.30	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	6	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	0.30	0.30	66.00%	3.89%	75.00%	30	$0.02	$11.17
2	6	200	207	Installation of Energy Management Systems	0.30	0.30	70.68%	10.00%	50.00%	10	$0.14	$1.04
2	6	200	208	Insulation of Pipes	0.30	0.30	50.00%	1.00%	50.00%	20	$0.02	$1.74

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	6	200	209	Installation of Chiller Economizers (water side)	0.30	0.30	81.26%	10.00%	50.00%	20	$0.59	$461.00
2	6	200	210	Optimize Chilled Water and Condenser Water Settings	0.30	0.30	50.00%	5.00%	33.00%	10	$0.15	$1.04
2	6	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	0.30	0.30	90.00%	7.50%	67.00%	15	$0.08	$1.61
2	6	200	212	Two-Speed Cooling Tower, 300 Tons	0.30	0.30	90.00%	14.00%	50.00%	15	$0.01	$1.61
2	6	200	213	VSD Cooling Tower, 300 Tons	0.30	0.30	90.00%	18.00%	50.00%	15	$0.05	$1.61
2	6	200	214	Primary/Secondary De-coupled Chilled Water System	0.30	0.30	80.00%	12.00%	50.00%	15	$0.34	$1.61
2	6	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	0.30	0.30		21.54%		15	$0.14	$1.61
2	6	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	0.30	0.30		27.69%		15	$0.45	$1.61
2	6	250	250	Base DX Packaged System, EER=10.3, 10 tons	0.52	0.52	100.00%	0.00%	100.00%	15	$1.77	$1.77
2	6	250	251	DX Tune-Up / Diagnostics	0.52	0.52	10.00%	10.00%	100.00%	3	$0.18	$1.77
2	6	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	0.52	0.52		8.85%		15	$0.21	$1.77
2	6	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	0.52	0.52	66.00%	5.00%	75.00%	30	$0.04	$19.09
2	6	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	0.52	0.52	95.00%	10.00%	25.00%	10	$0.65	$1.77
2	6	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.52	0.52	100.00%	10.00%	50.00%	10	$0.22	$1.77
2	6	250	259	Roof / Ceiling Insulation	0.52	0.52	23.44%	3.00%	50.00%	20	$0.47	$750.76
2	6	250	260	Cool Roofs (Reflective and Spray Evaporative)	0.52	0.52	100.00%	6.14%	50.00%	10	$0.24	$394.00
2	6	250	261	Clock / Programmable Thermostat	0.52	0.52	20.54%	10.00%	100.00%	10	$0.05	$1.77
2	6	250	262	Installation of Air Side Economizers	0.52	0.52	41.07%	15.00%	100.00%	10	$0.59	$788.00
2	6	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	0.52	0.52	100.00%	0.00%	100.00%	15	$1.61	$1.61
2	6	280	281	Air-Cooled HP Package, 5 tons, SEER=11	0.52	0.52		9.09%		15	$0.08	$1.61
2	6	280	282	Air-Cooled HP Package, 5 tons, SEER=12	0.52	0.52		16.67%		15	$0.53	$1.61
2	6	280	283	DX Tune-Up / Diagnostics	0.52	0.52	10.00%	10.00%	100.00%	3	$0.18	$1.77
2	6	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	0.52	0.52	66.00%	5.00%	75.00%	30	$0.04	$19.09
2	6	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	0.52	0.52	95.00%	10.00%	25.00%	10	$0.65	$1.77
2	6	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.52	0.52	100.00%	10.00%	50.00%	10	$0.22	$1.77
2	6	280	289	Roof / Ceiling Insulation	0.52	0.52	23.44%	3.00%	50.00%	20	$0.47	$750.76
2	6	280	290	Cool Roofs (Reflective and Spray Evaporative)	0.52	0.52	100.00%	6.14%	50.00%	10	$0.24	$394.00
2	6	280	291	Clock / Programmable Thermostat	0.52	0.52	20.54%	10.00%	100.00%	10	$0.05	$1.77
2	6	280	292	Installation of Air Side Economizers	0.52	0.52	41.07%	15.00%	100.00%	10	$0.59	$788.00
2	6	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.75	0.75		0.00%		15	$0.09	$0.09
2	6	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.75	0.75		1.50%		15	$0.02	$0.09
2	6	400	402	VSD, ASD Fan & Pump Applications	0.75	0.75		30.00%		15	$0.10	$0.09
2	6	610	610	Base Office Equipment	0.11	0.11	100.00%	0.00%	100.00%	4	$0.93	$2.72
2	6	610	611	ENERGY STAR or Better Office Equipment: Computer	0.11	0.11	65.00%	19.52%	100.00%	4	$0.12	$2.72
2	6	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.11	0.11	71.00%	17.34%	100.00%	4	$0.06	$2.72
2	6	610	623	Smart Networks	0.11	0.11	40.00%	7.22%	90.00%	4	$0.00	$2.72
2	6	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.11	0.11	33.00%	8.96%	100.00%	4	$0.01	$0.17
2	6	610	641	ENERGY STAR or Better Office Equipment: Printers	0.11	0.11	99.00%	11.20%	100.00%	4	$0.06	$0.75
2	6	700	700	Base Water Heating	0.64	0.64	100.00%	0.00%	100.00%	15	$20.37	$20.37
2	6	700	701	Demand controlled circulating systems	0.64	0.64	100.00%	5.00%	50.00%	15	$3.97	$20.37

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	6	700	702	Heat Pump Water Heater	0.64	0.64	87.24%	30.00%	75.00%	15	$2.53	$20.37
2	6	700	703	High-Efficiency Water Heater (electric)	0.64	0.64		5.40%		15	$0.73	$20.37
2	6	700	704	Hot Water (SHW) Pipe Insulation	0.64	0.64	9.88%	5.00%	50.00%	15	$0.02	$3.77
2	6	800	800	Base Heating	9.71	9.71	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	6	800	802	Roof / Ceiling Insulation	9.71	9.71	44.94%	10.00%	50.00%	20	$0.47	$2.29
2	6	800	805	Clock / Programmable Thermostat	9.71	9.71	20.54%	30.00%	100.00%	10	$0.15	$2.40
2	6	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	9.71	9.71	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	7	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	5.29	5.29	100.00%	0.00%	100.00%	21	$1.27	$1.27
2	7	110	111	4' 4L T8 Premium, EB	5.29	4.77	100.00%	25.00%	16.67%	32	$0.42	$1.27
2	7	110	112	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	62.50%	16.67%	32	$0.62	$1.27
2	7	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	5.29	4.77	90.00%	30.00%	50.00%	19	$0.44	$1.27
2	7	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	30.00%	23	$3.30	$1.27
2	7	110	115	4' 2L T5HO, EB	5.29	4.77	100.00%	18.75%	16.67%	32	$0.24	$1.27
2	7	110	116	4' 4L T8, EB	5.29	4.77	100.00%	22.22%	16.67%	32	$0.17	$1.27
2	7	110	117	4' 3L T8, EB	5.29	4.77	100.00%	38.20%	16.67%	32	$0.08	$1.27
2	7	110	118	4' 3L T8 Premium, EB	5.29	4.77	100.00%	42.36%	16.67%	32	$0.27	$1.27
2	7	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	21	$2.34	$2.34
2	7	120	121	4' 2L T8 Premium, EB	5.29	4.77	100.00%	25.00%	33.33%	32	$0.65	$2.34
2	7	120	122	4' 1L T8 Premium, EB, reflector	5.29	4.77	100.00%	61.11%	33.33%	32	$1.32	$2.34
2	7	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	5.29	4.77	90.00%	30.00%	50.00%	19	$0.38	$2.34
2	7	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	30.00%	23	$3.21	$2.34
2	7	120	125	4' 1L T5HO, EB	5.29	4.77	100.00%	13.90%	33.33%	32	$0.49	$2.34
2	7	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	21	$1.64	$1.64
2	7	130	131	8' 2L T12, 60W, EB	5.29	4.77	50.00%	10.57%	25.00%	32	$0.16	$1.64
2	7	130	132	8' 1L T12, 60W, EB, reflector	5.29	4.77	100.00%	55.30%	25.00%	32	$0.71	$1.64
2	7	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	5.29	4.77	90.00%	30.00%	50.00%	19	$0.49	$1.64
2	7	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	5.29	4.77	100.00%	75.00%	30.00%	23	$3.70	$1.64
2	7	130	135	8' 2L T8, EB	5.29	4.77	100.00%	52.80%	50.00%	32	$0.32	$1.64
2	7	140	140	Base Incandescent Flood, 75W	5.29	5.29	100.00%	0.00%	100.00%	1	$3.09	$3.09
2	7	140	141	CFL Screw-in, Modular 18W	5.29	4.77	85.00%	65.30%	90.00%	9	$1.90	$3.09
2	7	150	150	Base Incandescent Flood, 150W PAR	5.29	5.29	100.00%	0.00%	100.00%	1	$1.40	$1.40
2	7	150	151	Halogen PAR Flood, 90W	5.29	5.29	95.00%	40.00%	10.00%	1	$0.14	$1.40
2	7	150	152	Metal Halide, 50W	5.29	5.29	90.00%	52.00%	45.00%	11	$7.51	$1.40
2	7	150	153	HPS, 50W	5.29	5.29	90.00%	56.00%	45.00%	11	$3.83	$1.40
2	7	160	160	Base 4' 3L T12, 34W, 1EEMAG	5.29	5.29	100.00%	0.00%	100.00%	10	$0.09	$0.09
2	7	160	161	4' 3L T8, EB	5.29	4.77	100.00%	22.61%	25.00%	32	$0.01	$0.09
2	7	160	162	4' 3L T8 Premium, EB	5.29	4.77	100.00%	22.61%	25.00%	32	$0.02	$0.09
2	7	160	163	4' 2L T8 Premium, EB, reflector	5.29	4.77	100.00%	53.04%	25.00%	32	$0.05	$0.09
2	7	160	164	4' 1L T5HO, EB	5.29	4.77	100.00%	46.09%	25.00%	32	$0.01	$0.09
2	7	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	32	$1.42	$1.42
2	7	180	181	4' 4L T8 Premium, EB	4.24	3.81	100.00%	3.60%	100.00%	32	$0.25	$1.42
2	7	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	4.24	3.81	90.00%	30.00%	50.00%	19	$0.44	$1.42
2	7	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	32	$2.65	$2.65

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	7	185	186	4' 3L T8 Premium, EB	4.24	3.81	100.00%	6.70%	100.00%	32	$0.36	$2.65
2	7	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	4.24	4.24	100.00%	0.00%	100.00%	32	$2.49	$2.49
2	7	190	191	4' 2L T8 Premium, EB	4.24	3.81	100.00%	8.50%	100.00%	32	$0.22	$2.49
2	7	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	4.24	3.81	90.00%	30.00%	50.00%	19	$0.38	$2.49
2	7	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	3.76	3.76	100.00%	0.00%	100.00%	20	$2.07	$2.07
2	7	200	201	Chiller Tune-Up / Diagnostics	3.76	3.76	10.00%	5.00%	100.00%	5	$0.17	$2.07
2	7	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	3.76	3.76	100.00%	10.00%	50.00%	10	$0.44	$2.07
2	7	200	203	Roof / Ceiling Insulation	3.76	3.76	20.00%	3.00%	50.00%	20	$0.30	$277.59
2	7	200	204	Cool Roofs (Reflective and Spray Evaporative)	3.76	3.76	100.00%	1.35%	90.00%	10	$0.20	$199.77
2	7	200	205	EMS Optimization	3.76	3.76	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	7	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	3.76	3.76	66.00%	3.96%	75.00%	30	$0.04	$28.82
2	7	200	207	Installation of Energy Management Systems	3.76	3.76	50.00%	10.00%	50.00%	10	$0.27	$2.07
2	7	200	208	Insulation of Pipes	3.76	3.76	50.00%	1.00%	50.00%	20	$0.03	$2.92
2	7	200	209	Installation of Chiller Economizers (water side)	3.76	3.76	100.00%	10.00%	50.00%	20	$0.59	$461.00
2	7	200	210	Optimize Chilled Water and Condenser Water Settings	3.76	3.76	50.00%	5.00%	33.00%	10	$0.30	$2.07
2	7	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	3.76	3.76	90.00%	7.50%	67.00%	15	$0.16	$3.22
2	7	200	212	Two-Speed Cooling Tower, 300 Tons	3.76	3.76	90.00%	14.00%	50.00%	15	$0.01	$3.22
2	7	200	213	VSD Cooling Tower, 300 Tons	3.76	3.76	90.00%	18.00%	50.00%	15	$0.11	$3.22
2	7	200	214	Primary/Secondary De-coupled Chilled Water System	3.76	3.76	80.00%	12.00%	50.00%	15	$0.68	$3.22
2	7	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	3.76	3.76		21.54%		15	$0.27	$3.22
2	7	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	3.76	3.76		27.69%		15	$0.90	$3.22
2	7	250	250	Base DX Packaged System, EER=10.3, 10 tons	6.51	6.51	100.00%	0.00%	100.00%	15	$3.55	$3.55
2	7	250	251	DX Tune-Up / Diagnostics	6.51	6.51	10.00%	10.00%	100.00%	3	$0.35	$3.55
2	7	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	6.51	6.51		8.85%		15	$0.43	$3.55
2	7	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	66.00%	5.00%	75.00%	30	$0.11	$49.27
2	7	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$1.31	$3.55
2	7	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.44	$3.55
2	7	250	259	Roof / Ceiling Insulation	6.51	6.51	20.00%	3.00%	50.00%	20	$0.30	$474.49
2	7	250	260	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.35%	50.00%	10	$0.20	$341.47
2	7	250	261	Clock / Programmable Thermostat	6.51	6.51	30.00%	10.00%	100.00%	10	$0.09	$3.55
2	7	250	262	Installation of Air Side Economizers	6.51	6.51	100.00%	15.00%	100.00%	10	$0.59	$788.00
2	7	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	6.51	6.51	100.00%	0.00%	100.00%	15	$3.22	$3.22
2	7	280	281	Air-Cooled HP Package, 5 tons, SEER=11	6.51	6.51		9.09%		15	$0.16	$3.22
2	7	280	282	Air-Cooled HP Package, 5 tons, SEER=12	6.51	6.51		16.67%		15	$1.06	$3.22
2	7	280	283	DX Tune-Up / Diagnostics	6.51	6.51	10.00%	10.00%	100.00%	3	$0.35	$3.55
2	7	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	6.51	6.51	66.00%	5.00%	75.00%	30	$0.11	$49.27
2	7	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	6.51	6.51	95.00%	10.00%	25.00%	10	$1.31	$3.55
2	7	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	6.51	6.51	100.00%	10.00%	50.00%	10	$0.44	$3.55
2	7	280	289	Roof / Ceiling Insulation	6.51	6.51	20.00%	3.00%	50.00%	20	$0.30	$474.49

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	7	280	290	Cool Roofs (Reflective and Spray Evaporative)	6.51	6.51	100.00%	1.35%	50.00%	10	$0.20	$341.47
2	7	280	291	Clock / Programmable Thermostat	6.51	6.51	30.00%	10.00%	100.00%	10	$0.09	$3.55
2	7	280	292	Installation of Air Side Economizers	6.51	6.51	100.00%	15.00%	100.00%	10	$0.59	$788.00
2	7	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.98	0.98		0.00%		15	$0.11	$0.11
2	7	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.98	0.98		1.50%		15	$0.02	$0.11
2	7	400	402	VSD, ASD Fan & Pump Applications	0.98	0.98		30.00%		15	$0.13	$0.11
2	7	610	610	Base Office Equipment	0.32	0.32	100.00%	0.00%	100.00%	4	$0.25	$0.74
2	7	610	611	ENERGY STAR or Better Office Equipment: Computer	0.32	0.32	65.00%	21.55%	100.00%	4	$0.03	$0.74
2	7	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.32	0.32	71.00%	19.15%	100.00%	4	$0.02	$0.74
2	7	610	623	Smart Networks	0.32	0.32	40.00%	7.98%	90.00%	4	$0.00	$0.74
2	7	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.32	0.32	33.00%	6.25%	100.00%	4	$0.00	$0.04
2	7	610	641	ENERGY STAR or Better Office Equipment: Printers	0.32	0.32	99.00%	11.58%	100.00%	4	$0.02	$0.22
2	7	700	700	Base Water Heating	0.64	0.64	100.00%	0.00%	100.00%	15	$36.19	$36.19
2	7	700	701	Demand controlled circulating systems	0.64	0.64	100.00%	5.00%	50.00%	15	$7.06	$36.19
2	7	700	702	Heat Pump Water Heater	0.64	0.64	100.00%	30.00%	75.00%	15	$4.50	$36.19
2	7	700	703	High-Efficiency Water Heater (electric)	0.64	0.64		5.40%		15	$1.30	$36.19
2	7	700	704	Hot Water (SHW) Pipe Insulation	0.64	0.64	80.00%	5.00%	50.00%	15	$0.03	$6.34
2	7	800	800	Base Heating	0.79	0.79	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	7	800	802	Roof / Ceiling Insulation	0.79	0.79	40.00%	10.00%	50.00%	20	$0.30	$1.45
2	7	800	805	Clock / Programmable Thermostat	0.79	0.79	35.00%	30.00%	100.00%	10	$0.15	$2.40
2	7	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	0.79	0.79	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	8	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	10.77	10.77	100.00%	0.00%	100.00%	8	$1.48	$1.48
2	8	110	111	4' 4L T8 Premium, EB	10.77	9.69	100.00%	25.00%	16.67%	12	$0.48	$1.48
2	8	110	112	4' 2L T8 Premium, EB, reflector	10.77	9.69	100.00%	62.50%	16.67%	12	$0.72	$1.48
2	8	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	10.77	9.69	90.00%	30.00%	50.00%	7	$0.51	$1.48
2	8	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	10.77	9.69	100.00%	75.00%	10.00%	8	$3.84	$1.48
2	8	110	115	4' 2L T5HO, EB	10.77	9.69	100.00%	18.75%	16.67%	12	$0.28	$1.48
2	8	110	116	4' 4L T8, EB	10.77	9.69	100.00%	22.22%	16.67%	12	$0.20	$1.48
2	8	110	117	4' 3L T8, EB	10.77	9.69	100.00%	38.20%	16.67%	12	$0.09	$1.48
2	8	110	118	4' 3L T8 Premium, EB	10.77	9.69	100.00%	42.36%	16.67%	12	$0.31	$1.48
2	8	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	10.77	10.77	100.00%	0.00%	100.00%	8	$2.72	$2.72
2	8	120	121	4' 2L T8 Premium, EB	10.77	9.69	100.00%	25.00%	33.33%	12	$0.76	$2.72
2	8	120	122	4' 1L T8 Premium, EB, reflector	10.77	9.69	100.00%	61.11%	33.33%	12	$1.54	$2.72
2	8	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	10.77	9.69	90.00%	30.00%	50.00%	7	$0.44	$2.72
2	8	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	10.77	9.69	100.00%	75.00%	10.00%	8	$3.74	$2.72
2	8	120	125	4' 1L T5HO, EB	10.77	9.69	100.00%	13.90%	33.33%	12	$0.58	$2.72
2	8	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	10.77	10.77	100.00%	0.00%	100.00%	8	$1.77	$1.77
2	8	130	131	8' 2L T12, 60W, EB	10.77	9.69	50.00%	10.57%	25.00%	12	$0.17	$1.77
2	8	130	132	8' 1L T12, 60W, EB, reflector	10.77	9.69	100.00%	55.30%	25.00%	12	$0.77	$1.77
2	8	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	10.77	9.69	90.00%	30.00%	50.00%	7	$0.53	$1.77
2	8	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	10.77	9.69	100.00%	75.00%	10.00%	8	$3.99	$1.77
2	8	130	135	8' 2L T8, EB	10.77	9.69	100.00%	52.80%	50.00%	12	$0.35	$1.77
2	8	140	140	Base Incandescent Flood, 75W	10.77	10.77	100.00%	0.00%	100.00%	1	$3.72	$3.72

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	8	140	141	CFL Screw-in, Modular 18W	10.77	9.69	85.00%	65.30%	90.00%	3	$2.29	$3.72
2	8	150	150	Base Incandescent Flood, 150W PAR	10.77	10.77	100.00%	0.00%	100.00%	1	$1.04	$1.04
2	8	150	151	Halogen PAR Flood, 90W	10.77	10.77	95.00%	40.00%	10.00%	1	$0.10	$1.04
2	8	150	152	Metal Halide, 50W	10.77	10.77	90.00%	52.00%	45.00%	4	$5.59	$1.04
2	8	150	153	HPS, 50W	10.77	10.77	90.00%	56.00%	45.00%	4	$2.85	$1.04
2	8	160	160	Base 4' 3L T12, 34W, 1EEMAG	10.77	10.77	100.00%	0.00%	100.00%	10	$0.14	$0.14
2	8	160	161	4' 3L T8, EB	10.77	9.69	100.00%	22.61%	25.00%	12	$0.01	$0.14
2	8	160	162	4' 3L T8 Premium, EB	10.77	9.69	100.00%	22.61%	25.00%	12	$0.03	$0.14
2	8	160	163	4' 2L T8 Premium, EB, reflector	10.77	9.69	100.00%	53.04%	25.00%	12	$0.07	$0.14
2	8	160	164	4' 1L T5HO, EB	10.77	9.69	100.00%	46.09%	25.00%	12	$0.01	$0.14
2	8	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	8.62	8.62	100.00%	0.00%	100.00%	12	$1.65	$1.65
2	8	180	181	4' 4L T8 Premium, EB	8.62	7.75	100.00%	3.60%	100.00%	12	$0.30	$1.65
2	8	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	8.62	7.75	90.00%	30.00%	50.00%	7	$0.51	$1.65
2	8	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	8.62	8.62	100.00%	0.00%	100.00%	12	$3.08	$3.08
2	8	185	186	4' 3L T8 Premium, EB	8.62	7.75	100.00%	6.70%	100.00%	12	$0.42	$3.08
2	8	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	8.62	8.62	100.00%	0.00%	100.00%	12	$2.90	$2.90
2	8	190	191	4' 2L T8 Premium, EB	8.62	7.75	100.00%	8.50%	100.00%	12	$0.26	$2.90
2	8	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	8.62	7.75	90.00%	30.00%	50.00%	7	$0.44	$2.90
2	8	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	8.98	8.98	100.00%	0.00%	100.00%	20	$2.07	$2.07
2	8	200	201	Chiller Tune-Up / Diagnostics	8.98	8.98	10.00%	5.00%	100.00%	5	$0.17	$2.07
2	8	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	8.98	8.98	100.00%	10.00%	50.00%	10	$0.44	$2.07
2	8	200	203	Roof / Ceiling Insulation	8.98	8.98	20.00%	3.00%	50.00%	20	$0.43	$402.37
2	8	200	204	Cool Roofs (Reflective and Spray Evaporative)	8.98	8.98	100.00%	0.64%	90.00%	10	$0.16	$153.67
2	8	200	205	EMS Optimization	8.98	8.98	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	8	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	8.98	8.98	66.00%	1.17%	75.00%	30	$0.01	$9.28
2	8	200	207	Installation of Energy Management Systems	8.98	8.98	75.00%	10.00%	50.00%	10	$0.27	$2.07
2	8	200	208	Insulation of Pipes	8.98	8.98	50.00%	1.00%	50.00%	20	$0.01	$1.08
2	8	200	209	Installation of Chiller Economizers (water side)	8.98	8.98	100.00%	10.00%	50.00%	20	$0.59	$461.00
2	8	200	210	Optimize Chilled Water and Condenser Water Settings	8.98	8.98	50.00%	5.00%	33.00%	10	$0.30	$2.07
2	8	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	8.98	8.98	90.00%	7.50%	67.00%	15	$0.16	$3.22
2	8	200	212	Two-Speed Cooling Tower, 300 Tons	8.98	8.98	90.00%	14.00%	50.00%	15	$0.01	$3.22
2	8	200	213	VSD Cooling Tower, 300 Tons	8.98	8.98	90.00%	18.00%	50.00%	15	$0.11	$3.22
2	8	200	214	Primary/Secondary De-coupled Chilled Water System	8.98	8.98	80.00%	12.00%	50.00%	15	$0.68	$3.22
2	8	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	8.98	8.98		21.54%		15	$0.27	$3.22
2	8	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	8.98	8.98		27.69%		15	$0.90	$3.22
2	8	250	250	Base DX Packaged System, EER=10.3, 10 tons	15.55	15.55	100.00%	0.00%	100.00%	15	$3.55	$3.55
2	8	250	251	DX Tune-Up / Diagnostics	15.55	15.55	10.00%	10.00%	100.00%	3	$0.35	$3.55
2	8	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	15.55	15.55		8.85%		15	$0.43	$3.55
2	8	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	15.55	15.55	66.00%	5.00%	75.00%	30	$0.03	$15.85
2	8	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	15.55	15.55	95.00%	10.00%	25.00%	10	$1.31	$3.55

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	8	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	15.55	15.55	100.00%	10.00%	50.00%	10	$0.44	$3.55
2	8	250	259	Roof / Ceiling Insulation	15.55	15.55	20.00%	3.00%	50.00%	20	$0.43	$687.78
2	8	250	260	Cool Roofs (Reflective and Spray Evaporative)	15.55	15.55	100.00%	0.64%	50.00%	10	$0.16	$262.67
2	8	250	261	Clock / Programmable Thermostat	15.55	15.55	30.00%	10.00%	100.00%	10	$0.09	$3.55
2	8	250	262	Installation of Air Side Economizers	15.55	15.55	40.00%	15.00%	100.00%	10	$0.59	$788.00
2	8	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	15.55	15.55	100.00%	0.00%	100.00%	15	$3.22	$3.22
2	8	280	281	Air-Cooled HP Package, 5 tons, SEER=11	15.55	15.55		9.09%		15	$0.16	$3.22
2	8	280	282	Air-Cooled HP Package, 5 tons, SEER=12	15.55	15.55		16.67%		15	$1.06	$3.22
2	8	280	283	DX Tune-Up / Diagnostics	15.55	15.55	10.00%	10.00%	100.00%	3	$0.35	$3.55
2	8	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	15.55	15.55	66.00%	5.00%	75.00%	30	$0.03	$15.85
2	8	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	15.55	15.55	95.00%	10.00%	25.00%	10	$1.31	$3.55
2	8	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	15.55	15.55	100.00%	10.00%	50.00%	10	$0.44	$3.55
2	8	280	289	Roof / Ceiling Insulation	15.55	15.55	20.00%	3.00%	50.00%	20	$0.43	$687.78
2	8	280	290	Cool Roofs (Reflective and Spray Evaporative)	15.55	15.55	100.00%	0.64%	50.00%	10	$0.16	$262.67
2	8	280	291	Clock / Programmable Thermostat	15.55	15.55	30.00%	10.00%	100.00%	10	$0.09	$3.55
2	8	280	292	Installation of Air Side Economizers	15.55	15.55	40.00%	15.00%	100.00%	10	$0.59	$788.00
2	8	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	2.67	2.67		0.00%		15	$0.13	$0.13
2	8	400	401	Energy Efficient Fan & Pump Motors (ODP)	2.67	2.67		1.50%		15	$0.03	$0.13
2	8	400	402	VSD, ASD Fan & Pump Applications	2.67	2.67		30.00%		15	$0.15	$0.13
2	8	610	610	Base Office Equipment	0.52	0.52	100.00%	0.00%	100.00%	4	$0.89	$2.62
2	8	610	611	ENERGY STAR or Better Office Equipment: Computer	0.52	0.52	65.00%	17.36%	100.00%	4	$0.11	$2.62
2	8	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.52	0.52	71.00%	15.43%	100.00%	4	$0.06	$2.62
2	8	610	623	Smart Networks	0.52	0.52	40.00%	6.43%	90.00%	4	$0.00	$2.62
2	8	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.52	0.52	33.00%	10.21%	100.00%	4	$0.04	$0.47
2	8	610	641	ENERGY STAR or Better Office Equipment: Printers	0.52	0.52	99.00%	13.23%	100.00%	4	$0.11	$1.30
2	8	700	700	Base Water Heating	1.25	1.25	100.00%	0.00%	100.00%	15	$31.82	$31.82
2	8	700	701	Demand controlled circulating systems	1.25	1.25	90.00%	5.00%	50.00%	15	$6.20	$31.82
2	8	700	702	Heat Pump Water Heater	1.25	1.25	100.00%	30.00%	75.00%	15	$3.95	$31.82
2	8	700	703	High-Efficiency Water Heater (electric)	1.25	1.25		5.40%		15	$1.15	$31.82
2	8	700	704	Hot Water (SHW) Pipe Insulation	1.25	1.25	80.00%	5.00%	50.00%	15	$0.01	$2.33
2	8	800	800	Base Heating	4.58	4.58	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	8	800	802	Roof / Ceiling Insulation	4.58	4.58	40.00%	10.00%	50.00%	20	$0.43	$2.09
2	8	800	805	Clock / Programmable Thermostat	4.58	4.58	35.00%	30.00%	100.00%	10	$0.15	$2.40
2	8	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.58	4.58	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	9	100	100	Base Cooking	1.62	1.62		0.00%		15	$0.11	$0.11
2	9	100	101	High-Efficiency Convection Oven	1.62	1.62		20.00%		15	$0.09	$0.11
2	9	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	3.01	3.01	100.00%	0.00%	100.00%	17	$0.74	$0.74
2	9	110	111	4' 4L T8 Premium, EB	3.01	2.71	100.00%	25.00%	16.67%	26	$0.24	$0.74
2	9	110	112	4' 2L T8 Premium, EB, reflector	3.01	2.71	100.00%	62.50%	16.67%	26	$0.36	$0.74
2	9	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	3.01	2.71	89.63%	30.00%	20.00%	15	$0.26	$0.74

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	9	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	3.01	2.71	100.00%	75.00%	30.00%	19	$1.92	$0.74
2	9	110	115	4' 2L T5HO, EB	3.01	2.71	100.00%	18.75%	16.67%	26	$0.14	$0.74
2	9	110	116	4' 4L T8, EB	3.01	2.71	100.00%	22.22%	16.67%	26	$0.10	$0.74
2	9	110	117	4' 3L T8, EB	3.01	2.71	100.00%	38.20%	16.67%	26	$0.05	$0.74
2	9	110	118	4' 3L T8 Premium, EB	3.01	2.71	100.00%	42.36%	16.67%	26	$0.15	$0.74
2	9	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	3.01	3.01	100.00%	0.00%	100.00%	17	$1.37	$1.37
2	9	120	121	4' 2L T8 Premium, EB	3.01	2.71	100.00%	25.00%	33.33%	26	$0.38	$1.37
2	9	120	122	4' 1L T8 Premium, EB, reflector	3.01	2.71	100.00%	61.11%	33.33%	26	$0.78	$1.37
2	9	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	3.01	2.71	89.63%	30.00%	20.00%	15	$0.22	$1.37
2	9	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	3.01	2.71	100.00%	75.00%	30.00%	19	$1.89	$1.37
2	9	120	125	4' 1L T5HO, EB	3.01	2.71	100.00%	13.90%	33.33%	26	$0.29	$1.37
2	9	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	3.01	3.01	100.00%	0.00%	100.00%	17	$0.92	$0.92
2	9	130	131	8' 2L T12, 60W, EB	3.01	2.71	79.87%	10.57%	25.00%	26	$0.09	$0.92
2	9	130	132	8' 1L T12, 60W, EB, reflector	3.01	2.71	100.00%	55.30%	25.00%	26	$0.40	$0.92
2	9	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	3.01	2.71	89.63%	30.00%	20.00%	15	$0.28	$0.92
2	9	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	3.01	2.71	100.00%	75.00%	30.00%	19	$2.07	$0.92
2	9	130	135	8' 2L T8, EB	3.01	2.71	100.00%	52.80%	50.00%	26	$0.18	$0.92
2	9	140	140	Base Incandescent Flood, 75W	3.01	3.01	100.00%	0.00%	100.00%	1	$2.01	$2.01
2	9	140	141	CFL Screw-in, Modular 18W	3.01	2.71	72.51%	65.30%	70.00%	8	$1.24	$2.01
2	9	150	150	Base Incandescent Flood, 150W PAR	3.01	3.01	100.00%	0.00%	100.00%	1	$0.73	$0.73
2	9	150	151	Halogen PAR Flood, 90W	3.01	3.01	98.98%	40.00%	10.00%	1	$0.07	$0.73
2	9	150	152	Metal Halide, 50W	3.01	3.01	92.23%	52.00%	45.00%	9	$3.88	$0.73
2	9	150	153	HPS, 50W	3.01	3.01	92.23%	56.00%	45.00%	9	$1.98	$0.73
2	9	160	160	Base 4' 3L T12, 34W, 1EEMAG	3.01	3.01	100.00%	0.00%	100.00%	10	$0.22	$0.22
2	9	160	161	4' 3L T8, EB	3.01	2.71	100.00%	22.61%	25.00%	26	$0.02	$0.22
2	9	160	162	4' 3L T8 Premium, EB	3.01	2.71	100.00%	22.61%	25.00%	26	$0.05	$0.22
2	9	160	163	4' 2L T8 Premium, EB, reflector	3.01	2.71	100.00%	53.04%	25.00%	26	$0.11	$0.22
2	9	160	164	4' 1L T5HO, EB	3.01	2.71	100.00%	46.09%	25.00%	26	$0.02	$0.22
2	9	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	2.41	2.41	100.00%	0.00%	100.00%	26	$0.83	$0.83
2	9	180	181	4' 4L T8 Premium, EB	2.41	2.17	100.00%	3.60%	100.00%	26	$0.15	$0.83
2	9	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.41	2.17	89.63%	30.00%	20.00%	15	$0.26	$0.83
2	9	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	2.41	2.41	100.00%	0.00%	100.00%	26	$1.56	$1.56
2	9	185	186	4' 3L T8 Premium, EB	2.41	2.17	100.00%	6.70%	100.00%	26	$0.21	$1.56
2	9	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	2.41	2.41	100.00%	0.00%	100.00%	26	$1.46	$1.46
2	9	190	191	4' 2L T8 Premium, EB	2.41	2.17	100.00%	8.50%	100.00%	26	$0.13	$1.46
2	9	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.41	2.17	89.63%	30.00%	20.00%	15	$0.22	$1.46
2	9	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	1.50	1.50	100.00%	0.00%	100.00%	20	$2.19	$2.19
2	9	200	201	Chiller Tune-Up / Diagnostics	1.50	1.50	10.00%	5.00%	100.00%	5	$0.18	$2.19
2	9	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	1.50	1.50	100.00%	10.00%	50.00%	10	$0.46	$2.19
2	9	200	203	Roof / Ceiling Insulation	1.50	1.50	34.57%	3.00%	50.00%	20	$0.21	$198.57
2	9	200	204	Cool Roofs (Reflective and Spray Evaporative)	1.50	1.50	100.00%	0.39%	90.00%	10	$0.04	$38.42
2	9	200	205	EMS Optimization	1.50	1.50	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	9	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	1.50	1.50	92.94%	7.03%	75.00%	30	$0.06	$43.56

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	9	200	207	Installation of Energy Management Systems	1.50	1.50	37.46%	10.00%	50.00%	10	$0.29	$2.19
2	9	200	208	Insulation of Pipes	1.50	1.50	50.00%	1.00%	50.00%	20	$0.03	$3.98
2	9	200	209	Installation of Chiller Economizers (water side)	1.50	1.50	40.07%	10.00%	50.00%	20	$0.59	$461.00
2	9	200	210	Optimize Chilled Water and Condenser Water Settings	1.50	1.50	50.00%	5.00%	33.00%	10	$0.31	$2.19
2	9	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	1.50	1.50	90.00%	7.50%	67.00%	15	$0.17	$3.40
2	9	200	212	Two-Speed Cooling Tower, 300 Tons	1.50	1.50	90.00%	14.00%	50.00%	15	$0.01	$3.40
2	9	200	213	VSD Cooling Tower, 300 Tons	1.50	1.50	90.00%	18.00%	50.00%	15	$0.11	$3.40
2	9	200	214	Primary/Secondary De-coupled Chilled Water System	1.50	1.50	80.00%	12.00%	50.00%	15	$0.71	$3.40
2	9	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	1.50	1.50		21.54%		15	$0.29	$3.40
2	9	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	1.50	1.50		27.69%		15	$0.95	$3.40
2	9	250	250	Base DX Packaged System, EER=10.3, 10 tons	2.60	2.60	100.00%	0.00%	100.00%	15	$3.74	$3.74
2	9	250	251	DX Tune-Up / Diagnostics	2.60	2.60	10.00%	10.00%	100.00%	3	$0.37	$3.74
2	9	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	2.60	2.60		8.85%		15	$0.45	$3.74
2	9	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.60	2.60	92.94%	5.00%	75.00%	30	$0.16	$74.47
2	9	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.60	2.60	95.00%	10.00%	25.00%	10	$1.38	$3.74
2	9	250	255	Occupancy Sensor for room HVAC units	2.60	2.60	100.00%	35.00%	51.00%	15	$0.30	$2.40
2	9	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.60	2.60	100.00%	10.00%	50.00%	10	$0.46	$3.74
2	9	250	259	Roof / Ceiling Insulation	2.60	2.60	34.57%	3.00%	50.00%	20	$0.21	$339.41
2	9	250	260	Cool Roofs (Reflective and Spray Evaporative)	2.60	2.60	100.00%	0.39%	50.00%	10	$0.04	$65.67
2	9	250	261	Clock / Programmable Thermostat	2.60	2.60	40.00%	10.00%	100.00%	10	$0.10	$3.74
2	9	250	262	Installation of Air Side Economizers	2.60	2.60	40.00%	15.00%	100.00%	10	$0.59	$788.00
2	9	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	2.60	2.60	100.00%	0.00%	100.00%	15	$3.40	$3.40
2	9	280	281	Air-Cooled HP Package, 5 tons, SEER=11	2.60	2.60		9.09%		15	$0.17	$3.40
2	9	280	282	Air-Cooled HP Package, 5 tons, SEER=12	2.60	2.60		16.67%		15	$1.12	$3.40
2	9	280	283	DX Tune-Up / Diagnostics	2.60	2.60	10.00%	10.00%	100.00%	3	$0.37	$3.74
2	9	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.60	2.60	92.94%	5.00%	75.00%	30	$0.16	$74.47
2	9	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	2.60	2.60	95.00%	10.00%	25.00%	10	$1.38	$3.74
2	9	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.60	2.60	100.00%	10.00%	50.00%	10	$0.46	$3.74
2	9	280	289	Roof / Ceiling Insulation	2.60	2.60	34.57%	3.00%	50.00%	20	$0.21	$339.41
2	9	280	290	Cool Roofs (Reflective and Spray Evaporative)	2.60	2.60	100.00%	0.39%	50.00%	10	$0.04	$65.67
2	9	280	291	Clock / Programmable Thermostat	2.60	2.60	40.00%	10.00%	100.00%	10	$0.10	$3.74
2	9	280	292	Installation of Air Side Economizers	2.60	2.60	40.00%	15.00%	100.00%	10	$0.59	$788.00
2	9	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	0.60	0.60		0.00%		15	$0.09	$0.09
2	9	400	401	Energy Efficient Fan & Pump Motors (ODP)	0.60	0.60		1.50%		15	$0.02	$0.09
2	9	400	402	VSD, ASD Fan & Pump Applications	0.60	0.60		30.00%		15	$0.10	$0.09
2	9	610	610	Base Office Equipment	0.10	0.10	100.00%	0.00%	100.00%	4	$0.08	$0.23
2	9	610	611	ENERGY STAR or Better Office Equipment: Computer	0.10	0.10	65.00%	12.24%	100.00%	4	$0.01	$0.23
2	9	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.10	0.10	71.00%	10.87%	100.00%	4	$0.00	$0.23
2	9	610	623	Smart Networks	0.10	0.10	40.00%	4.53%	90.00%	4	$0.00	$0.23
2	9	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.10	0.10	33.00%	20.18%	100.00%	4	$0.00	$0.03

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	9	610	641	ENERGY STAR or Better Office Equipment: Printers	0.10	0.10	99.00%	7.56%	100.00%	4	$0.01	$0.12
2	9	700	700	Base Water Heating	1.74	1.74	100.00%	0.00%	100.00%	15	$27.95	$27.95
2	9	700	701	Demand controlled circulating systems	1.74	1.74	100.00%	5.00%	50.00%	15	$5.45	$27.95
2	9	700	702	Heat Pump Water Heater	1.74	1.74	100.00%	30.00%	75.00%	15	$3.47	$27.95
2	9	700	703	High-Efficiency Water Heater (electric)	1.74	1.74		5.40%		15	$1.01	$27.95
2	9	700	704	Hot Water (SHW) Pipe Insulation	1.74	1.74	100.00%	5.00%	50.00%	15	$0.03	$8.64
2	9	800	800	Base Heating	4.84	4.84	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	9	800	801	Occupancy Sensor for room HVAC units	4.84	4.84	100.00%	35.00%	51.00%	15	$0.20	$2.40
2	9	800	802	Roof / Ceiling Insulation	4.84	4.84	62.26%	10.00%	50.00%	20	$0.21	$1.03
2	9	800	805	Clock / Programmable Thermostat	4.84	4.84	29.72%	30.00%	100.00%	10	$0.15	$2.40
2	9	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.84	4.84	100.00%	5.00%	50.00%	15	$0.28	$2.40
2	10	110	110	Base Fluorescent Fixture, 4' 4L T12, 34W, 2EEMAG	2.12	2.12	100.00%	0.00%	100.00%	23	$1.42	$1.42
2	10	110	111	4' 4L T8 Premium, EB	2.12	1.91	100.00%	25.00%	16.67%	36	$0.46	$1.42
2	10	110	112	4' 2L T8 Premium, EB, reflector	2.12	1.91	100.00%	62.50%	16.67%	36	$0.70	$1.42
2	10	110	113	Occupancy Sensor, 4-4' Fluorescent Fixtures	2.12	1.91	95.02%	30.00%	20.00%	21	$0.49	$1.42
2	10	110	114	Continuous Dimming, 5-4' Fluorescent Fixtures	2.12	1.91	100.00%	75.00%	30.00%	26	$3.69	$1.42
2	10	110	115	4' 2L T5HO, EB	2.12	1.91	100.00%	18.75%	16.67%	36	$0.27	$1.42
2	10	110	116	4' 4L T8, EB	2.12	1.91	100.00%	22.22%	16.67%	36	$0.19	$1.42
2	10	110	117	4' 3L T8, EB	2.12	1.91	100.00%	38.20%	16.67%	36	$0.09	$1.42
2	10	110	118	4' 3L T8 Premium, EB	2.12	1.91	100.00%	42.36%	16.67%	36	$0.30	$1.42
2	10	120	120	Base Fluorescent Fixture, 4' 2L T12, 34W, 1EEMAG	2.12	2.12	100.00%	0.00%	100.00%	23	$2.63	$2.63
2	10	120	121	4' 2L T8 Premium, EB	2.12	1.91	100.00%	25.00%	33.33%	36	$0.73	$2.63
2	10	120	122	4' 1L T8 Premium, EB, reflector	2.12	1.91	100.00%	61.11%	33.33%	36	$1.49	$2.63
2	10	120	123	Occupancy Sensor, 8-4' Fluorescent Fixtures	2.12	1.91	95.02%	30.00%	20.00%	21	$0.43	$2.63
2	10	120	124	Continuous Dimming, 10-4' Fluorescent Fixtures	2.12	1.91	100.00%	75.00%	30.00%	26	$3.62	$2.63
2	10	120	125	4' 1L T5HO, EB	2.12	1.91	100.00%	13.90%	33.33%	36	$0.56	$2.63
2	10	130	130	Base Fluorescent Fixture, 8' 2L T12, 60W, 1EEMAG	2.12	2.12	100.00%	0.00%	100.00%	23	$1.79	$1.79
2	10	130	131	8' 2L T12, 60W, EB	2.12	1.91	46.17%	10.57%	25.00%	36	$0.17	$1.79
2	10	130	132	8' 1L T12, 60W, EB, reflector	2.12	1.91	100.00%	55.30%	25.00%	36	$0.77	$1.79
2	10	130	133	Occupancy Sensor, 4-8' Fluorescent Fixtures	2.12	1.91	95.02%	30.00%	20.00%	21	$0.53	$1.79
2	10	130	134	Continuous Dimming, 5-8' Fluorescent Fixtures	2.12	1.91	100.00%	75.00%	30.00%	26	$4.03	$1.79
2	10	130	135	8' 2L T8, EB	2.12	1.91	100.00%	52.80%	50.00%	36	$0.35	$1.79
2	10	140	140	Base Incandescent Flood, 75W	2.12	2.12	100.00%	0.00%	100.00%	1	$3.96	$3.96
2	10	140	141	CFL Screw-in, Modular 18W	2.12	1.91	95.29%	65.30%	90.00%	10	$2.44	$3.96
2	10	150	150	Base Incandescent Flood, 150W PAR	2.12	2.12	100.00%	0.00%	100.00%	1	$1.92	$1.92
2	10	150	151	Halogen PAR Flood, 90W	2.12	2.12	98.69%	40.00%	10.00%	1	$0.19	$1.92
2	10	150	152	Metal Halide, 50W	2.12	2.12	97.99%	52.00%	45.00%	12	$10.29	$1.92
2	10	150	153	HPS, 50W	2.12	2.12	97.99%	56.00%	45.00%	12	$5.25	$1.92
2	10	160	160	Base 4' 3L T12, 34W, 1EEMAG	2.12	2.12	100.00%	0.00%	100.00%	10	$0.36	$0.36
2	10	160	161	4' 3L T8, EB	2.12	1.91	100.00%	22.61%	25.00%	36	$0.03	$0.36
2	10	160	162	4' 3L T8 Premium, EB	2.12	1.91	100.00%	22.61%	25.00%	36	$0.08	$0.36
2	10	160	163	4' 2L T8 Premium, EB, reflector	2.12	1.91	100.00%	53.04%	25.00%	36	$0.19	$0.36
2	10	160	164	4' 1L T5HO, EB	2.12	1.91	100.00%	46.09%	25.00%	36	$0.03	$0.36

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	10	180	180	Base Fluorescent Fixture 4' 4L T8, 1EB	1.70	1.70	100.00%	0.00%	100.00%	36	$1.59	$1.59
2	10	180	181	4' 4L T8 Premium, EB	1.70	1.53	100.00%	3.60%	100.00%	36	$0.28	$1.59
2	10	180	182	Occupancy Sensor, 4-4' Fluorescent Fixtures	1.70	1.53	95.02%	30.00%	20.00%	21	$0.49	$1.59
2	10	185	185	Base Fluorescent Fixture 4' 3L T8, 1EB	1.70	1.70	100.00%	0.00%	100.00%	36	$2.99	$2.99
2	10	185	186	4' 3L T8 Premium, EB	1.70	1.53	100.00%	6.70%	100.00%	36	$0.41	$2.99
2	10	190	190	Base Fluorescent Fixture 4' 2L T8, 1EB	1.70	1.70	100.00%	0.00%	100.00%	36	$2.81	$2.81
2	10	190	191	4' 2L T8 Premium, EB	1.70	1.53	100.00%	8.50%	100.00%	36	$0.25	$2.81
2	10	190	192	Occupancy Sensor, 8-4' Fluorescent Fixtures	1.70	1.53	95.02%	30.00%	20.00%	21	$0.43	$2.81
2	10	200	200	Base Centrifugal Chiller, 0.65 kW/ton, 300 tons	2.54	2.54	100.00%	0.00%	100.00%	20	$0.92	$0.92
2	10	200	201	Chiller Tune-Up / Diagnostics	2.54	2.54	10.00%	5.00%	100.00%	5	$0.08	$0.92
2	10	200	202	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	2.54	2.54	100.00%	10.00%	50.00%	10	$0.19	$0.92
2	10	200	203	Roof / Ceiling Insulation	2.54	2.54	40.19%	3.00%	50.00%	20	$0.44	$414.96
2	10	200	204	Cool Roofs (Reflective and Spray Evaporative)	2.54	2.54	100.00%	12.96%	90.00%	10	$0.47	$461.00
2	10	200	205	EMS Optimization	2.54	2.54	50.00%	1.00%	100.00%	5	$0.00	$0.00
2	10	200	206	High Efficiency Windows (Low-E Glass or Multiple Glazed)	2.54	2.54	76.27%	2.47%	75.00%	30	$0.02	$13.11
2	10	200	207	Installation of Energy Management Systems	2.54	2.54	100.00%	10.00%	50.00%	10	$0.12	$0.92
2	10	200	208	Insulation of Pipes	2.54	2.54	50.00%	1.00%	50.00%	20	$0.01	$1.08
2	10	200	209	Installation of Chiller Economizers (water side)	2.54	2.54	76.27%	10.00%	50.00%	20	$0.59	$461.00
2	10	200	210	Optimize Chilled Water and Condenser Water Settings	2.54	2.54	50.00%	5.00%	33.00%	10	$0.13	$0.92
2	10	200	211	Decrease Cooling Tower Approach Temperature, 300 Tons, 6 Deg F	2.54	2.54	90.00%	7.50%	67.00%	15	$0.07	$1.43
2	10	200	212	Two-Speed Cooling Tower, 300 Tons	2.54	2.54	90.00%	14.00%	50.00%	15	$0.01	$1.43
2	10	200	213	VSD Cooling Tower, 300 Tons	2.54	2.54	90.00%	18.00%	50.00%	15	$0.05	$1.43
2	10	200	214	Primary/Secondary De-coupled Chilled Water System	2.54	2.54	80.00%	12.00%	50.00%	15	$0.30	$1.43
2	10	200	215	HE Chiller, 0.51 kW/ton, 300 Tons	2.54	2.54		21.54%		15	$0.12	$1.43
2	10	200	216	VSD Chiller, 0.47 kW/ton, 300 Tons	2.54	2.54		27.69%		15	$0.40	$1.43
2	10	250	250	Base DX Packaged System, EER=10.3, 10 tons	4.40	4.40	100.00%	0.00%	100.00%	15	$1.58	$1.58
2	10	250	251	DX Tune-Up / Diagnostics	4.40	4.40	10.00%	10.00%	100.00%	3	$0.16	$1.58
2	10	250	252	Hi-Eff DX Packaged System, 10 tons, EER=11.3	4.40	4.40		8.85%		15	$0.19	$1.58
2	10	250	253	High Efficiency Windows (Low-E Glass or Multiple Glazed)	4.40	4.40	76.27%	5.00%	75.00%	30	$0.05	$22.41
2	10	250	254	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	4.40	4.40	95.00%	10.00%	25.00%	10	$0.58	$1.58
2	10	250	258	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.40	4.40	100.00%	10.00%	50.00%	10	$0.19	$1.58
2	10	250	259	Roof / Ceiling Insulation	4.40	4.40	40.19%	3.00%	50.00%	20	$0.44	$709.31
2	10	250	260	Cool Roofs (Reflective and Spray Evaporative)	4.40	4.40	100.00%	12.96%	50.00%	10	$0.42	$709.31
2	10	250	261	Clock / Programmable Thermostat	4.40	4.40	17.97%	10.00%	100.00%	10	$0.04	$1.58
2	10	250	262	Installation of Air Side Economizers	4.40	4.40	79.66%	15.00%	100.00%	10	$0.59	$788.00
2	10	280	280	Base Air-Cooled HP Package, 5 tons, SEER=10	4.40	4.40	100.00%	0.00%	100.00%	15	$1.43	$1.43
2	10	280	281	Air-Cooled HP Package, 5 tons, SEER=11	4.40	4.40		9.09%		15	$0.07	$1.43
2	10	280	282	Air-Cooled HP Package, 5 tons, SEER=12	4.40	4.40		16.67%		15	$0.47	$1.43
2	10	280	283	DX Tune-Up / Diagnostics	4.40	4.40	10.00%	10.00%	100.00%	3	$0.16	$1.58
2	10	280	284	High Efficiency Windows (Low-E Glass or Multiple Glazed)	4.40	4.40	76.27%	5.00%	75.00%	30	$0.05	$22.41

Table B.3: Commercial Electric

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	10	280	285	Installation of Direct of Indirect Evaporative Cooling, Evaporative Pre-Cooling, and Absorption Cooling	4.40	4.40	95.00%	10.00%	25.00%	10	$0.58	$1.58
2	10	280	288	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.40	4.40	100.00%	10.00%	50.00%	10	$0.19	$1.58
2	10	280	289	Roof / Ceiling Insulation	4.40	4.40	40.19%	3.00%	50.00%	20	$0.44	$709.31
2	10	280	290	Cool Roofs (Reflective and Spray Evaporative)	4.40	4.40	100.00%	12.96%	50.00%	10	$0.42	$709.31
2	10	280	291	Clock / Programmable Thermostat	4.40	4.40	17.97%	10.00%	100.00%	10	$0.04	$1.58
2	10	280	292	Installation of Air Side Economizers	4.40	4.40	79.66%	15.00%	100.00%	10	$0.59	$788.00
2	10	400	400	Base Fan Motor, 5hp, 1800rpm, 87.5% (ODP)	1.89	1.89		0.00%		15	$0.28	$0.28
2	10	400	401	Energy Efficient Fan & Pump Motors (ODP)	1.89	1.89		1.50%		15	$0.06	$0.28
2	10	400	402	VSD, ASD Fan & Pump Applications	1.89	1.89		30.00%		15	$0.33	$0.28
2	10	610	610	Base Office Equipment	0.09	0.09	100.00%	0.00%	100.00%	4	$1.16	$3.42
2	10	610	611	ENERGY STAR or Better Office Equipment: Computer	0.09	0.09	65.00%	18.60%	100.00%	4	$0.15	$3.42
2	10	610	621	ENERGY STAR or Better Office Equipment: Monitors	0.09	0.09	71.00%	16.52%	100.00%	4	$0.07	$3.42
2	10	610	623	Smart Networks	0.09	0.09	40.00%	6.88%	90.00%	4	$0.01	$3.42
2	10	610	631	ENERGY STAR or Better Office Equipment: Copiers	0.09	0.09	33.00%	11.44%	100.00%	4	$0.04	$0.50
2	10	610	641	ENERGY STAR or Better Office Equipment: Printers	0.09	0.09	99.00%	9.16%	100.00%	4	$0.11	$1.24
2	10	700	700	Base Water Heating	2.25	2.25	100.00%	0.00%	100.00%	15	$27.30	$27.30
2	10	700	701	Demand controlled circulating systems	2.25	2.25	100.00%	5.00%	50.00%	15	$5.32	$27.30
2	10	700	702	Heat Pump Water Heater	2.25	2.25	100.00%	30.00%	75.00%	15	$3.39	$27.30
2	10	700	703	High-Efficiency Water Heater (electric)	2.25	2.25		5.40%		15	$0.98	$27.30
2	10	700	704	Hot Water (SHW) Pipe Insulation	2.25	2.25	100.00%	5.00%	50.00%	15	$0.01	$2.34
2	10	800	800	Base Heating	4.58	4.58	100.00%	0.00%	100.00%	20	$2.40	$2.40
2	10	800	802	Roof / Ceiling Insulation	4.58	4.58	13.38%	10.00%	50.00%	20	$0.44	$2.16
2	10	800	805	Clock / Programmable Thermostat	4.58	4.58	20.88%	30.00%	100.00%	10	$0.15	$2.40
2	10	800	812	Installation of Automated Building Ventilation Control (Via Occupancy Sensors, CO2 Sensors, Etc.)	4.58	4.58	100.00%	5.00%	50.00%	15	$0.28	$2.40

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	200	200	Base Heating	0.18	0.18	100.00%	0.00%	100.00%	20.0	$0.2954	$0.30
1	1	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.18	0.18	98.00%	36.84%	75.00%	60.0	$0.0596	$1.75
1	1	200	202	Insulation (ceiling)	0.18	0.18	12.95%	5.31%	50.00%	20.0	$0.3252	$13.27
1	1	200	203	Insulation (wall)	0.18	0.18	84.12%	20.00%	50.00%	20.0	$0.3650	$13.27
1	1	200	206	Duct Repair and Sealing	0.18	0.18	50.00%	2.00%	25.00%	20.0	$0.0072	$0.91
1	1	200	207	Duct Insulation	0.18	0.18	58.50%	2.00%	25.00%	20.0	$0.0183	$0.91
1	1	200	209	Insulation of Pipes	0.18	0.18	25.00%	2.00%	50.00%	20.0	$0.0150	$0.74
1	1	200	212	Boiler Tune-Up	0.18	0.18	90.00%	2.00%	100.00%	2.0	$0.0022	$0.00
1	1	200	216	Clock / Programmable Thermostat	0.18	0.18	48.81%	2.00%	75.00%	10.0	$0.0008	$0.00

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	1	200	218	Installation of Energy Management Systems (EMS)	0.18	0.18	52.58%	10.00%	25.00%	20.0	$0.2900	$20.00
1	1	200	222	Installation of Air Side Heat Recovery Systems	0.18	0.18	90.00%	20.00%	50.00%	20.0	$1.0000	$10.00
1	1	200	227	High Efficiency Gas Furnace/Boiler	0.18	0.18		13.20%		20.0	$0.0960	$0.30
1	1	200	228	Stack Heat Exchanger	0.18	0.18	84.00%	4.76%	50.00%	20.0	$0.0093	$0.00
1	1	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.06	0.06	100.00%	0.00%	100.00%	15.0	$0.0381	$0.04
1	1	400	401	Hot Water (SHW) Pipe Insulation	0.06	0.06	50.30%	3.00%	50.00%	15.0	$0.0039	$0.01
1	1	400	403	Water Heater Tank Blanket/Insulation	0.06	0.06	88.76%	15.00%	95.00%	15.0	$0.0055	$0.00
1	1	400	404	Tankless Water Heater	0.06	0.06	100.00%	10.00%	10.00%	15.0	$0.0369	$0.04
1	1	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.06	0.06	47.10%	5.00%	95.00%	15.0	$0.0664	$0.04
1	1	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.06	0.06	47.10%	20.00%	95.00%	15.0	$0.1036	$0.04
1	2	200	200	Base Heating	0.12	0.12	100.00%	0.00%	100.00%	20.0	$0.3082	$0.31
1	2	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.12	0.12	99.80%	25.00%	75.00%	60.0	$0.0193	$0.57
1	2	200	202	Insulation (ceiling)	0.12	0.12	75.43%	16.92%	50.00%	20.0	$0.4483	$18.30
1	2	200	203	Insulation (wall)	0.12	0.12	72.21%	20.00%	50.00%	20.0	$0.5031	$18.30
1	2	200	206	Duct Repair and Sealing	0.12	0.12	50.00%	2.00%	25.00%	20.0	$0.0050	$0.62
1	2	200	207	Duct Insulation	0.12	0.12	84.90%	2.00%	25.00%	20.0	$0.0126	$0.62
1	2	200	209	Insulation of Pipes	0.12	0.12	25.00%	2.00%	50.00%	20.0	$0.0205	$1.01
1	2	200	216	Clock / Programmable Thermostat	0.12	0.12	79.02%	2.00%	75.00%	10.0	$0.0008	$0.00
1	2	200	222	Installation of Air Side Heat Recovery Systems	0.12	0.12	90.00%	20.00%	50.00%	20.0	$1.0000	$10.00
1	2	200	227	High Efficiency Gas Furnace/Boiler	0.12	0.12		13.20%		20.0	$0.1002	$0.31
1	2	200	228	Stack Heat Exchanger	0.12	0.12	85.00%	4.76%	50.00%	20.0	$0.0297	$0.00
1	2	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.19	0.19	100.00%	0.00%	100.00%	15.0	$0.1191	$0.12
1	2	400	401	Hot Water (SHW) Pipe Insulation	0.19	0.19	73.40%	3.00%	50.00%	15.0	$0.0236	$0.05
1	2	400	403	Water Heater Tank Blanket/Insulation	0.19	0.19	75.87%	15.00%	95.00%	15.0	$0.0331	$0.00
1	2	400	404	Tankless Water Heater	0.19	0.19	100.00%	10.00%	10.00%	15.0	$0.1154	$0.12
1	2	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.19	0.19	57.40%	5.00%	95.00%	15.0	$0.2076	$0.12
1	2	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.19	0.19	57.40%	20.00%	95.00%	15.0	$0.3238	$0.12
1	3	100	100	Base Cooking	1.72	1.72	100.00%	0.00%	100.00%	15.0	$1.9256	$1.93
1	3	100	102	High-Efficiency Convection Oven	1.72	1.72		12.00%		15.0	$1.6175	$1.93
1	3	100	103	Efficient Infrared Griddle	1.72	1.72	80.00%	14.00%	90.00%	15.0	$0.4652	$1.93
1	3	100	104	Infrared Fryer	1.72	1.72	80.00%	30.00%	90.00%	15.0	$0.6608	$1.93
1	3	100	105	Power Burner Oven	1.72	1.72	80.00%	8.00%	90.00%	15.0	$1.9670	$1.93
1	3	100	106	Power Burner Fryer	1.72	1.72	80.00%	8.00%	90.00%	15.0	$0.7873	$1.93
1	3	100	107	Infrared Conveyer Oven	1.72	1.72	90.00%	30.00%	90.00%	15.0	$2.1088	$1.93
1	3	200	200	Base Heating	0.14	0.14	100.00%	0.00%	100.00%	20.0	$0.8148	$0.81
1	3	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.14	0.14	100.00%	15.00%	50.00%	60.0	$0.0313	$0.92
1	3	200	202	Insulation (ceiling)	0.14	0.14	55.72%	6.40%	50.00%	20.0	$0.4713	$19.24
1	3	200	203	Insulation (wall)	0.14	0.14	93.11%	20.00%	50.00%	20.0	$0.5290	$19.24
1	3	200	206	Duct Repair and Sealing	0.14	0.14	50.00%	2.00%	25.00%	20.0	$0.0127	$1.59
1	3	200	207	Duct Insulation	0.14	0.14	56.80%	2.00%	25.00%	20.0	$0.0321	$1.59
1	3	200	209	Insulation of Pipes	0.14	0.14	25.00%	2.00%	50.00%	20.0	$0.0316	$1.56
1	3	200	216	Clock / Programmable Thermostat	0.14	0.14	50.25%	2.00%	75.00%	10.0	$0.0008	$0.00
1	3	200	222	Installation of Air Side Heat Recovery Systems	0.14	0.14	78.34%	20.00%	50.00%	20.0	$1.0000	$10.00
1	3	200	227	High Efficiency Gas Furnace/Boiler	0.14	0.14		13.20%		20.0	$0.2648	$0.81

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	3	200	228	Stack Heat Exchanger	0.14	0.14	86.00%	4.76%	50.00%	20.0	$0.1194	$0.00
1	3	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.54	0.54	100.00%	0.00%	100.00%	15.0	$0.1640	$0.16
1	3	400	401	Hot Water (SHW) Pipe Insulation	0.54	0.54	74.60%	3.00%	50.00%	15.0	$0.0255	$0.05
1	3	400	403	Water Heater Tank Blanket/Insulation	0.54	0.54	86.30%	5.00%	95.00%	15.0	$0.0357	$0.01
1	3	400	404	Tankless Water Heater	0.54	0.54	100.00%	10.00%	10.00%	15.0	$0.1590	$0.16
1	3	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.54	0.54	54.20%	5.00%	95.00%	15.0	$0.2860	$0.16
1	3	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.54	0.54	54.20%	20.00%	95.00%	15.0	$0.4460	$0.16
1	4	100	100	Base Cooking	0.67	0.67	100.00%	0.00%	100.00%	15.0	$0.5229	$0.52
1	4	100	102	High-Efficiency Convection Oven	0.67	0.67		9.00%		15.0	$0.4392	$0.52
1	4	100	103	Efficient Infrared Griddle	0.67	0.67	80.00%	3.00%	75.00%	15.0	$0.1263	$0.52
1	4	100	104	Infrared Fryer	0.67	0.67	80.00%	3.00%	75.00%	15.0	$0.1794	$0.52
1	4	100	105	Power Burner Oven	0.67	0.67	80.00%	4.26%	75.00%	15.0	$0.5341	$0.52
1	4	100	106	Power Burner Fryer	0.67	0.67	80.00%	4.26%	75.00%	15.0	$0.2138	$0.52
1	4	100	107	Infrared Conveyer Oven	0.67	0.67	90.00%	3.00%	75.00%	15.0	$0.5726	$0.52
1	4	200	200	Base Heating	0.20	0.20	100.00%	0.00%	100.00%	20.0	$0.3388	$0.34
1	4	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.20	0.20	100.00%	6.35%	75.00%	60.0	$0.0278	$0.82
1	4	200	202	Insulation (ceiling)	0.20	0.20	85.03%	11.27%	50.00%	20.0	$0.4811	$19.64
1	4	200	203	Insulation (wall)	0.20	0.20	85.03%	20.00%	50.00%	20.0	$0.5400	$19.64
1	4	200	206	Duct Repair and Sealing	0.20	0.20	50.00%	2.00%	25.00%	20.0	$0.0053	$0.66
1	4	200	207	Duct Insulation	0.20	0.20	71.50%	2.00%	25.00%	20.0	$0.0134	$0.66
1	4	200	209	Insulation of Pipes	0.20	0.20	25.00%	2.00%	50.00%	20.0	$0.0236	$1.17
1	4	200	216	Clock / Programmable Thermostat	0.20	0.20	78.37%	2.00%	75.00%	10.0	$0.0008	$0.00
1	4	200	222	Installation of Air Side Heat Recovery Systems	0.20	0.20	76.40%	20.00%	50.00%	20.0	$1.0000	$10.00
1	4	200	227	High Efficiency Gas Furnace/Boiler	0.20	0.20		13.20%		20.0	$0.1101	$0.34
1	4	200	228	Stack Heat Exchanger	0.20	0.20	87.00%	4.76%	50.00%	20.0	$0.0941	$0.00
1	4	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.09	0.09	100.00%	0.00%	100.00%	15.0	$0.0555	$0.06
1	4	400	401	Hot Water (SHW) Pipe Insulation	0.09	0.09	69.50%	3.00%	50.00%	15.0	$0.0093	$0.02
1	4	400	403	Water Heater Tank Blanket/Insulation	0.09	0.09	100.00%	10.00%	95.00%	15.0	$0.0130	$0.00
1	4	400	404	Tankless Water Heater	0.09	0.09	100.00%	10.00%	10.00%	15.0	$0.0538	$0.06
1	4	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.09	0.09	69.30%	5.00%	95.00%	15.0	$0.0968	$0.06
1	4	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.09	0.09	69.30%	20.00%	95.00%	15.0	$0.1509	$0.06
1	5	200	200	Base Heating	0.12	0.12	100.00%	0.00%	100.00%	20.0	$0.2472	$0.25
1	5	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.12	0.12	100.00%	1.00%	75.00%	60.0	$0.0116	$0.34
1	5	200	202	Insulation (ceiling)	0.12	0.12	33.67%	30.92%	50.00%	20.0	$0.4534	$18.51
1	5	200	203	Insulation (wall)	0.12	0.12	44.52%	20.00%	50.00%	20.0	$0.5090	$18.51
1	5	200	206	Duct Repair and Sealing	0.12	0.12	50.00%	2.00%	25.00%	20.0	$0.0024	$0.31
1	5	200	207	Duct Insulation	0.12	0.12	62.30%	2.00%	25.00%	20.0	$0.0062	$0.31
1	5	200	209	Insulation of Pipes	0.12	0.12	25.00%	2.00%	50.00%	20.0	$0.0112	$0.56
1	5	200	216	Clock / Programmable Thermostat	0.12	0.12	38.41%	2.00%	75.00%	10.0	$0.0008	$0.00
1	5	200	222	Installation of Air Side Heat Recovery Systems	0.12	0.12	69.04%	20.00%	50.00%	20.0	$1.0000	$10.00
1	5	200	227	High Efficiency Gas Furnace/Boiler	0.12	0.12		13.20%		20.0	$0.0804	$0.25
1	5	200	228	Stack Heat Exchanger	0.12	0.12	84.00%	4.76%	50.00%	20.0	$0.0100	$0.00
1	5	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.01	0.01	100.00%	0.00%	100.00%	15.0	$0.0070	$0.01
1	5	400	401	Hot Water (SHW) Pipe Insulation	0.01	0.01	75.80%	3.00%	50.00%	15.0	$0.0017	$0.00

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	5	400	403	Water Heater Tank Blanket/Insulation	0.01	0.01	100.00%	15.00%	95.00%	15.0	$0.0023	$0.00
1	5	400	404	Tankless Water Heater	0.01	0.01	100.00%	10.00%	10.00%	15.0	$0.0068	$0.01
1	5	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.01	0.01	53.90%	5.00%	95.00%	15.0	$0.0122	$0.01
1	5	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.01	0.01	53.90%	20.00%	95.00%	15.0	$0.0190	$0.01
1	6	100	100	Base Cooking	0.03	0.03	100.00%	0.00%	100.00%	15.0	$0.2401	$0.24
1	6	100	102	High-Efficiency Convection Oven	0.03	0.03		14.00%		15.0	$0.2017	$0.24
1	6	100	103	Efficient Infrared Griddle	0.03	0.03	80.00%	3.00%	75.00%	15.0	$0.0580	$0.24
1	6	100	104	Infrared Fryer	0.03	0.03	80.00%	15.00%	75.00%	15.0	$0.0824	$0.24
1	6	100	105	Power Burner Oven	0.03	0.03	80.00%	4.26%	75.00%	15.0	$0.2453	$0.24
1	6	100	106	Power Burner Fryer	0.03	0.03	80.00%	4.26%	75.00%	15.0	$0.0982	$0.24
1	6	100	107	Infrared Conveyer Oven	0.03	0.03	90.00%	5.00%	75.00%	15.0	$0.2629	$0.24
1	6	200	200	Base Heating	0.18	0.18	100.00%	0.00%	100.00%	20.0	$1.2048	$1.20
1	6	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.18	0.18	99.20%	15.00%	75.00%	60.0	$0.0165	$0.48
1	6	200	202	Insulation (ceiling)	0.18	0.18	44.94%	11.04%	50.00%	20.0	$0.4668	$19.05
1	6	200	203	Insulation (wall)	0.18	0.18	47.86%	20.00%	50.00%	20.0	$0.5240	$19.05
1	6	200	206	Duct Repair and Sealing	0.18	0.18	50.00%	2.00%	25.00%	20.0	$0.0027	$0.34
1	6	200	207	Duct Insulation	0.18	0.18	71.80%	2.00%	25.00%	20.0	$0.0069	$0.34
1	6	200	209	Insulation of Pipes	0.18	0.18	25.00%	2.00%	50.00%	20.0	$0.0119	$0.59
1	6	200	212	Boiler Tune-Up	0.18	0.18	90.00%	2.00%	100.00%	2.0	$0.0064	$0.00
1	6	200	216	Clock / Programmable Thermostat	0.18	0.18	49.43%	2.00%	75.00%	10.0	$0.0008	$0.00
1	6	200	218	Installation of Energy Management Systems (EMS)	0.18	0.18	9.59%	10.00%	25.00%	20.0	$0.2900	$20.00
1	6	200	222	Installation of Air Side Heat Recovery Systems	0.18	0.18	58.48%	20.00%	50.00%	20.0	$1.0000	$10.00
1	6	200	227	High Efficiency Gas Furnace/Boiler	0.18	0.18		13.20%		20.0	$0.3916	$1.20
1	6	200	228	Stack Heat Exchanger	0.18	0.18	84.00%	4.76%	50.00%	20.0	$0.0274	$0.00
1	6	300	300	Base Pool Heating	0.17	0.17	100.00%	0.00%	100.00%	10.0	$0.1459	$0.15
1	6	300	301	Installation of Solar Pool/Spa Heating Systems	0.17	0.17	100.00%	15.80%	100.00%	10.0	$0.3050	$0.10
1	6	300	302	Installation of Swimming Pool / Spa Covers	0.17	0.17	29.00%	35.00%	90.00%	5.0	$0.0068	$0.15
1	6	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.18	0.18	100.00%	0.00%	100.00%	15.0	$0.1670	$0.17
1	6	400	401	Hot Water (SHW) Pipe Insulation	0.18	0.18	25.10%	3.00%	50.00%	15.0	$0.0151	$0.03
1	6	400	403	Water Heater Tank Blanket/Insulation	0.18	0.18	100.00%	10.00%	95.00%	15.0	$0.0211	$0.00
1	6	400	404	Tankless Water Heater	0.18	0.18	100.00%	10.00%	10.00%	15.0	$0.1619	$0.17
1	6	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.18	0.18		5.00%		15.0	$0.2913	$0.17
1	6	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.18	0.18		20.00%		15.0	$0.4543	$0.17
1	7	100	100	Base Cooking	0.03	0.03	100.00%	0.00%	100.00%	15.0	$0.1365	$0.14
1	7	100	102	High-Efficiency Convection Oven	0.03	0.03		5.00%		15.0	$0.1147	$0.14
1	7	100	103	Efficient Infrared Griddle	0.03	0.03	80.00%	4.00%	75.00%	15.0	$0.0330	$0.14
1	7	100	104	Infrared Fryer	0.03	0.03	80.00%	15.00%	75.00%	15.0	$0.0468	$0.14
1	7	100	105	Power Burner Oven	0.03	0.03	80.00%	4.26%	75.00%	15.0	$0.1394	$0.14
1	7	100	106	Power Burner Fryer	0.03	0.03	80.00%	4.26%	75.00%	15.0	$0.0558	$0.14
1	7	100	107	Infrared Conveyer Oven	0.03	0.03	90.00%	15.00%	75.00%	15.0	$0.1495	$0.14
1	7	200	200	Base Heating	0.26	0.26	100.00%	0.00%	100.00%	20.0	$0.4557	$0.46
1	7	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.26	0.26	99.00%	15.00%	75.00%	60.0	$0.0425	$1.25
1	7	200	202	Insulation (ceiling)	0.26	0.26	18.79%	10.00%	50.00%	20.0	$0.2951	$12.04
1	7	200	203	Insulation (wall)	0.26	0.26	18.79%	20.00%	50.00%	20.0	$0.3312	$12.04

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	7	200	206	Duct Repair and Sealing	0.26	0.26	50.00%	2.00%	25.00%	20.0	$0.0023	$0.29
1	7	200	207	Duct Insulation	0.26	0.26	73.80%	2.00%	25.00%	20.0	$0.0059	$0.29
1	7	200	209	Insulation of Pipes	0.26	0.26	25.00%	2.00%	50.00%	20.0	$0.0044	$0.22
1	7	200	212	Boiler Tune-Up	0.26	0.26	90.00%	2.00%	100.00%	2.0	$0.0015	$0.00
1	7	200	216	Clock / Programmable Thermostat	0.26	0.26	49.00%	2.00%	75.00%	10.0	$0.0008	$0.00
1	7	200	218	Installation of Energy Management Systems (EMS)	0.26	0.26	23.20%	10.00%	25.00%	20.0	$0.2900	$20.00
1	7	200	222	Installation of Air Side Heat Recovery Systems	0.26	0.26	90.00%	20.00%	50.00%	20.0	$1.0000	$10.00
1	7	200	227	High Efficiency Gas Furnace/Boiler	0.26	0.26		13.20%		20.0	$0.1481	$0.46
1	7	200	228	Stack Heat Exchanger	0.26	0.26	81.00%	4.71%	50.00%	20.0	$0.0065	$0.00
1	7	300	300	Base Pool Heating	0.14	0.14	100.00%	0.00%	100.00%	10.0	$0.1152	$0.12
1	7	300	301	Installation of Solar Pool/Spa Heating Systems	0.14	0.14	100.00%	15.80%	100.00%	10.0	$0.1969	$0.07
1	7	300	302	Installation of Swimming Pool / Spa Covers	0.14	0.14	25.00%	35.00%	90.00%	5.0	$0.0054	$0.12
1	7	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.48	0.48	100.00%	0.00%	100.00%	15.0	$0.2968	$0.30
1	7	400	401	Hot Water (SHW) Pipe Insulation	0.48	0.48	2.00%	3.00%	50.00%	15.0	$0.0254	$0.05
1	7	400	403	Water Heater Tank Blanket/Insulation	0.48	0.48	50.00%	5.00%	95.00%	15.0	$0.0355	$0.01
1	7	400	404	Tankless Water Heater	0.48	0.48	100.00%	10.00%	10.00%	15.0	$0.2877	$0.30
1	7	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.48	0.48		5.00%		15.0	$0.5176	$0.30
1	7	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.48	0.48		20.00%		15.0	$0.8071	$0.30
1	8	100	100	Base Cooking	0.09	0.09	100.00%	0.00%	100.00%	15.0	$0.0914	$0.09
1	8	100	102	High-Efficiency Convection Oven	0.09	0.09		7.00%		15.0	$0.0768	$0.09
1	8	100	103	Efficient Infrared Griddle	0.09	0.09	80.00%	3.00%	75.00%	15.0	$0.0221	$0.09
1	8	100	104	Infrared Fryer	0.09	0.09	80.00%	15.00%	75.00%	15.0	$0.0314	$0.09
1	8	100	105	Power Burner Oven	0.09	0.09	80.00%	4.26%	75.00%	15.0	$0.0934	$0.09
1	8	100	106	Power Burner Fryer	0.09	0.09	80.00%	4.26%	75.00%	15.0	$0.0374	$0.09
1	8	100	107	Infrared Conveyer Oven	0.09	0.09	90.00%	15.00%	75.00%	15.0	$0.1001	$0.09
1	8	200	200	Base Heating	0.47	0.47	100.00%	0.00%	100.00%	20.0	$0.4000	$0.40
1	8	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.47	0.47	99.30%	15.00%	75.00%	60.0	$0.0137	$0.40
1	8	200	202	Insulation (ceiling)	0.47	0.47	21.53%	10.00%	50.00%	20.0	$0.4277	$17.46
1	8	200	203	Insulation (wall)	0.47	0.47	21.53%	20.00%	50.00%	20.0	$0.4800	$17.46
1	8	200	206	Duct Repair and Sealing	0.47	0.47	50.00%	2.00%	25.00%	20.0	$0.0023	$0.28
1	8	200	207	Duct Insulation	0.47	0.47	70.30%	2.00%	25.00%	20.0	$0.0058	$0.28
1	8	200	209	Insulation of Pipes	0.47	0.47	25.00%	2.00%	50.00%	20.0	$0.0175	$0.87
1	8	200	212	Boiler Tune-Up	0.47	0.47	90.00%	2.00%	100.00%	2.0	$0.0034	$0.00
1	8	200	216	Clock / Programmable Thermostat	0.47	0.47	49.00%	2.00%	75.00%	10.0	$0.0008	$0.00
1	8	200	218	Installation of Energy Management Systems (EMS)	0.47	0.47	74.60%	10.00%	25.00%	20.0	$0.2900	$20.00
1	8	200	222	Installation of Air Side Heat Recovery Systems	0.47	0.47	90.00%	20.00%	50.00%	20.0	$1.0000	$10.00
1	8	200	227	High Efficiency Gas Furnace/Boiler	0.47	0.47		13.20%		20.0	$0.1300	$0.40
1	8	200	228	Stack Heat Exchanger	0.47	0.47	79.00%	4.69%	50.00%	20.0	$0.0145	$0.00
1	8	300	300	Base Pool Heating	0.03	0.03	100.00%	0.00%	100.00%	10.0	$0.0243	$0.02
1	8	300	301	Installation of Solar Pool/Spa Heating Systems	0.03	0.03	100.00%	15.80%	100.00%	10.0	$0.0235	$0.01
1	8	300	302	Installation of Swimming Pool / Spa Covers	0.03	0.03	50.00%	35.00%	90.00%	5.0	$0.0011	$0.02
1	8	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.71	0.71	100.00%	0.00%	100.00%	15.0	$0.2609	$0.26
1	8	400	401	Hot Water (SHW) Pipe Insulation	0.71	0.71	32.50%	3.00%	50.00%	15.0	$0.0093	$0.02
1	8	400	403	Water Heater Tank Blanket/Insulation	0.71	0.71	50.00%	5.00%	95.00%	15.0	$0.0448	$0.01

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	8	400	404	Tankless Water Heater	0.71	0.71	91.80%	10.00%	10.00%	15.0	$0.2529	$0.26
1	8	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.71	0.71		5.00%		15.0	$0.4550	$0.26
1	8	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.71	0.71		20.00%		15.0	$0.7095	$0.26
1	9	100	100	Base Cooking	0.11	0.11	100.00%	0.00%	100.00%	15.0	$0.1070	$0.11
1	9	100	102	High-Efficiency Convection Oven	0.11	0.11		6.00%		15.0	$0.0899	$0.11
1	9	100	103	Efficient Infrared Griddle	0.11	0.11	80.00%	3.00%	75.00%	15.0	$0.0259	$0.11
1	9	100	104	Infrared Fryer	0.11	0.11	80.00%	15.00%	75.00%	15.0	$0.0367	$0.11
1	9	100	105	Power Burner Oven	0.11	0.11	80.00%	4.26%	75.00%	15.0	$0.1093	$0.11
1	9	100	106	Power Burner Fryer	0.11	0.11	80.00%	4.26%	75.00%	15.0	$0.0438	$0.11
1	9	100	107	Infrared Conveyer Oven	0.11	0.11	90.00%	5.00%	75.00%	15.0	$0.1172	$0.11
1	9	200	200	Base Heating	0.08	0.08	100.00%	0.00%	100.00%	20.0	$0.2971	$0.30
1	9	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.08	0.08	97.50%	30.00%	75.00%	60.0	$0.0643	$1.89
1	9	200	202	Insulation (ceiling)	0.08	0.08	62.26%	10.00%	50.00%	20.0	$0.2111	$8.61
1	9	200	203	Insulation (wall)	0.08	0.08	100.00%	20.00%	50.00%	20.0	$0.2369	$8.61
1	9	200	206	Duct Repair and Sealing	0.08	0.08	50.00%	2.00%	25.00%	20.0	$0.0050	$0.63
1	9	200	207	Duct Insulation	0.08	0.08	79.10%	2.00%	25.00%	20.0	$0.0127	$0.63
1	9	200	209	Insulation of Pipes	0.08	0.08	25.00%	2.00%	50.00%	20.0	$0.0099	$0.49
1	9	200	212	Boiler Tune-Up	0.08	0.08	90.00%	2.00%	100.00%	2.0	$0.0029	$0.00
1	9	200	213	Occupancy Sensor for room HVAC units	0.08	0.08	100.00%	35.00%	51.00%	15.0	$0.0440	$8.61
1	9	200	216	Clock / Programmable Thermostat	0.08	0.08	33.66%	2.00%	75.00%	10.0	$0.0008	$0.00
1	9	200	218	Installation of Energy Management Systems (EMS)	0.08	0.08	57.28%	10.00%	25.00%	20.0	$0.2900	$20.00
1	9	200	222	Installation of Air Side Heat Recovery Systems	0.08	0.08	49.56%	20.00%	50.00%	20.0	$1.0000	$10.00
1	9	200	227	High Efficiency Gas Furnace/Boiler	0.08	0.08		13.20%		20.0	$0.0965	$0.30
1	9	200	228	Stack Heat Exchanger	0.08	0.08	85.00%	4.63%	50.00%	20.0	$0.0123	$0.00
1	9	300	300	Base Pool Heating	0.11	0.11	100.00%	0.00%	100.00%	10.0	$0.0946	$0.09
1	9	300	301	Installation of Solar Pool/Spa Heating Systems	0.11	0.11	100.00%	15.80%	100.00%	10.0	$0.0728	$0.02
1	9	300	302	Installation of Swimming Pool / Spa Covers	0.11	0.11	80.00%	35.00%	90.00%	5.0	$0.0044	$0.09
1	9	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.37	0.37	100.00%	0.00%	100.00%	15.0	$0.2292	$0.23
1	9	400	401	Hot Water (SHW) Pipe Insulation	0.37	0.37	49.00%	3.00%	50.00%	15.0	$0.0346	$0.07
1	9	400	403	Water Heater Tank Blanket/Insulation	0.37	0.37	97.77%	5.00%	95.00%	15.0	$0.0484	$0.01
1	9	400	404	Tankless Water Heater	0.37	0.37	100.00%	10.00%	10.00%	15.0	$0.2222	$0.23
1	9	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.37	0.37		5.00%		15.0	$0.3996	$0.23
1	9	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.37	0.37		20.00%		15.0	$0.6232	$0.23
1	10	200	200	Base Heating	0.23	0.23	100.00%	0.00%	100.00%	20.0	$0.5056	$0.51
1	10	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.23	0.23	98.90%	6.40%	75.00%	60.0	$0.0193	$0.57
1	10	200	202	Insulation (ceiling)	0.23	0.23	14.47%	10.00%	50.00%	20.0	$0.4411	$18.00
1	10	200	203	Insulation (wall)	0.23	0.23	63.74%	20.00%	50.00%	20.0	$0.4951	$18.00
1	10	200	206	Duct Repair and Sealing	0.23	0.23	50.00%	2.00%	25.00%	20.0	$0.0050	$0.63
1	10	200	207	Duct Insulation	0.23	0.23	83.40%	2.00%	25.00%	20.0	$0.0127	$0.63
1	10	200	209	Insulation of Pipes	0.23	0.23	25.00%	2.00%	50.00%	20.0	$0.0237	$1.17
1	10	200	212	Boiler Tune-Up	0.23	0.23	90.00%	2.00%	100.00%	2.0	$0.0043	$0.00
1	10	200	216	Clock / Programmable Thermostat	0.23	0.23	41.94%	2.00%	75.00%	10.0	$0.0008	$0.00
1	10	200	218	Installation of Energy Management Systems (EMS)	0.23	0.23	17.11%	10.00%	25.00%	20.0	$0.2900	$20.00
1	10	200	222	Installation of Air Side Heat Recovery Systems	0.23	0.23	50.00%	20.00%	50.00%	20.0	$1.0000	$10.00

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
1	10	200	227	High Efficiency Gas Furnace/Boiler	0.23	0.23		13.20%		20.0	$0.1643	$0.51
1	10	200	228	Stack Heat Exchanger	0.23	0.23	84.00%	5.00%	50.00%	20.0	$0.0186	$0.00
1	10	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.37	0.37	100.00%	0.00%	100.00%	15.0	$0.2239	$0.22
1	10	400	401	Hot Water (SHW) Pipe Insulation	0.37	0.37	58.80%	3.00%	50.00%	15.0	$0.0094	$0.02
1	10	400	403	Water Heater Tank Blanket/Insulation	0.37	0.37	39.91%	10.00%	95.00%	15.0	$0.0131	$0.00
1	10	400	404	Tankless Water Heater	0.37	0.37	100.00%	10.00%	10.00%	15.0	$0.2170	$0.22
1	10	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.37	0.37		5.00%		15.0	$0.3904	$0.22
1	10	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.37	0.37		20.00%		15.0	$0.6088	$0.22
2	1	200	200	Base Heating	0.18	0.18	100.00%	0.00%	100.00%	20.0	$0.2807	$0.30
2	1	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.18	0.18	98.00%	20.00%	75.00%	60.0	$0.0570	$1.75
2	1	200	202	Insulation (ceiling)	0.18	0.18	12.95%	5.31%	75.00%	20.0	$0.3120	$13.27
2	1	200	203	Insulation (wall)	0.18	0.18	84.12%	10.00%	50.00%	20.0	$0.3518	$13.27
2	1	200	209	Insulation of Pipes	0.18	0.18	25.00%	1.00%	100.00%	20.0	$0.0137	$0.74
2	1	200	212	Boiler Tune-Up	0.18	0.18	10.00%	1.00%	100.00%	2.0	$0.0018	$0.00
2	1	200	216	Clock / Programmable Thermostat	0.18	0.18	48.81%	0.50%	75.00%	10.0	$0.0005	$0.00
2	1	200	218	Installation of Energy Management Systems (EMS)	0.18	0.18	52.58%	7.00%	25.00%	20.0	$0.2500	$20.00
2	1	200	222	Installation of Air Side Heat Recovery Systems	0.18	0.18	80.00%	15.00%	75.00%	20.0	$0.9300	$10.00
2	1	200	227	High Efficiency Gas Furnace/Boiler	0.18	0.18		13.20%		20.0	$0.0960	$0.30
2	1	200	228	Stack Heat Exchanger	0.18	0.18	84.00%	4.00%	50.00%	20.0	$0.0083	$0.00
2	1	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.06	0.06	100.00%	0.00%	100.00%	15.0	$0.0362	$0.04
2	1	400	401	Hot Water (SHW) Pipe Insulation	0.06	0.06	50.30%	2.00%	50.00%	15.0	$0.0037	$0.01
2	1	400	403	Water Heater Tank Blanket/Insulation	0.06	0.06	88.76%	12.00%	95.00%	15.0	$0.0046	$0.00
2	1	400	404	Tankless Water Heater	0.06	0.06	100.00%	8.00%	10.00%	15.0	$0.0351	$0.04
2	1	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.06	0.06		5.00%		15.0	$0.0632	$0.04
2	1	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.06	0.06		20.00%		15.0	$0.0985	$0.04
2	2	200	200	Base Heating	0.12	0.12	100.00%	0.00%	100.00%	20.0	$0.2928	$0.31
2	2	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.12	0.12	99.80%	10.22%	75.00%	60.0	$0.0185	$0.57
2	2	200	202	Insulation (ceiling)	0.12	0.12	75.43%	8.00%	50.00%	20.0	$0.4300	$18.30
2	2	200	203	Insulation (wall)	0.12	0.12	72.21%	10.00%	50.00%	20.0	$0.4849	$18.30
2	2	200	209	Insulation of Pipes	0.12	0.12	25.00%	1.00%	100.00%	20.0	$0.0188	$1.01
2	2	200	216	Clock / Programmable Thermostat	0.12	0.12	79.02%	0.50%	75.00%	10.0	$0.0005	$0.00
2	2	200	222	Installation of Air Side Heat Recovery Systems	0.12	0.12	80.00%	15.00%	50.00%	20.0	$0.9300	$10.00
2	2	200	227	High Efficiency Gas Furnace/Boiler	0.12	0.12		13.20%		20.0	$0.1002	$0.31
2	2	200	228	Stack Heat Exchanger	0.12	0.12	85.00%	4.00%	50.00%	20.0	$0.0265	$0.00
2	2	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.19	0.19	100.00%	0.00%	100.00%	15.0	$0.1133	$0.12
2	2	400	401	Hot Water (SHW) Pipe Insulation	0.19	0.19	73.40%	2.00%	50.00%	15.0	$0.0222	$0.05
2	2	400	403	Water Heater Tank Blanket/Insulation	0.19	0.19	75.87%	12.00%	95.00%	15.0	$0.0281	$0.00
2	2	400	404	Tankless Water Heater	0.19	0.19	100.00%	8.00%	10.00%	15.0	$0.1096	$0.12
2	2	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.19	0.19		5.00%		15.0	$0.1975	$0.12
2	2	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.19	0.19		20.00%		15.0	$0.3078	$0.12
2	3	100	100	Base Cooking	1.72	1.72	100.00%	0.00%	100.00%	15.0	$1.9256	$1.93
2	3	100	102	High-Efficiency Convection Oven	1.72	1.72		6.00%		15.0	$1.6175	$1.93
2	3	100	103	Efficient Infrared Griddle	1.72	1.72	80.00%	7.00%	80.00%	15.0	$0.4652	$1.93
2	3	100	104	Infrared Fryer	1.72	1.72	80.00%	15.00%	80.00%	15.0	$0.6608	$1.93

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	3	100	105	Power Burner Oven	1.72	1.72	80.00%	4.26%	80.00%	15.0	$1.9670	$1.93
2	3	100	106	Power Burner Fryer	1.72	1.72	80.00%	4.26%	80.00%	15.0	$0.7873	$1.93
2	3	100	107	Infrared Conveyer Oven	1.72	1.72	90.00%	15.00%	80.00%	15.0	$2.1088	$1.93
2	3	200	200	Base Heating	0.14	0.14	100.00%	0.00%	100.00%	20.0	$0.7740	$0.81
2	3	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.14	0.14	100.00%	2.78%	50.00%	60.0	$0.0299	$0.92
2	3	200	202	Insulation (ceiling)	0.14	0.14	55.72%	6.40%	50.00%	20.0	$0.4520	$19.24
2	3	200	203	Insulation (wall)	0.14	0.14	93.11%	10.00%	50.00%	20.0	$0.5098	$19.24
2	3	200	209	Insulation of Pipes	0.14	0.14	25.00%	1.00%	100.00%	20.0	$0.0289	$1.56
2	3	200	216	Clock / Programmable Thermostat	0.14	0.14	50.25%	0.50%	75.00%	10.0	$0.0005	$0.00
2	3	200	222	Installation of Air Side Heat Recovery Systems	0.14	0.14	78.34%	15.00%	50.00%	20.0	$0.9300	$10.00
2	3	200	227	High Efficiency Gas Furnace/Boiler	0.14	0.14		13.20%		20.0	$0.2648	$0.81
2	3	200	228	Stack Heat Exchanger	0.14	0.14	86.00%	4.00%	50.00%	20.0	$0.1064	$0.00
2	3	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.54	0.54	100.00%	0.00%	100.00%	15.0	$0.1560	$0.16
2	3	400	401	Hot Water (SHW) Pipe Insulation	0.54	0.54	74.60%	2.00%	50.00%	15.0	$0.0239	$0.05
2	3	400	403	Water Heater Tank Blanket/Insulation	0.54	0.54	86.30%	5.00%	95.00%	15.0	$0.0303	$0.01
2	3	400	404	Tankless Water Heater	0.54	0.54	100.00%	8.00%	10.00%	15.0	$0.1510	$0.16
2	3	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.54	0.54		5.00%		15.0	$0.2720	$0.16
2	3	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.54	0.54		20.00%		15.0	$0.4240	$0.16
2	4	100	100	Base Cooking	0.67	0.67	100.00%	0.00%	100.00%	15.0	$0.5229	$0.52
2	4	100	102	High-Efficiency Convection Oven	0.67	0.67		7.00%		15.0	$0.4392	$0.52
2	4	100	103	Efficient Infrared Griddle	0.67	0.67	80.00%	1.00%	60.00%	15.0	$0.1263	$0.52
2	4	100	104	Infrared Fryer	0.67	0.67	80.00%	1.00%	60.00%	15.0	$0.1794	$0.52
2	4	100	105	Power Burner Oven	0.67	0.67	80.00%	2.00%	60.00%	15.0	$0.5341	$0.52
2	4	100	106	Power Burner Fryer	0.67	0.67	80.00%	2.00%	60.00%	15.0	$0.2138	$0.52
2	4	100	107	Infrared Conveyer Oven	0.67	0.67	90.00%	1.00%	60.00%	15.0	$0.5726	$0.52
2	4	200	200	Base Heating	0.20	0.20	100.00%	0.00%	100.00%	20.0	$0.3218	$0.34
2	4	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.20	0.20	100.00%	6.35%	75.00%	60.0	$0.0266	$0.82
2	4	200	202	Insulation (ceiling)	0.20	0.20	85.03%	5.00%	50.00%	20.0	$0.4615	$19.64
2	4	200	203	Insulation (wall)	0.20	0.20	85.03%	10.00%	50.00%	20.0	$0.5204	$19.64
2	4	200	209	Insulation of Pipes	0.20	0.20	25.00%	1.00%	100.00%	20.0	$0.0216	$1.17
2	4	200	216	Clock / Programmable Thermostat	0.20	0.20	78.37%	0.50%	75.00%	10.0	$0.0005	$0.00
2	4	200	222	Installation of Air Side Heat Recovery Systems	0.20	0.20	76.40%	15.00%	50.00%	20.0	$0.9300	$10.00
2	4	200	227	High Efficiency Gas Furnace/Boiler	0.20	0.20		13.20%		20.0	$0.1101	$0.34
2	4	200	228	Stack Heat Exchanger	0.20	0.20	87.00%	4.00%	50.00%	20.0	$0.0839	$0.00
2	4	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.09	0.09	100.00%	0.00%	100.00%	15.0	$0.0528	$0.06
2	4	400	401	Hot Water (SHW) Pipe Insulation	0.09	0.09	69.50%	2.00%	50.00%	15.0	$0.0087	$0.02
2	4	400	403	Water Heater Tank Blanket/Insulation	0.09	0.09	100.00%	8.00%	95.00%	15.0	$0.0110	$0.00
2	4	400	404	Tankless Water Heater	0.09	0.09	100.00%	8.00%	10.00%	15.0	$0.0511	$0.06
2	4	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.09	0.09		5.00%		15.0	$0.0920	$0.06
2	4	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.09	0.09		20.00%		15.0	$0.1435	$0.06
2	5	200	200	Base Heating	0.12	0.12	100.00%	0.00%	100.00%	20.0	$0.2349	$0.25
2	5	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.12	0.12	100.00%	1.00%	75.00%	60.0	$0.0111	$0.34
2	5	200	202	Insulation (ceiling)	0.12	0.12	33.67%	15.00%	50.00%	20.0	$0.4349	$18.51
2	5	200	203	Insulation (wall)	0.12	0.12	44.52%	10.00%	50.00%	20.0	$0.4905	$18.51

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	5	200	209	Insulation of Pipes	0.12	0.12	25.00%	1.00%	100.00%	20.0	$0.0103	$0.56
2	5	200	216	Clock / Programmable Thermostat	0.12	0.12	38.41%	0.50%	75.00%	10.0	$0.0005	$0.00
2	5	200	222	Installation of Air Side Heat Recovery Systems	0.12	0.12	69.04%	15.00%	50.00%	20.0	$0.9300	$10.00
2	5	200	227	High Efficiency Gas Furnace/Boiler	0.12	0.12		13.20%		20.0	$0.0804	$0.25
2	5	200	228	Stack Heat Exchanger	0.12	0.12	84.00%	4.00%	50.00%	20.0	$0.0089	$0.00
2	5	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.01	0.01	100.00%	0.00%	100.00%	15.0	$0.0067	$0.01
2	5	400	401	Hot Water (SHW) Pipe Insulation	0.01	0.01	75.80%	2.00%	50.00%	15.0	$0.0016	$0.00
2	5	400	403	Water Heater Tank Blanket/Insulation	0.01	0.01	100.00%	15.00%	95.00%	15.0	$0.0020	$0.00
2	5	400	404	Tankless Water Heater	0.01	0.01	100.00%	8.00%	10.00%	15.0	$0.0064	$0.01
2	5	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.01	0.01		5.00%		15.0	$0.0116	$0.01
2	5	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.01	0.01		20.00%		15.0	$0.0181	$0.01
2	6	100	100	Base Cooking	0.03	0.03	100.00%	0.00%	100.00%	15.0	$0.2401	$0.24
2	6	100	102	High-Efficiency Convection Oven	0.03	0.03		14.00%		15.0	$0.2017	$0.24
2	6	100	103	Efficient Infrared Griddle	0.03	0.03	80.00%	3.00%	60.00%	15.0	$0.0580	$0.24
2	6	100	104	Infrared Fryer	0.03	0.03	80.00%	15.00%	60.00%	15.0	$0.0824	$0.24
2	6	100	105	Power Burner Oven	0.03	0.03	80.00%	4.26%	60.00%	15.0	$0.2453	$0.24
2	6	100	106	Power Burner Fryer	0.03	0.03	80.00%	4.26%	60.00%	15.0	$0.0982	$0.24
2	6	100	107	Infrared Conveyer Oven	0.03	0.03	90.00%	5.00%	60.00%	15.0	$0.2629	$0.24
2	6	200	200	Base Heating	0.18	0.18	100.00%	0.00%	100.00%	20.0	$1.1446	$1.20
2	6	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.18	0.18	99.20%	6.00%	75.00%	60.0	$0.0157	$0.48
2	6	200	202	Insulation (ceiling)	0.18	0.18	44.94%	5.00%	50.00%	20.0	$0.4478	$19.05
2	6	200	203	Insulation (wall)	0.18	0.18	47.86%	10.00%	50.00%	20.0	$0.5050	$19.05
2	6	200	209	Insulation of Pipes	0.18	0.18	25.00%	1.00%	100.00%	20.0	$0.0109	$0.59
2	6	200	212	Boiler Tune-Up	0.18	0.18	10.00%	1.00%	100.00%	2.0	$0.0053	$0.00
2	6	200	216	Clock / Programmable Thermostat	0.18	0.18	49.43%	0.50%	75.00%	10.0	$0.0005	$0.00
2	6	200	218	Installation of Energy Management Systems (EMS)	0.18	0.18	9.59%	7.00%	25.00%	20.0	$0.2500	$20.00
2	6	200	222	Installation of Air Side Heat Recovery Systems	0.18	0.18	58.48%	15.00%	50.00%	20.0	$0.9300	$10.00
2	6	200	227	High Efficiency Gas Furnace/Boiler	0.18	0.18		13.20%		20.0	$0.3916	$1.20
2	6	200	228	Stack Heat Exchanger	0.18	0.18	84.00%	4.00%	50.00%	20.0	$0.0244	$0.00
2	6	300	300	Base Pool Heating	0.03	0.03	100.00%	0.00%	100.00%	10.0	$0.1459	$0.15
2	6	300	301	Installation of Solar Pool/Spa Heating Systems	0.03	0.03	100.00%	15.80%	100.00%	10.0	$0.3026	$0.10
2	6	300	302	Installation of Swimming Pool / Spa Covers	0.03	0.03	29.00%	35.00%	90.00%	5.0	$0.0061	$0.15
2	6	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.18	0.18	100.00%	0.00%	100.00%	15.0	$0.1589	$0.17
2	6	400	401	Hot Water (SHW) Pipe Insulation	0.18	0.18	25.10%	2.00%	50.00%	15.0	$0.0141	$0.03
2	6	400	403	Water Heater Tank Blanket/Insulation	0.18	0.18	100.00%	8.00%	95.00%	15.0	$0.0179	$0.00
2	6	400	404	Tankless Water Heater	0.18	0.18	100.00%	8.00%	10.00%	15.0	$0.1538	$0.17
2	6	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.18	0.18		5.00%		15.0	$0.2770	$0.17
2	6	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.18	0.18		20.00%		15.0	$0.4318	$0.17
2	7	100	100	Base Cooking	0.03	0.03	100.00%	0.00%	100.00%	15.0	$0.1365	$0.14
2	7	100	102	High-Efficiency Convection Oven	0.03	0.03		5.00%		15.0	$0.1147	$0.14
2	7	100	103	Efficient Infrared Griddle	0.03	0.03	80.00%	4.00%	60.00%	15.0	$0.0330	$0.14
2	7	100	104	Infrared Fryer	0.03	0.03	80.00%	15.00%	60.00%	15.0	$0.0468	$0.14
2	7	100	105	Power Burner Oven	0.03	0.03	80.00%	4.26%	60.00%	15.0	$0.1394	$0.14
2	7	100	106	Power Burner Fryer	0.03	0.03	80.00%	4.26%	60.00%	15.0	$0.0558	$0.14

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	7	100	107	Infrared Conveyer Oven	0.03	0.03	90.00%	15.00%	60.00%	15.0	$0.1495	$0.14
2	7	200	200	Base Heating	0.26	0.26	100.00%	0.00%	100.00%	20.0	$0.4329	$0.46
2	7	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.26	0.26	99.00%	6.00%	75.00%	60.0	$0.0406	$1.25
2	7	200	202	Insulation (ceiling)	0.26	0.26	18.79%	2.99%	50.00%	20.0	$0.2830	$12.04
2	7	200	203	Insulation (wall)	0.26	0.26	18.79%	10.00%	50.00%	20.0	$0.3191	$12.04
2	7	200	209	Insulation of Pipes	0.26	0.26	25.00%	1.00%	100.00%	20.0	$0.0040	$0.22
2	7	200	212	Boiler Tune-Up	0.26	0.26	10.00%	1.00%	100.00%	2.0	$0.0013	$0.00
2	7	200	216	Clock / Programmable Thermostat	0.26	0.26	49.00%	0.50%	75.00%	10.0	$0.0005	$0.00
2	7	200	218	Installation of Energy Management Systems (EMS)	0.26	0.26	23.20%	7.00%	25.00%	20.0	$0.2500	$20.00
2	7	200	222	Installation of Air Side Heat Recovery Systems	0.26	0.26	80.00%	15.00%	50.00%	20.0	$0.9300	$10.00
2	7	200	227	High Efficiency Gas Furnace/Boiler	0.26	0.26		13.20%		20.0	$0.1481	$0.46
2	7	200	228	Stack Heat Exchanger	0.26	0.26	81.00%	4.00%	50.00%	20.0	$0.0058	$0.00
2	7	300	300	Base Pool Heating	0.05	0.05	100.00%	0.00%	100.00%	10.0	$0.1152	$0.12
2	7	300	301	Installation of Solar Pool/Spa Heating Systems	0.05	0.05	100.00%	15.80%	100.00%	10.0	$0.1954	$0.07
2	7	300	302	Installation of Swimming Pool / Spa Covers	0.05	0.05	25.00%	35.00%	90.00%	5.0	$0.0048	$0.12
2	7	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.48	0.48	100.00%	0.00%	100.00%	15.0	$0.2823	$0.30
2	7	400	401	Hot Water (SHW) Pipe Insulation	0.48	0.48	2.00%	2.00%	50.00%	15.0	$0.0238	$0.05
2	7	400	403	Water Heater Tank Blanket/Insulation	0.48	0.48	50.00%	5.00%	95.00%	15.0	$0.0301	$0.01
2	7	400	404	Tankless Water Heater	0.48	0.48	100.00%	8.00%	10.00%	15.0	$0.2733	$0.30
2	7	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.48	0.48		5.00%		15.0	$0.4922	$0.30
2	7	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.48	0.48		20.00%		15.0	$0.7673	$0.30
2	8	100	100	Base Cooking	0.09	0.09	100.00%	0.00%	100.00%	15.0	$0.0914	$0.09
2	8	100	102	High-Efficiency Convection Oven	0.09	0.09		7.00%		15.0	$0.0768	$0.09
2	8	100	103	Efficient Infrared Griddle	0.09	0.09	80.00%	3.00%	60.00%	15.0	$0.0221	$0.09
2	8	100	104	Infrared Fryer	0.09	0.09	80.00%	15.00%	60.00%	15.0	$0.0314	$0.09
2	8	100	105	Power Burner Oven	0.09	0.09	80.00%	4.26%	60.00%	15.0	$0.0934	$0.09
2	8	100	106	Power Burner Fryer	0.09	0.09	80.00%	4.26%	60.00%	15.0	$0.0374	$0.09
2	8	100	107	Infrared Conveyer Oven	0.09	0.09	90.00%	15.00%	60.00%	15.0	$0.1001	$0.09
2	8	200	200	Base Heating	0.47	0.47	100.00%	0.00%	100.00%	20.0	$0.3800	$0.40
2	8	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.47	0.47	99.30%	6.00%	75.00%	60.0	$0.0131	$0.40
2	8	200	202	Insulation (ceiling)	0.47	0.47	21.53%	3.00%	50.00%	20.0	$0.4102	$17.46
2	8	200	203	Insulation (wall)	0.47	0.47	21.53%	10.00%	50.00%	20.0	$0.4626	$17.46
2	8	200	209	Insulation of Pipes	0.47	0.47	25.00%	1.00%	100.00%	20.0	$0.0160	$0.87
2	8	200	212	Boiler Tune-Up	0.47	0.47	10.00%	1.00%	100.00%	2.0	$0.0028	$0.00
2	8	200	216	Clock / Programmable Thermostat	0.47	0.47	49.00%	0.50%	75.00%	10.0	$0.0005	$0.00
2	8	200	218	Installation of Energy Management Systems (EMS)	0.47	0.47	74.60%	7.00%	25.00%	20.0	$0.2500	$20.00
2	8	200	222	Installation of Air Side Heat Recovery Systems	0.47	0.47	80.00%	15.00%	50.00%	20.0	$0.9300	$10.00
2	8	200	227	High Efficiency Gas Furnace/Boiler	0.47	0.47		13.20%		20.0	$0.1300	$0.40
2	8	200	228	Stack Heat Exchanger	0.47	0.47	79.00%	4.00%	50.00%	20.0	$0.0129	$0.00
2	8	300	300	Base Pool Heating	0.02	0.02	100.00%	0.00%	100.00%	10.0	$0.0243	$0.02
2	8	300	301	Installation of Solar Pool/Spa Heating Systems	0.02	0.02	100.00%	15.80%	100.00%	10.0	$0.0234	$0.01
2	8	300	302	Installation of Swimming Pool / Spa Covers	0.02	0.02	50.00%	35.00%	90.00%	5.0	$0.0010	$0.02
2	8	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.71	0.71	100.00%	0.00%	100.00%	15.0	$0.2482	$0.26
2	8	400	401	Hot Water (SHW) Pipe Insulation	0.71	0.71	32.50%	2.00%	50.00%	15.0	$0.0088	$0.02

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	8	400	403	Water Heater Tank Blanket/Insulation	0.71	0.71	50.00%	5.00%	95.00%	15.0	$0.0380	$0.01
2	8	400	404	Tankless Water Heater	0.71	0.71	91.80%	8.00%	10.00%	15.0	$0.2402	$0.26
2	8	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.71	0.71		5.00%		15.0	$0.4327	$0.26
2	8	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.71	0.71		20.00%		15.0	$0.6745	$0.26
2	9	100	100	Base Cooking	0.11	0.11	100.00%	0.00%	100.00%	15.0	$0.1070	$0.11
2	9	100	102	High-Efficiency Convection Oven	0.11	0.11		6.00%		15.0	$0.0899	$0.11
2	9	100	103	Efficient Infrared Griddle	0.11	0.11	80.00%	3.00%	60.00%	15.0	$0.0259	$0.11
2	9	100	104	Infrared Fryer	0.11	0.11	80.00%	15.00%	60.00%	15.0	$0.0367	$0.11
2	9	100	105	Power Burner Oven	0.11	0.11	80.00%	4.26%	60.00%	15.0	$0.1093	$0.11
2	9	100	106	Power Burner Fryer	0.11	0.11	80.00%	4.26%	60.00%	15.0	$0.0438	$0.11
2	9	100	107	Infrared Conveyer Oven	0.11	0.11	90.00%	5.00%	60.00%	15.0	$0.1172	$0.11
2	9	200	200	Base Heating	0.08	0.08	100.00%	0.00%	100.00%	20.0	$0.2822	$0.30
2	9	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.08	0.08	97.50%	6.00%	75.00%	60.0	$0.0614	$1.89
2	9	200	202	Insulation (ceiling)	0.08	0.08	62.26%	3.00%	50.00%	20.0	$0.2024	$8.61
2	9	200	203	Insulation (wall)	0.08	0.08	100.00%	10.00%	50.00%	20.0	$0.2283	$8.61
2	9	200	209	Insulation of Pipes	0.08	0.08	25.00%	1.00%	100.00%	20.0	$0.0090	$0.49
2	9	200	212	Boiler Tune-Up	0.08	0.08	10.00%	1.00%	100.00%	2.0	$0.0024	$0.00
2	9	200	213	Occupancy Sensor for room HVAC units	0.08	0.08	100.00%	35.00%	51.00%	15.0	$0.0440	$8.61
2	9	200	216	Clock / Programmable Thermostat	0.08	0.08	33.66%	0.50%	75.00%	10.0	$0.0005	$0.00
2	9	200	218	Installation of Energy Management Systems (EMS)	0.08	0.08	57.28%	7.00%	25.00%	20.0	$0.2500	$20.00
2	9	200	222	Installation of Air Side Heat Recovery Systems	0.08	0.08	49.56%	15.00%	50.00%	20.0	$0.9300	$10.00
2	9	200	227	High Efficiency Gas Furnace/Boiler	0.08	0.08		13.20%		20.0	$0.0965	$0.30
2	9	200	228	Stack Heat Exchanger	0.08	0.08	85.00%	4.00%	50.00%	20.0	$0.0110	$0.00
2	9	300	300	Base Pool Heating	0.06	0.06	100.00%	0.00%	100.00%	10.0	$0.0946	$0.09
2	9	300	301	Installation of Solar Pool/Spa Heating Systems	0.06	0.06	100.00%	15.80%	100.00%	10.0	$0.0722	$0.02
2	9	300	302	Installation of Swimming Pool / Spa Covers	0.06	0.06	80.00%	35.00%	90.00%	5.0	$0.0039	$0.09
2	9	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.37	0.37	100.00%	0.00%	100.00%	15.0	$0.2180	$0.23
2	9	400	401	Hot Water (SHW) Pipe Insulation	0.37	0.37	49.00%	2.00%	50.00%	15.0	$0.0324	$0.07
2	9	400	403	Water Heater Tank Blanket/Insulation	0.37	0.37	97.77%	5.00%	95.00%	15.0	$0.0410	$0.01
2	9	400	404	Tankless Water Heater	0.37	0.37	100.00%	8.00%	10.00%	15.0	$0.2110	$0.23
2	9	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.37	0.37		5.00%		15.0	$0.3801	$0.23
2	9	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.37	0.37		20.00%		15.0	$0.5925	$0.23
2	10	200	200	Base Heating	0.23	0.23	100.00%	0.00%	100.00%	20.0	$0.4803	$0.51
2	10	200	201	High Efficiency Windows (Multiple Glazed, Low Emissivity)	0.23	0.23	98.90%	6.40%	75.00%	60.0	$0.0185	$0.57
2	10	200	202	Insulation (ceiling)	0.23	0.23	14.47%	9.54%	50.00%	20.0	$0.4231	$18.00
2	10	200	203	Insulation (wall)	0.23	0.23	63.74%	10.00%	50.00%	20.0	$0.4771	$18.00
2	10	200	209	Insulation of Pipes	0.23	0.23	25.00%	1.00%	100.00%	20.0	$0.0217	$1.17
2	10	200	212	Boiler Tune-Up	0.23	0.23	10.00%	1.00%	100.00%	2.0	$0.0036	$0.00
2	10	200	216	Clock / Programmable Thermostat	0.23	0.23	41.94%	0.50%	75.00%	10.0	$0.0005	$0.00
2	10	200	218	Installation of Energy Management Systems (EMS)	0.23	0.23	17.11%	7.00%	25.00%	20.0	$0.2500	$20.00
2	10	200	222	Installation of Air Side Heat Recovery Systems	0.23	0.23	50.00%	15.00%	50.00%	20.0	$0.9300	$10.00
2	10	200	227	High Efficiency Gas Furnace/Boiler	0.23	0.23		13.20%		20.0	$0.1643	$0.51
2	10	200	228	Stack Heat Exchanger	0.23	0.23	84.00%	4.00%	50.00%	20.0	$0.0166	$0.00
2	10	400	400	Base Water Heating, 100 gal., 88 kBtu, EF=.76	0.37	0.37	100.00%	0.00%	100.00%	15.0	$0.2129	$0.22

Table B.4: Commercial Gas

Segment	Building	Base Number	Measure Number	Measure Name	Stock Usage	Base Usage	Incomplete Factor	Energy Savings	Feasibility Factor	Measure Life	Full Per Unit Cost	Full Base Measure Cost
2	10	400	401	Hot Water (SHW) Pipe Insulation	0.37	0.37	58.80%	2.00%	50.00%	15.0	$0.0088	$0.02
2	10	400	403	Water Heater Tank Blanket/Insulation	0.37	0.37	39.91%	8.00%	95.00%	15.0	$0.0111	$0.00
2	10	400	404	Tankless Water Heater	0.37	0.37	100.00%	8.00%	10.00%	15.0	$0.2061	$0.22
2	10	400	405	High-Efficiency Water Heater (gas), 100 gal., 88 kBTU, EF=.80	0.37	0.37		5.00%		15.0	$0.3713	$0.22
2	10	400	406	High-Efficiency Water Heater (gas), 100 gal., 120 kBTU, EF=.95	0.37	0.37		20.00%		15.0	$0.5788	$0.22

Residential Electric

Residential Electric Sales Forecast (MWh)

Year	Island	Jefferson	King	Kitsap	Kittitas	Pierce	Skagit	Thurston	Whatcom	Total
2005	334,620	182,083	4,648,197	1,249,933	103,362	1,082,143	482,038	1,136,964	736,869	9,956,209
2006	336,439	188,023	4,636,615	1,250,872	105,630	1,103,506	486,163	1,143,897	748,016	9,999,161
2007	337,082	193,435	4,616,750	1,246,209	108,196	1,112,528	487,292	1,154,232	753,497	10,009,222
2008	336,342	197,355	4,624,964	1,236,576	110,407	1,129,011	485,290	1,154,776	751,896	10,026,618
2009	338,836	204,098	4,673,377	1,241,384	113,671	1,159,519	487,620	1,163,102	756,888	10,138,495
2010	343,834	213,519	4,722,675	1,255,623	118,331	1,187,760	494,610	1,187,050	770,915	10,294,319
2011	351,694	221,450	4,760,828	1,289,619	122,859	1,206,691	502,848	1,213,471	785,987	10,455,448
2012	359,285	227,629	4,783,566	1,325,916	127,008	1,229,355	510,629	1,248,179	800,009	10,611,576
2013	365,786	233,305	4,812,145	1,355,777	129,969	1,251,198	518,108	1,278,555	812,811	10,757,655
2014	371,435	238,593	4,853,763	1,382,214	132,237	1,271,376	524,963	1,304,153	825,042	10,903,777
2015	376,855	243,027	4,901,688	1,411,261	134,565	1,288,252	529,287	1,328,738	834,350	11,048,022
2016	382,474	246,816	4,951,058	1,441,699	137,040	1,304,728	532,275	1,355,287	840,844	11,192,221
2017	387,870	250,685	5,004,692	1,470,390	138,451	1,322,794	535,781	1,381,984	847,747	11,340,393
2018	393,148	254,762	5,063,259	1,498,087	138,694	1,342,401	539,896	1,406,685	855,602	11,492,535
2019	398,527	258,930	5,124,363	1,526,665	138,914	1,362,788	544,118	1,430,873	863,792	11,648,970
2020	404,101	263,249	5,186,548	1,556,586	139,243	1,383,788	548,482	1,456,458	872,302	11,810,757
2021	409,926	267,742	5,250,480	1,588,133	139,706	1,405,166	553,029	1,483,341	881,282	11,978,805
2022	415,889	271,637	5,326,860	1,611,236	141,739	1,425,608	561,074	1,504,919	894,102	12,153,063
2023	422,013	275,637	5,405,297	1,634,961	143,826	1,446,599	569,335	1,527,079	907,267	12,332,016
2024	428,326	279,759	5,486,148	1,659,416	145,977	1,468,237	577,851	1,549,921	920,838	12,516,474
2025	434,732	283,944	5,568,209	1,684,237	148,161	1,490,199	586,495	1,573,104	934,612	12,703,692

Residential Electric Customer Count Forecast

Year	Island	Jefferson	King	Kitsap	Kittitas	Pierce	Skagit	Thurston	Whatcom	Total
2005	28,691	14,172	433,055	98,444	8,648	87,434	45,119	95,079	76,828	887,469
2006	29,163	14,794	436,724	99,597	8,937	90,139	46,005	96,708	78,847	900,913
2007	29,657	15,449	441,407	100,716	9,291	92,244	46,806	99,049	80,621	915,242
2008	30,031	15,995	448,783	101,423	9,623	95,005	47,308	100,570	81,648	930,387
2009	30,437	16,642	456,249	102,434	9,968	98,167	47,825	101,910	82,691	946,323
2010	30,964	17,454	462,241	103,871	10,402	100,814	48,634	104,272	84,439	963,090
2011	31,749	18,146	467,140	106,946	10,827	102,676	49,567	106,857	86,304	980,213
2012	32,517	18,700	470,578	110,234	11,218	104,872	50,463	110,192	88,069	996,843
2013	33,186	19,212	474,572	112,994	11,505	107,001	51,329	113,153	89,701	1,012,653
2014	33,770	19,690	479,734	115,446	11,731	108,965	52,123	115,668	91,252	1,028,379
2015	34,349	20,106	485,732	118,169	11,967	110,697	52,688	118,148	92,520	1,044,377
2016	34,952	20,473	492,034	121,044	12,221	112,431	53,135	120,837	93,505	1,060,632
2017	35,532	20,844	498,589	123,754	12,370	114,268	53,617	123,520	94,504	1,076,997
2018	36,090	21,227	505,483	126,349	12,417	116,205	54,142	125,991	95,580	1,093,484
2019	36,651	21,614	512,517	128,993	12,460	118,185	54,665	128,391	96,671	1,110,145
2020	37,223	22,010	519,580	131,734	12,509	120,201	55,193	130,898	97,782	1,127,130
2021	37,813	22,417	526,718	134,591	12,569	122,228	55,728	133,500	98,926	1,144,490
2022	38,517	22,827	533,979	136,765	12,723	124,443	56,480	135,759	100,757	1,162,249
2023	39,048	23,141	541,340	138,650	12,899	126,158	57,259	137,630	102,146	1,178,271
2024	39,586	23,460	548,803	140,561	13,076	127,897	58,048	139,528	103,554	1,194,513
2025	40,131	23,784	556,368	142,499	13,257	129,660	58,848	141,451	104,981	1,210,980

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2005	Island	0.109994176	0.114770965	0.775234859
2006	Island	0.109379809	0.113278365	0.777341826
2007	Island	0.108765443	0.111785764	0.779448793
2008	Island	0.108151076	0.110293164	0.78155576
2009	Island	0.107536709	0.108800564	0.783662728
2010	Island	0.106922342	0.107307963	0.785769695
2011	Island	0.106307975	0.105815363	0.787876662
2012	Island	0.105693608	0.104322763	0.789983629
2013	Island	0.105079241	0.102830162	0.792090596
2014	Island	0.104464874	0.101337562	0.794197564

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2015	Island	0.103850508	0.099844961	0.796304531
2016	Island	0.103236141	0.098352361	0.798411498
2017	Island	0.102621774	0.096859761	0.800518465
2018	Island	0.102007407	0.09536716	0.802625433
2019	Island	0.10139304	0.09387456	0.8047324
2020	Island	0.100778673	0.09238196	0.806839367
2021	Island	0.100164306	0.090889359	0.808946334
2022	Island	0.09954994	0.089396759	0.811053302
2023	Island	0.098935573	0.087904159	0.813160269
2024	Island	0.098321206	0.086411558	0.815267236
2025	Island	0.097706839	0.084918958	0.817374203
2005	Jefferson	0.075108418	0.183038725	0.741852857
2006	Jefferson	0.074885166	0.181262003	0.743852831
2007	Jefferson	0.074661914	0.179485281	0.745852806
2008	Jefferson	0.074438662	0.177708559	0.74785278
2009	Jefferson	0.07421541	0.175931836	0.749852754
2010	Jefferson	0.073992158	0.174155114	0.751852728
2011	Jefferson	0.073768906	0.172378392	0.753852702
2012	Jefferson	0.073545654	0.17060167	0.755852676
2013	Jefferson	0.073322402	0.168824948	0.75785265
2014	Jefferson	0.07309915	0.167048225	0.759852624
2015	Jefferson	0.072875898	0.165271503	0.761852599
2016	Jefferson	0.072652646	0.163494781	0.763852573
2017	Jefferson	0.072429394	0.161718059	0.765852547
2018	Jefferson	0.072206142	0.159941337	0.767852521
2019	Jefferson	0.07198289	0.158164614	0.769852495
2020	Jefferson	0.071759639	0.156387892	0.771852469
2021	Jefferson	0.071536387	0.15461117	0.773852443
2022	Jefferson	0.071313135	0.152834448	0.775852417
2023	Jefferson	0.071089883	0.151057726	0.777852392
2024	Jefferson	0.070866631	0.149281004	0.779852366
2025	Jefferson	0.070643379	0.147504281	0.78185234
2005	King	0.314379887	0.039035467	0.646584646
2006	King	0.3160933	0.038652426	0.645254274
2007	King	0.317806712	0.038269385	0.643923903
2008	King	0.319520124	0.037886344	0.642593532

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2009	King	0.321233537	0.037503303	0.64126316
2010	King	0.322946949	0.037120262	0.639932789
2011	King	0.324660362	0.036737221	0.638602418
2012	King	0.326373774	0.03635418	0.637272046
2013	King	0.328087186	0.035971139	0.635941675
2014	King	0.329800599	0.035588097	0.634611304
2015	King	0.331514011	0.035205056	0.633280932
2016	King	0.333227424	0.034822015	0.631950561
2017	King	0.334940836	0.034438974	0.63062019
2018	King	0.336654248	0.034055933	0.629289818
2019	King	0.338367661	0.033672892	0.627959447
2020	King	0.340081073	0.033289851	0.626629076
2021	King	0.341794486	0.03290681	0.625298704
2022	King	0.343507898	0.032523769	0.623968333
2023	King	0.34522131	0.032140728	0.622637962
2024	King	0.346934723	0.031757687	0.621307591
2025	King	0.348648135	0.031374646	0.619977219
2005	Kitsap	0.189160848	0.105774646	0.705064506
2006	Kitsap	0.189047505	0.105526747	0.705425748
2007	Kitsap	0.188934162	0.105278847	0.705786991
2008	Kitsap	0.18882082	0.105030947	0.706148233
2009	Kitsap	0.188707477	0.104783047	0.706509475
2010	Kitsap	0.188594135	0.104535148	0.706870718
2011	Kitsap	0.188480792	0.104287248	0.70723196
2012	Kitsap	0.188367449	0.104039348	0.707593203
2013	Kitsap	0.188254107	0.103791448	0.707954445
2014	Kitsap	0.188140764	0.103543549	0.708315687
2015	Kitsap	0.188027421	0.103295649	0.70867693
2016	Kitsap	0.187914079	0.103047749	0.709038172
2017	Kitsap	0.187800736	0.102799849	0.709399415
2018	Kitsap	0.187687394	0.10255195	0.709760657
2019	Kitsap	0.187574051	0.10230405	0.710121899
2020	Kitsap	0.187460708	0.10205615	0.710483142
2021	Kitsap	0.187347366	0.10180825	0.710844384
2022	Kitsap	0.187234023	0.10156035	0.711205626
2023	Kitsap	0.187120681	0.101312451	0.711566869

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2024	Kitsap	0.187007338	0.101064551	0.711928111
2025	Kitsap	0.186893995	0.100816651	0.712289354
2005	Kittitas	0.05523072	0.203860048	0.740909233
2006	Kittitas	0.055422323	0.20468282	0.739894858
2007	Kittitas	0.055613926	0.205505592	0.738880482
2008	Kittitas	0.055805529	0.206328364	0.737866107
2009	Kittitas	0.055997132	0.207151136	0.736851732
2010	Kittitas	0.056188735	0.207973908	0.735837357
2011	Kittitas	0.056380339	0.20879668	0.734822982
2012	Kittitas	0.056571942	0.209619452	0.733808607
2013	Kittitas	0.056763545	0.210442224	0.732794232
2014	Kittitas	0.056955148	0.211264996	0.731779856
2015	Kittitas	0.057146751	0.212087768	0.730765481
2016	Kittitas	0.057338354	0.212910539	0.729751106
2017	Kittitas	0.057529958	0.213733311	0.728736731
2018	Kittitas	0.057721561	0.214556083	0.727722356
2019	Kittitas	0.057913164	0.215378855	0.726707981
2020	Kittitas	0.058104767	0.216201627	0.725693605
2021	Kittitas	0.05829637	0.217024399	0.72467923
2022	Kittitas	0.058487973	0.217847171	0.723664855
2023	Kittitas	0.058679577	0.218669943	0.72265048
2024	Kittitas	0.05887118	0.219492715	0.721636105
2025	Kittitas	0.059062783	0.220315487	0.72062173
2005	Pierce	0.177585887	0.117229396	0.705184717
2006	Pierce	0.174965938	0.116829286	0.708204776
2007	Pierce	0.172345989	0.116429175	0.711224836
2008	Pierce	0.16972604	0.116029065	0.714244896
2009	Pierce	0.16710609	0.115628954	0.717264956
2010	Pierce	0.164486141	0.115228843	0.720285015
2011	Pierce	0.161866192	0.114828733	0.723305075
2012	Pierce	0.159246243	0.114428622	0.726325135
2013	Pierce	0.156626294	0.114028512	0.729345195
2014	Pierce	0.154006344	0.113628401	0.732365254
2015	Pierce	0.151386395	0.113228291	0.735385314
2016	Pierce	0.148766446	0.11282818	0.738405374
2017	Pierce	0.146146497	0.112428069	0.741425434

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2018	Pierce	0.143526548	0.112027959	0.744445493
2019	Pierce	0.140906598	0.111627848	0.747465553
2020	Pierce	0.138286649	0.111227738	0.750485613
2021	Pierce	0.1356667	0.110827627	0.753505673
2022	Pierce	0.133046751	0.110427517	0.756525733
2023	Pierce	0.130426802	0.110027406	0.759545792
2024	Pierce	0.127806853	0.109627295	0.762565852
2025	Pierce	0.125186903	0.109227185	0.765585912
2005	Skagit	0.15657949	0.131288766	0.712131744
2006	Skagit	0.157766405	0.131915929	0.710317666
2007	Skagit	0.158953321	0.132543092	0.708503587
2008	Skagit	0.160140236	0.133170256	0.706689508
2009	Skagit	0.161327152	0.133797419	0.704875429
2010	Skagit	0.162514067	0.134424582	0.70306135
2011	Skagit	0.163700983	0.135051746	0.701247271
2012	Skagit	0.164887899	0.135678909	0.699433193
2013	Skagit	0.166074814	0.136306072	0.697619114
2014	Skagit	0.16726173	0.136933235	0.695805035
2015	Skagit	0.168448645	0.137560399	0.693990956
2016	Skagit	0.169635561	0.138187562	0.692176877
2017	Skagit	0.170822476	0.138814725	0.690362798
2018	Skagit	0.172009392	0.139441889	0.68854872
2019	Skagit	0.173196307	0.140069052	0.686734641
2020	Skagit	0.174383223	0.140696215	0.684920562
2021	Skagit	0.175570138	0.141323379	0.683106483
2022	Skagit	0.176757054	0.141950542	0.681292404
2023	Skagit	0.17794397	0.142577705	0.679478325
2024	Skagit	0.179130885	0.143204868	0.677664246
2025	Skagit	0.180317801	0.143832032	0.675850168
2005	Thurston	0.193034995	0.134239141	0.672725864
2006	Thurston	0.192765605	0.132731	0.674503395
2007	Thurston	0.192496214	0.131222859	0.676280927
2008	Thurston	0.192226823	0.129714718	0.678058458
2009	Thurston	0.191957433	0.128206578	0.67983599
2010	Thurston	0.191688042	0.126698437	0.681613521
2011	Thurston	0.191418652	0.125190296	0.683391053

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2012	Thurston	0.191149261	0.123682155	0.685168584
2013	Thurston	0.19087987	0.122174014	0.686946116
2014	Thurston	0.19061048	0.120665873	0.688723647
2015	Thurston	0.190341089	0.119157732	0.690501179
2016	Thurston	0.190071698	0.117649591	0.69227871
2017	Thurston	0.189802308	0.11614145	0.694056242
2018	Thurston	0.189532917	0.114633309	0.695833774
2019	Thurston	0.189263527	0.113125168	0.697611305
2020	Thurston	0.188994136	0.111617027	0.699388837
2021	Thurston	0.188724745	0.110108887	0.701166368
2022	Thurston	0.188455355	0.108600746	0.7029439
2023	Thurston	0.188185964	0.107092605	0.704721431
2024	Thurston	0.187916573	0.105584464	0.706498963
2025	Thurston	0.187647183	0.104076323	0.708276494
2005	Whatcom	0.242250515	0.128940741	0.628808744
2006	Whatcom	0.245397446	0.129263668	0.625338886
2007	Whatcom	0.248544376	0.129586595	0.621869029
2008	Whatcom	0.251691307	0.129909522	0.618399171
2009	Whatcom	0.254838238	0.130232449	0.614929313
2010	Whatcom	0.257985168	0.130555376	0.611459455
2011	Whatcom	0.261132099	0.130878303	0.607989597
2012	Whatcom	0.26427903	0.131201231	0.60451974
2013	Whatcom	0.26742596	0.131524158	0.601049882
2014	Whatcom	0.270572891	0.131847085	0.597580024
2015	Whatcom	0.273719822	0.132170012	0.594110166
2016	Whatcom	0.276866752	0.132492939	0.590640309
2017	Whatcom	0.280013683	0.132815866	0.587170451
2018	Whatcom	0.283160614	0.133138793	0.583700593
2019	Whatcom	0.286307545	0.13346172	0.580230735
2020	Whatcom	0.289454475	0.133784647	0.576760877
2021	Whatcom	0.292601406	0.134107574	0.57329102
2022	Whatcom	0.295748337	0.134430502	0.569821162
2023	Whatcom	0.298895267	0.134753429	0.566351304
2024	Whatcom	0.302042198	0.135076356	0.562881446
2025	Whatcom	0.305189129	0.135399283	0.559411589

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family

Residential Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Manufactured	Central_AC	Electric	0.5	0.4	0.09	0.01
Manufactured	Cooking	Electric	0.95	0.05	- - -	- - -
Manufactured	Cooking	Gas	1	- - -	- - -	- - -
Manufactured	Freezer	Electric	0.95	0.05	- - -	- - -
Manufactured	Heat_Pump	Electric	0.5	0.4	0.09	0.01
Manufactured	Lighting	Electric	0.7	0.2	0.075	0.025
Manufactured	Other	Electric	1	- - -	- - -	- - -
Manufactured	Plug_Load	Electric	1	- - -	- - -	- - -
Manufactured	Refrigeration	Electric	0.6	0.2	0.15	0.05
Manufactured	Room_AC	Electric	0.59	0.34	0.06	0.01
Manufactured	Space_Heat	Electric	0.95	0.04	0.009	0.001
Manufactured	Space_Heat	Gas	1	- - -	- - -	- - -
Manufactured	Water_Heat	Electric	0.1	0.68	0.21	0.01
Manufactured	Water_Heat	Gas	1	- - -	- - -	- - -
Multi_Family	Central_AC	Electric	0.5	0.4	0.09	0.01
Multi_Family	Cooking	Electric	0.95	0.05	- - -	- - -
Multi_Family	Cooking	Gas	1	- - -	- - -	- - -
Multi_Family	Freezer	Electric	0.95	0.05	- - -	- - -
Multi_Family	Heat_Pump	Electric	0.5	0.4	0.09	0.01
Multi_Family	Lighting	Electric	0.7	0.2	0.075	0.025
Multi_Family	Other	Electric	1	- - -	- - -	- - -
Multi_Family	Plug_Load	Electric	1	- - -	- - -	- - -
Multi_Family	Refrigeration	Electric	0.6	0.2	0.15	0.05
Multi_Family	Room_AC	Electric	0.5	0.48	0.01	0.01
Multi_Family	Space_Heat	Electric	0.95	0.04	0.009	0.001
Multi_Family	Space_Heat	Gas	1	- - -	- - -	- - -
Multi_Family	Water_Heat	Electric	0.13	0.76	0.1	0.01
Multi_Family	Water_Heat	Gas	1	- - -	- - -	- - -
Single_Family	Central_AC	Electric	0.5	0.4	0.09	0.01
Single_Family	Cooking	Electric	0.9	0.1	- - -	- - -

Residential Electric Housing Type Allocation

Year	County	Multi Family	Manufactured	Single Family	
Single_Family	Cooking	Gas	1	- - -	- - -	- - -
Single_Family	Freezer	Electric	0.95	0.05	- - -	- - -
Single_Family	Heat_Pump	Electric	0.5	0.4	0.09	0.01
Single_Family	Lighting	Electric	0.7	0.2	0.075	0.025
Single_Family	Other	Electric	1	- - -	- - -	- - -
Single_Family	Plug_Load	Electric	1	- - -	- - -	- - -
Single_Family	Refrigeration	Electric	0.6	0.2	0.15	0.05
Single_Family	Room_AC	Electric	0.59	0.34	0.06	0.01
Single_Family	Space_Heat	Electric	0.95	0.04	0.009	0.001
Single_Family	Space_Heat	Gas	1	- - -	- - -	- - -
Single_Family	Water_Heat	Electric	0.1	0.68	0.21	0.01
Single_Family	Water_Heat	Gas	1	- - -	- - -	- - -
Manufactured	Dryer	Electric	0.65	0.2	0.15	. - - -
Multi_Family	Dryer	Electric	0.65	0.2	0.15	. - - -
Single_Family	Dryer	Electric	0.65	0.2	0.15	. - - -
Manufactured	Dryer	Gas	1	- - -	- - -	- - -
Multi_Family	Dryer	Gas	1	- - -	- - -	- - -
Single_Family	Dryer	Gas	1	- - -	- - -	- - -

Residential Electric Electric Price Forecast ($/kWh)

Year	Res Price Deflator	Single_Family		Multi_Family		Manufactured	
		Average Price	Marginal Price	Average Price	Marginal Price	Average Price	Marginal Price
2005	100.00	0.06955	0.06955	0.06955	0.06955	0.06955	0.06955
2006	102.29	0.07614	0.07614	0.07614	0.07614	0.07614	0.07614
2007	104.61	0.08349	0.08349	0.08349	0.08349	0.08349	0.08349
2008	107.08	0.08539	0.08539	0.08539	0.08539	0.08539	0.08539
2009	109.72	0.08735	0.08735	0.08735	0.08735	0.08735	0.08735
2010	112.67	0.08953	0.08953	0.08953	0.08953	0.08953	0.08953
2011	115.97	0.09188	0.09188	0.09188	0.09188	0.09188	0.09188
2012	119.34	0.09419	0.09419	0.09419	0.09419	0.09419	0.09419
2013	123.05	0.09654	0.09654	0.09654	0.09654	0.09654	0.09654
2014	126.80	0.09907	0.09907	0.09907	0.09907	0.09907	0.09907
2015	130.47	0.10178	0.10178	0.10178	0.10178	0.10178	0.10178
2016	134.23	0.10445	0.10445	0.10445	0.10445	0.10445	0.10445
2017	138.36	0.10721	0.10721	0.10721	0.10721	0.10721	0.10721
2018	142.88	0.11008	0.11008	0.11008	0.11008	0.11008	0.11008
2019	147.75	0.11302	0.11302	0.11302	0.11302	0.11302	0.11302
2020	152.92	0.11597	0.11597	0.11597	0.11597	0.11597	0.11597
2021	158.32	0.11893	0.11893	0.11893	0.11893	0.11893	0.11893
2022	163.95	0.12190	0.12190	0.12190	0.12190	0.12190	0.12190
2023	169.82	0.12484	0.12484	0.12484	0.12484	0.12484	0.12484
2024	175.93	0.12778	0.12778	0.12778	0.12778	0.12778	0.12778
2025	182.27	0.13079	0.13079	0.13079	0.13079	0.13079	0.13079

Residential Electric Gas Price Forecast ($/therm)

Year	Res Price Deflator	Single_Family		Multi_Family		Manufactured	
		Average Price	Marginal Price	Average Price	Marginal Price	Average Price	Marginal Price
2005	100.00	1.09796	1.09796	1.09796	1.09796	1.09796	1.09796
2006	102.29	1.10498	1.10498	1.10498	1.10498	1.10498	1.10498
2007	104.61	1.10899	1.10899	1.10899	1.10899	1.10899	1.10899
2008	107.08	1.02027	1.02027	1.02027	1.02027	1.02027	1.02027
2009	109.72	0.99589	0.99589	0.99589	0.99589	0.99589	0.99589
2010	112.67	0.92554	0.92554	0.92554	0.92554	0.92554	0.92554
2011	115.97	1.00316	1.00316	1.00316	1.00316	1.00316	1.00316
2012	119.34	1.02242	1.02242	1.02242	1.02242	1.02242	1.02242
2013	123.05	1.09416	1.09416	1.09416	1.09416	1.09416	1.09416
2014	126.80	1.16195	1.16195	1.16195	1.16195	1.16195	1.16195
2015	130.47	1.17080	1.17080	1.17080	1.17080	1.17080	1.17080
2016	134.23	1.05989	1.05989	1.05989	1.05989	1.05989	1.05989
2017	138.36	1.09495	1.09495	1.09495	1.09495	1.09495	1.09495
2018	142.88	1.18576	1.18576	1.18576	1.18576	1.18576	1.18576
2019	147.75	1.27289	1.27289	1.27289	1.27289	1.27289	1.27289
2020	152.92	1.33734	1.33734	1.33734	1.33734	1.33734	1.33734
2021	158.32	1.36319	1.36319	1.36319	1.36319	1.36319	1.36319
2022	163.95	1.38512	1.38512	1.38512	1.38512	1.38512	1.38512
2023	169.82	1.40767	1.40767	1.40767	1.40767	1.40767	1.40767
2024	175.93	1.40731	1.40731	1.40731	1.40731	1.40731	1.40731
2025	182.27	1.43022	1.43022	1.43022	1.43022	1.43022	1.43022

Residential Gas

Residential Gas Sales Forecast (Therms)

Year	King	Kittitas	Lewis	Pierce	Snohomish	Thurston	Total
2005	315,995,171	253,301	3,176,241	97,627,240	81,715,731	28,641,844	527,409,529
2006	319,460,427	255,649	3,210,976	98,706,886	82,674,044	28,952,733	533,260,715
2007	328,828,808	263,157	3,305,155	101,599,911	85,095,972	29,801,336	548,894,340
2008	338,616,082	271,017	3,403,535	104,622,225	87,627,680	30,687,762	565,228,301
2009	349,405,487	279,673	3,511,992	107,954,160	90,418,025	31,665,045	583,234,382
2010	359,791,451	288,007	3,616,392	111,161,516	93,104,245	32,605,778	600,567,388
2011	370,690,849	296,743	3,725,958	114,527,579	95,922,521	33,593,119	618,756,770
2012	378,822,775	303,244	3,807,721	117,038,608	98,022,663	34,329,784	632,324,795
2013	385,743,447	308,779	3,877,308	119,175,355	99,809,617	34,956,646	643,871,151
2014	390,844,814	312,864	3,928,605	120,749,925	101,126,184	35,418,578	652,380,970
2015	395,291,188	316,428	3,973,316	122,122,091	102,273,646	35,821,116	659,797,785
2016	401,054,975	321,053	4,031,264	123,901,316	103,762,704	36,343,012	669,414,324
2017	409,387,442	327,737	4,115,028	126,474,258	105,916,929	37,097,700	683,319,094
2018	415,920,020	332,972	4,180,706	128,491,086	107,604,570	37,689,318	694,218,673
2019	420,427,928	336,586	4,226,034	129,882,311	108,768,055	38,097,443	701,738,358
2020	424,464,144	339,826	4,266,620	131,127,776	109,809,823	38,462,792	708,470,980
2021	428,812,881	343,319	4,310,344	132,469,807	110,932,755	38,856,448	715,725,554
2022	433,841,251	347,356	4,360,899	134,021,852	112,231,687	39,311,700	724,114,746
2023	439,487,637	351,888	4,417,666	135,764,875	113,690,609	39,822,968	733,535,643
2024	445,219,452	356,489	4,475,290	137,534,302	115,171,762	40,341,975	743,099,271
2025	451,024,096	361,137	4,533,638	139,327,435	116,673,339	40,867,942	752,787,587

Residential Gas Customer Count Forecast

Year	King	Kittitas	Lewis	Pierce	Snohomish	Thurston	Total
2005	366,807	430	4,180	117,212	97,531	36,151	622,311
2006	376,105	441	4,286	120,183	100,004	37,067	638,086
2007	385,273	452	4,391	123,112	102,441	37,971	653,639
2008	395,315	463	4,505	126,321	105,112	38,960	670,677
2009	406,645	477	4,634	129,942	108,125	40,077	689,900
2010	419,109	491	4,776	133,925	111,439	41,306	711,047
2011	432,375	507	4,928	138,164	114,966	42,613	733,553
2012	445,239	522	5,074	142,275	118,386	43,881	755,377
2013	457,023	536	5,209	146,040	121,519	45,042	775,368
2014	468,037	549	5,334	149,559	124,447	46,127	794,053
2015	478,650	561	5,455	152,950	127,269	47,173	812,058
2016	489,310	574	5,577	156,356	130,103	48,224	830,143
2017	500,435	587	5,703	159,911	133,061	49,320	849,018
2018	511,815	600	5,833	163,548	136,087	50,442	868,325
2019	523,049	613	5,961	167,137	139,074	51,549	887,384
2020	534,236	626	6,089	170,712	142,049	52,651	906,363
2021	545,659	640	6,219	174,362	145,086	53,777	925,742
2022	557,481	653	6,354	178,140	148,229	54,942	945,800
2023	569,757	668	6,493	182,063	151,494	56,152	966,627
2024	582,559	683	6,639	186,154	154,898	57,414	988,346
2025	593,880	728	6,710	191,174	159,471	58,839	1,010,802

Residential Gas Building Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2005	King	0.3838	0.0257	0.5906
2006	King	0.3856	0.0253	0.5891
2007	King	0.3875	0.0250	0.5876
2008	King	0.3893	0.0246	0.5861
2009	King	0.3912	0.0243	0.5846

Residential Gas Building Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2010	King	0.3930	0.0239	0.5831
2011	King	0.3948	0.0236	0.5816
2012	King	0.3967	0.0233	0.5801
2013	King	0.3985	0.0229	0.5785
2014	King	0.4004	0.0226	0.5770
2015	King	0.4022	0.0222	0.5755
2016	King	0.4041	0.0219	0.5740
2017	King	0.4059	0.0215	0.5725
2018	King	0.4078	0.0212	0.5710
2019	King	0.4096	0.0209	0.5695
2020	King	0.4115	0.0205	0.5680
2021	King	0.4133	0.0202	0.5665
2022	King	0.4151	0.0198	0.5650
2023	King	0.4170	0.0195	0.5635
2024	King	0.4188	0.0191	0.5620
2025	King	0.4207	0.0188	0.5605
2005	Kittitas	0.0552	0.2039	0.7409
2006	Kittitas	0.0554	0.2047	0.7399
2007	Kittitas	0.0556	0.2055	0.7389
2008	Kittitas	0.0558	0.2063	0.7379
2009	Kittitas	0.0560	0.2072	0.7369
2010	Kittitas	0.0562	0.2080	0.7358
2011	Kittitas	0.0564	0.2088	0.7348
2012	Kittitas	0.0566	0.2096	0.7338
2013	Kittitas	0.0568	0.2104	0.7328
2014	Kittitas	0.0570	0.2113	0.7318
2015	Kittitas	0.0571	0.2121	0.7308
2016	Kittitas	0.0573	0.2129	0.7298
2017	Kittitas	0.0575	0.2137	0.7287
2018	Kittitas	0.0577	0.2146	0.7277
2019	Kittitas	0.0579	0.2154	0.7267
2020	Kittitas	0.0581	0.2162	0.7257

Residential Gas Building Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2021	Kittitas	0.0583	0.2170	0.7247
2022	Kittitas	0.0585	0.2178	0.7237
2023	Kittitas	0.0587	0.2187	0.7227
2024	Kittitas	0.0589	0.2195	0.7216
2025	Kittitas	0.0591	0.2203	0.7206
2005	Pierce	0.2407	0.0832	0.6761
2006	Pierce	0.2395	0.0827	0.6777
2007	Pierce	0.2383	0.0823	0.6794
2008	Pierce	0.2371	0.0819	0.6810
2009	Pierce	0.2359	0.0815	0.6826
2010	Pierce	0.2347	0.0811	0.6843
2011	Pierce	0.2335	0.0806	0.6859
2012	Pierce	0.2322	0.0802	0.6876
2013	Pierce	0.2310	0.0798	0.6892
2014	Pierce	0.2298	0.0794	0.6908
2015	Pierce	0.2286	0.0789	0.6925
2016	Pierce	0.2274	0.0785	0.6941
2017	Pierce	0.2262	0.0781	0.6957
2018	Pierce	0.2250	0.0777	0.6974
2019	Pierce	0.2238	0.0772	0.6990
2020	Pierce	0.2226	0.0768	0.7006
2021	Pierce	0.2213	0.0764	0.7023
2022	Pierce	0.2201	0.0760	0.7039
2023	Pierce	0.2189	0.0756	0.7055
2024	Pierce	0.2177	0.0751	0.7072
2025	Pierce	0.2165	0.0747	0.7088
2005	Snohomish	0.2678	0.0736	0.6586
2006	Snohomish	0.2688	0.0716	0.6596
2007	Snohomish	0.2698	0.0695	0.6607
2008	Snohomish	0.2708	0.0674	0.6618
2009	Snohomish	0.2718	0.0653	0.6628
2010	Snohomish	0.2729	0.0632	0.6639

Residential Gas Building Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2011	Snohomish	0.2739	0.0612	0.6650
2012	Snohomish	0.2749	0.0591	0.6660
2013	Snohomish	0.2759	0.0570	0.6671
2014	Snohomish	0.2769	0.0549	0.6682
2015	Snohomish	0.2779	0.0528	0.6692
2016	Snohomish	0.2789	0.0508	0.6703
2017	Snohomish	0.2800	0.0487	0.6714
2018	Snohomish	0.2810	0.0466	0.6724
2019	Snohomish	0.2820	0.0445	0.6735
2020	Snohomish	0.2830	0.0424	0.6746
2021	Snohomish	0.2840	0.0403	0.6756
2022	Snohomish	0.2850	0.0383	0.6767
2023	Snohomish	0.2861	0.0362	0.6778
2024	Snohomish	0.2871	0.0341	0.6788
2025	Snohomish	0.2881	0.0320	0.6799
2005	Thurston	0.1930	0.1342	0.6727
2006	Thurston	0.1928	0.1327	0.6745
2007	Thurston	0.1925	0.1312	0.6763
2008	Thurston	0.1922	0.1297	0.6781
2009	Thurston	0.1920	0.1282	0.6798
2010	Thurston	0.1917	0.1267	0.6816
2011	Thurston	0.1914	0.1252	0.6834
2012	Thurston	0.1911	0.1237	0.6852
2013	Thurston	0.1909	0.1222	0.6869
2014	Thurston	0.1906	0.1207	0.6887
2015	Thurston	0.1903	0.1192	0.6905
2016	Thurston	0.1901	0.1176	0.6923
2017	Thurston	0.1898	0.1161	0.6941
2018	Thurston	0.1895	0.1146	0.6958
2019	Thurston	0.1893	0.1131	0.6976
2020	Thurston	0.1890	0.1116	0.6994
2021	Thurston	0.1887	0.1101	0.7012

Residential Gas Building Type Allocation

Year	County	Multi Family	Manufactured	Single Family
2022	Thurston	0.1885	0.1086	0.7029
2023	Thurston	0.1882	0.1071	0.7047
2024	Thurston	0.1879	0.1056	0.7065
2025	Thurston	0.1876	0.1041	0.7083

Residential Gas Efficiency Shares

bName	N Name	F Name	Stock	Standard	High	Premium
Manufactured	Cooking	Gas	0.95	0.05	- - -	. - - -
Manufactured	Cooking	Electric	1	. - - -	. - - -	. - - -
Manufactured	Other	Gas	1	. - - -	. - - -	. - - -
Manufactured	Space_Heat	Gas	0.5	0.46	0.03	0.01
Manufactured	Space_Heat	Electric	1	. - - -	. - - -	. - - -
Manufactured	Water_Heat	Gas	0.1	0.68	0.21	0.01
Manufactured	Water_Heat	Electric	1	. - - -	. - - -	. - - -
Multi_Family	Cooking	Gas	0.95	0.05	. - - -	. - - -
Multi_Family	Cooking	Electric	1	. - - -	. - - -	. - - -
Multi_Family	Other	Gas	1	. - - -	. - - -	. - - -
Multi_Family	Space_Heat	Gas	0.5	0.46	0.03	0.01
Multi_Family	Space_Heat	Electric	1	. - - -	. - - -	. - - -
Multi_Family	Water_Heat	Gas	0.13	0.76	0.1	0.01
Multi_Family	Water_Heat	Electric	1	. - - -	. - - -	. - - -
Single_Family	Cooking	Gas	0.9	0.1	. - - -	. - - -
Single_Family	Cooking	Electric	1	. - - -	. - - -	. - - -
Single_Family	Other	Gas	1	. - - -	. - - -	. - - -
Single_Family	Space_Heat	Gas	0.5	0.46	0.03	0.01
Single_Family	Space_Heat	Electric	1	. - - -	. - - -	. - - -
Single_Family	Water_Heat	Gas	0.1	0.68	0.21	0.01
Single_Family	Water_Heat	Electric	1	. - - -	. - - -	. - - -
Manufactured	Dryer	Gas	0.48	0.3	0.22	. - - -
Multi_Family	Dryer	Gas	0.48	0.3	0.22	. - - -
Single_Family	Dryer	Gas	0.48	0.3	0.22	. - - -
Manufactured	Dryer	Electric	1	. - - -	. - - -	. - - -
Multi_Family	Dryer	Electric	1	. - - -	. - - -	. - - -
Single_Family	Dryer	Electric	1	. - - -	. - - -	. - - -

Residential Gas Electric Price Forecast ($/kWh)

Year	Res Price Deflator	Single Family		Multi Family		Manufactured	
		Average Price	Marginal Price	Average Price	Marginal Price	Average Price	Marginal Price
2005	100.00	0.06955	0.06955	0.06955	0.06955	0.06955	0.06955
2006	102.29	0.07614	0.07614	0.07614	0.07614	0.07614	0.07614
2007	104.61	0.08349	0.08349	0.08349	0.08349	0.08349	0.08349
2008	107.08	0.08539	0.08539	0.08539	0.08539	0.08539	0.08539
2009	109.72	0.08735	0.08735	0.08735	0.08735	0.08735	0.08735
2010	112.67	0.08953	0.08953	0.08953	0.08953	0.08953	0.08953
2011	115.97	0.09188	0.09188	0.09188	0.09188	0.09188	0.09188
2012	119.34	0.09419	0.09419	0.09419	0.09419	0.09419	0.09419
2013	123.05	0.09654	0.09654	0.09654	0.09654	0.09654	0.09654
2014	126.80	0.09907	0.09907	0.09907	0.09907	0.09907	0.09907
2015	130.47	0.10178	0.10178	0.10178	0.10178	0.10178	0.10178
2016	134.23	0.10445	0.10445	0.10445	0.10445	0.10445	0.10445
2017	138.36	0.10721	0.10721	0.10721	0.10721	0.10721	0.10721
2018	142.88	0.11008	0.11008	0.11008	0.11008	0.11008	0.11008
2019	147.75	0.11302	0.11302	0.11302	0.11302	0.11302	0.11302
2020	152.92	0.11597	0.11597	0.11597	0.11597	0.11597	0.11597
2021	158.32	0.11893	0.11893	0.11893	0.11893	0.11893	0.11893
2022	163.95	0.12190	0.12190	0.12190	0.12190	0.12190	0.12190
2023	169.82	0.12484	0.12484	0.12484	0.12484	0.12484	0.12484
2024	175.93	0.12778	0.12778	0.12778	0.12778	0.12778	0.12778
2025	182.27	0.13079	0.13079	0.13079	0.13079	0.13079	0.13079

Residential Gas Price Forecast ($/therm)

Year	Res Price Deflator	Single Family		Multi Family		Manufactured	
		Average Price	Marginal Price	Average Price	Marginal Price	Average Price	Marginal Price
2005	100.00	1.09796	1.09796	1.09796	1.09796	1.09796	1.09796
2006	102.29	1.10498	1.10498	1.10498	1.10498	1.10498	1.10498
2007	104.61	1.10899	1.10899	1.10899	1.10899	1.10899	1.10899
2008	107.08	1.02027	1.02027	1.02027	1.02027	1.02027	1.02027
2009	109.72	0.99589	0.99589	0.99589	0.99589	0.99589	0.99589
2010	112.67	0.92554	0.92554	0.92554	0.92554	0.92554	0.92554
2011	115.97	1.00316	1.00316	1.00316	1.00316	1.00316	1.00316
2012	119.34	1.02242	1.02242	1.02242	1.02242	1.02242	1.02242
2013	123.05	1.09416	1.09416	1.09416	1.09416	1.09416	1.09416
2014	126.80	1.16195	1.16195	1.16195	1.16195	1.16195	1.16195
2015	130.47	1.17080	1.17080	1.17080	1.17080	1.17080	1.17080
2016	134.23	1.05989	1.05989	1.05989	1.05989	1.05989	1.05989
2017	138.36	1.09495	1.09495	1.09495	1.09495	1.09495	1.09495
2018	142.88	1.18576	1.18576	1.18576	1.18576	1.18576	1.18576
2019	147.75	1.27289	1.27289	1.27289	1.27289	1.27289	1.27289
2020	152.92	1.33734	1.33734	1.33734	1.33734	1.33734	1.33734
2021	158.32	1.36319	1.36319	1.36319	1.36319	1.36319	1.36319
2022	163.95	1.38512	1.38512	1.38512	1.38512	1.38512	1.38512
2023	169.82	1.40767	1.40767	1.40767	1.40767	1.40767	1.40767
2024	175.93	1.40731	1.40731	1.40731	1.40731	1.40731	1.40731
2025	182.27	1.43022	1.43022	1.43022	1.43022	1.43022	1.43022

Commercial Electric

Commercial Electric Sales Forecast (MWh)

Year	Island	Jefferson	King	Kitsap	Kittitas	Pierce	Skagit	Thurston	Whatcom	Total
2005	194,879	86,095	5,083,803	681,480	64,357	535,571	477,222	872,865	671,323	8,667,596
2006	198,148	88,856	5,131,202	690,723	65,669	552,002	488,831	892,234	693,203	8,800,869
2007	204,323	94,126	5,242,137	702,031	67,220	572,627	504,248	909,693	720,706	9,017,110
2008	209,461	98,088	5,408,223	713,895	68,598	598,061	516,237	933,936	739,671	9,286,169
2009	211,900	100,978	5,529,414	726,151	69,728	620,217	524,027	964,860	750,879	9,498,155
2010	218,339	106,475	5,681,341	747,008	72,114	645,605	541,408	1,000,406	778,367	9,791,062
2011	223,849	111,713	5,771,484	782,698	73,560	662,716	555,619	1,052,487	801,190	10,035,317
2012	232,197	116,022	5,863,828	817,869	75,835	687,043	572,817	1,090,479	828,292	10,284,381
2013	240,409	120,167	5,968,664	848,638	77,744	712,270	590,043	1,122,447	854,695	10,535,077
2014	247,454	124,119	6,081,901	875,229	79,349	736,148	606,307	1,151,305	880,633	10,782,444
2015	253,440	127,540	6,195,454	903,462	80,999	755,784	618,809	1,183,139	902,548	11,021,175
2016	260,262	130,638	6,319,674	936,485	82,709	775,016	629,598	1,217,808	920,759	11,272,950
2017	267,349	133,741	6,449,619	967,434	84,347	795,444	640,766	1,248,465	938,910	11,526,075
2018	274,086	136,938	6,584,096	997,679	85,842	816,804	652,619	1,279,607	958,150	11,785,822
2019	280,688	140,194	6,721,614	1,029,083	87,347	838,734	664,717	1,313,041	978,030	12,053,449
2020	287,553	143,532	6,861,340	1,061,548	88,946	861,106	677,008	1,346,794	998,282	12,326,110
2021	294,644	146,992	7,005,049	1,095,527	90,630	883,666	689,545	1,381,689	1,019,133	12,606,874
2022	301,429	150,377	7,166,354	1,120,754	92,717	904,014	705,423	1,413,505	1,042,601	12,897,173
2023	308,432	153,871	7,332,862	1,146,794	94,872	925,018	721,813	1,446,347	1,066,825	13,196,834
2024	315,675	157,484	7,505,058	1,173,724	97,099	946,740	738,763	1,480,311	1,091,877	13,506,733
2025	323,088	161,182	7,681,298	1,201,286	99,380	968,972	756,112	1,515,073	1,117,518	13,823,909

Commercial Electric Customer Count Forecast

Year	Island	Jefferson	King	Kitsap	Kittitas	Pierce	Skagit	Thurston	Whatcom	Total
2005	4,011	2,666	51,710	12,334	1,881	9,797	7,714	12,683	11,103	113,900
2006	4,096	2,764	52,405	12,552	1,927	10,139	7,933	13,018	11,512	116,346
2007	4,209	2,918	53,363	12,716	1,967	10,483	8,157	13,229	11,929	118,972
2008	4,290	3,023	54,735	12,856	1,995	10,885	8,302	13,503	12,172	121,762
2009	4,347	3,117	56,050	13,097	2,031	11,307	8,441	13,972	12,376	124,738
2010	4,447	3,263	57,178	13,377	2,086	11,685	8,659	14,383	12,738	127,816
2011	4,543	3,411	57,872	13,965	2,120	11,951	8,853	15,076	13,063	130,854
2012	4,690	3,526	58,525	14,525	2,175	12,332	9,085	15,548	13,442	133,847
2013	4,836	3,637	59,322	15,008	2,221	12,732	9,319	15,937	13,813	136,823
2014	4,962	3,745	60,265	15,431	2,260	13,118	9,547	16,297	14,189	139,815
2015	5,076	3,843	61,307	15,908	2,303	13,450	9,731	16,726	14,522	142,866
2016	5,203	3,930	62,426	16,461	2,348	13,769	9,883	17,186	14,788	145,995
2017	5,338	4,018	63,621	16,982	2,391	14,112	10,045	17,594	15,059	149,160
2018	5,464	4,108	64,851	17,487	2,430	14,469	10,215	18,006	15,345	152,376
2019	5,586	4,199	66,097	18,008	2,468	14,833	10,387	18,447	15,637	155,663
2020	5,715	4,293	67,372	18,549	2,510	15,207	10,564	18,893	15,938	159,039
2021	5,846	4,389	68,675	19,113	2,553	15,581	10,743	19,352	16,245	162,498
2022	5,953	4,468	69,831	19,509	2,557	15,898	10,946	19,679	16,530	165,372
2023	6,035	4,530	70,793	19,778	2,592	16,118	11,097	19,951	16,758	167,652
2024	6,119	4,592	71,769	20,051	2,628	16,340	11,249	20,226	16,989	169,963
2025	6,203	4,656	72,758	20,327	2,664	16,565	11,405	20,504	17,224	172,306

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2005	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2006	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2007	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2008	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2009	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2010	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2011	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2012	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2013	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2014	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2015	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2016	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2017	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2018	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2019	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2020	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2021	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2022	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2023	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2024	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2025	Island	0.172020	0.030356	0.142423	0.015748	0.098356	0.085371	0.007183	0.174241	0.031634	0.242667
2005	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2006	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2007	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2008	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2009	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2010	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2011	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2012	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2013	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2014	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2015	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2016	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2017	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2018	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2019	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2020	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2021	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2022	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2023	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2024	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2025	Jefferson	0.064440	0.011372	0.068437	0.004867	0.054572	0.161062	0.128614	0.274779	0.060472	0.171386
2005	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2006	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2007	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2008	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2009	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2010	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2011	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2012	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2013	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2014	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2015	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2016	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2017	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2018	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2019	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2020	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2021	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2022	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2023	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2024	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2025	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2005	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2006	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2007	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2008	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2009	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2010	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2011	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2012	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2013	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2014	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2015	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2016	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2017	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2018	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2019	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2020	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2021	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2022	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2023	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2024	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2025	Kitsap	0.246691	0.043534	0.101196	0.010705	0.055223	0.102951	0.009493	0.157107	0.003093	0.270007
2005	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2006	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2007	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2008	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2009	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2010	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2011	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2012	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2013	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2014	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2015	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2016	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2017	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2018	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2019	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2020	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2021	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2022	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2023	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2024	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2025	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2005	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2006	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2007	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2008	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2009	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2010	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2011	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2012	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2013	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2014	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2015	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2016	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2017	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2018	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2019	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2020	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2021	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2022	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2023	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2024	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2025	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2005	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2006	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2007	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2008	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2009	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2010	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2011	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2012	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2013	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2014	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2015	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2016	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2017	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2018	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2019	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2020	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2021	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2022	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2023	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2024	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2025	Skagit	0.272020	0.048004	0.092464	0.011480	0.195768	0.083520	0.034286	0.074339	0.005698	0.182421
2005	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2006	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2007	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2008	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2009	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2010	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2011	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2012	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2013	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2014	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2015	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2016	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2017	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2018	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2019	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2020	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2021	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2022	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2023	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2024	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2025	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2005	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2006	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2007	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2008	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2009	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2010	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2011	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2012	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726

Commercial Electric Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	Univer-sity	Other
2013	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2014	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2015	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2016	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2017	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2018	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2019	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2020	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2021	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2022	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2023	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2024	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726
2025	Whatcom	0.299755	0.052898	0.123137	0.017978	0.138547	0.075238	0.045420	0.016278	0.045022	0.185726

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Dry_Goods_Retail	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Dry_Goods_Retail	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Dry_Goods_Retail	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Dry_Goods_Retail	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Dry_Goods_Retail	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Dry_Goods_Retail	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Dry_Goods_Retail	Other	Electric	1.000	- - -	- - -	- - -
Dry_Goods_Retail	Plug_Load	Electric	0.950	0.050	- - -	- - -
Dry_Goods_Retail	Space_Heat	Electric	1.000	- - -	- - -	- - -

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Dry_Goods_Retail	Space_Heat	Gas	1.000	- - -	- - -	- - -
Dry_Goods_Retail	Ventilation	Electric	0.550	0.400	0.050	- - -
Dry_Goods_Retail	Water_Heat	Electric	0.700	0.225	0.045	0.030
Dry_Goods_Retail	Water_Heat	Gas	1.000	- - -	- - -	- - -
Grocery	Cooking	Electric	0.950	0.050	- - -	- - -
Grocery	Cooking	Gas	1.000	- - -	- - -	- - -
Grocery	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Grocery	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Grocery	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Grocery	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Grocery	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Grocery	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Grocery	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Grocery	Other	Electric	1.000	- - -	- - -	- - -
Grocery	Plug_Load	Electric	0.950	0.050	- - -	- - -
Grocery	Refrigeration	Electric	0.950	0.050	- - -	- - -
Grocery	Space_Heat	Electric	1.000	- - -	- - -	- - -
Grocery	Space_Heat	Gas	1.000	- - -	- - -	- - -
Grocery	Ventilation	Electric	0.550	0.400	0.050	- - -
Grocery	Water_Heat	Electric	0.700	0.225	0.045	0.030
Grocery	Water_Heat	Gas	1.000	- - -	- - -	- - -
Hospital	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Hospital	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Hospital	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Hospital	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Hospital	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Hospital	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Hospital	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Hospital	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Hospital	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Hospital	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Hospital	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Hospital	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Hospital	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Hospital	Other	Electric	1.000	- - -	- - -	- - -
Hospital	Plug_Load	Electric	0.950	0.050	.	.
Hospital	Space_Heat	Electric	1.000	- - -	- - -	- - -
Hospital	Space_Heat	Gas	1.000	- - -	- - -	- - -
Hospital	Ventilation	Electric	0.550	0.400	0.050	.
Hospital	Water_Heat	Electric	0.700	0.225	0.045	0.030
Hospital	Water_Heat	Gas	1.000	- - -	- - -	- - -
Hotel_Motel	Cooking	Electric	0.950	0.050	- - -	- - -
Hotel_Motel	Cooking	Gas	1.000	- - -	- - -	- - -
Hotel_Motel	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Hotel_Motel	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Hotel_Motel	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Hotel_Motel	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Hotel_Motel	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Hotel_Motel	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Hotel_Motel	Other	Electric	1.000	- - -	- - -	- - -
Hotel_Motel	Plug_Load	Electric	0.950	0.050	- - -	- - -
Hotel_Motel	Space_Heat	Electric	1.000	- - -	- - -	- - -
Hotel_Motel	Space_Heat	Gas	1.000	- - -	- - -	- - -
Hotel_Motel	Ventilation	Electric	0.550	0.400	0.050	- - -
Hotel_Motel	Water_Heat	Electric	0.700	0.225	0.045	0.030
Hotel_Motel	Water_Heat	Gas	1.000	- - -	- - -	- - -
Office	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Office	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Office	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Office	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Office	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Office	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Office	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Office	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Office	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Office	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Office	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Office	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Office	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Office	Other	Electric	1.000	- - -	- - -	- - -
Office	Plug_Load	Electric	0.950	0.050	- - -	- - -
Office	Space_Heat	Electric	1.000	- - -	- - -	- - -
Office	Space_Heat	Gas	1.000	- - -	- - -	- - -
Office	Ventilation	Electric	0.550	0.400	0.050	- - -
Office	Water_Heat	Electric	0.700	0.225	0.045	0.030
Office	Water_Heat	Gas	1.000	- - -	- - -	- - -
Other	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Other	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Other	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Other	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Other	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Other	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Other	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Other	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Other	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Other	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Other	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Other	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Other	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Other	Other	Electric	1.000	- - -	- - -	- - -
Other	Plug_Load	Electric	0.950	0.050	- - -	- - -
Other	Space_Heat	Electric	1.000	- - -	- - -	- - -
Other	Space_Heat	Gas	1.000	- - -	- - -	- - -
Other	Ventilation	Electric	0.550	0.400	0.050	.
Other	Water_Heat	Electric	0.700	0.225	0.045	0.030

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Other	Water_Heat	Gas	1.000	- - -	- - -	- - -
Restaurant	Cooking	Electric	0.950	0.050	- - -	- - -
Restaurant	Cooking	Gas	1.000	- - -	- - -	- - -
Restaurant	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Restaurant	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Restaurant	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Restaurant	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Restaurant	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Restaurant	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Restaurant	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Restaurant	Other	Electric	1.000	- - -	- - -	- - -
Restaurant	Plug_Load	Electric	0.950	0.050	- - -	- - -
Restaurant	Refrigeration	Electric	0.950	0.050	- - -	- - -
Restaurant	Space_Heat	Electric	1.000	- - -	- - -	- - -
Restaurant	Space_Heat	Gas	1.000	- - -	- - -	- - -
Restaurant	Ventilation	Electric	0.550	0.400	0.050	.
Restaurant	Water_Heat	Electric	0.700	0.225	0.045	0.030
Restaurant	Water_Heat	Gas	1.000	- - -	- - -	- - -
School	Cooking	Electric	0.950	0.050	- - -	- - -
School	Cooking	Gas	1.000	- - -	- - -	- - -
School	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
School	Cooling_DX	Electric	0.515	0.456	0.023	0.007
School	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
School	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
School	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
School	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
School	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
School	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
School	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
School	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
School	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
School	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
School	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
School	Other	Electric	1.000	- - -	- - -	- - -
School	Plug_Load	Electric	0.950	0.050	- - -	- - -
School	Space_Heat	Electric	1.000	- - -	- - -	- - -
School	Space_Heat	Gas	1.000	- - -	- - -	- - -
School	Ventilation	Electric	0.550	0.400	0.050	.
School	Water_Heat	Electric	0.700	0.225	0.045	0.030
School	Water_Heat	Gas	1.000	- - -	- - -	- - -
University	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
University	Cooling_DX	Electric	0.515	0.456	0.023	0.007
University	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
University	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
University	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
University	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020
University	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
University	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
University	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
University	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
University	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
University	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
University	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
University	Other	Electric	1.000	- - -	- - -	- - -
University	Plug_Load	Electric	0.950	0.050	- - -	- - -
University	Space_Heat	Electric	1.000	- - -	- - -	- - -
University	Space_Heat	Gas	1.000	- - -	- - -	- - -
University	Ventilation	Electric	0.550	0.400	0.050	.
University	Water_Heat	Electric	0.700	0.225	0.045	0.030
University	Water_Heat	Gas	1.000	- - -	- - -	- - -
Warehouse	Cooling_Chillers	Electric	0.515	0.456	0.023	0.007
Warehouse	Cooling_DX	Electric	0.515	0.456	0.023	0.007
Warehouse	Cooling_HeatPump	Electric	0.515	0.456	0.023	0.007
Warehouse	Lighting_2L4T12	Electric	0.900	0.050	0.030	0.020
Warehouse	Lighting_2L4T8	Electric	0.900	0.050	0.030	0.020
Warehouse	Lighting_2L8T12	Electric	0.900	0.050	0.030	0.020

Commercial Electric Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Warehouse	Lighting_3L4T12	Electric	0.900	0.050	0.030	0.020
Warehouse	Lighting_3L4T8	Electric	0.9000	0.0900	0.0075	0.0025
Warehouse	Lighting_4L4T12	Electric	0.900	0.050	0.030	0.020
Warehouse	Lighting_4L4T8	Electric	0.900	0.090	0.008	0.003
Warehouse	Lighting_INC150W	Electric	0.900	0.050	0.030	0.020
Warehouse	Lighting_INC75W	Electric	0.900	0.050	0.030	0.020
Warehouse	Lighting_MV400W	Electric	0.900	0.050	0.030	0.020
Warehouse	Other	Electric	1.000	- - -	- - -	- - -
Warehouse	Plug_Load	Electric	0.950	0.050	- - -	- - -
Warehouse	Space_Heat	Electric	1.000	- - -	- - -	- - -
Warehouse	Space_Heat	Gas	1.000	- - -	- - -	- - -
Warehouse	Ventilation	Electric	0.550	0.400	0.050	.
Warehouse	Water_Heat	Electric	0.700	0.225	0.045	0.030
Warehouse	Water_Heat	Gas	1.000	- - -	- - -	- - -

Commercial Electric Electric Price Forecast ($/kWh)

Year	Price Deflator	Commercial Average Price	Commercial Marginal Price
2005	100.00	0.07395	0.07395
2006	102.29	0.07665	0.07665
2007	104.61	0.07528	0.07528
2008	107.08	0.07694	0.07694
2009	109.72	0.07868	0.07868
2010	112.67	0.08066	0.08066
2011	115.97	0.08284	0.08284
2012	119.34	0.08505	0.08505
2013	123.05	0.08736	0.08736
2014	126.80	0.08991	0.08991
2015	130.47	0.09273	0.09273
2016	134.23	0.09558	0.09558
2017	138.36	0.09863	0.09863
2018	142.88	0.10190	0.10190
2019	147.75	0.10536	0.10536
2020	152.92	0.10895	0.10895
2021	158.32	0.11267	0.11267
2022	163.95	0.11653	0.11653
2023	169.82	0.12049	0.12049
2024	175.93	0.12458	0.12458
2025	182.27	0.12881	0.12881

Commercial Electric Gas Price Forecast ($/therm)

Year	Price Deflator	Commercial Average Price	Commercial Marginal Price
2005	100.00	0.98069	0.98069
2006	102.29	0.98887	0.98887
2007	104.61	0.97624	0.97624
2008	107.08	0.88972	0.88972
2009	109.72	0.86538	0.86538
2010	112.67	0.79505	0.79505
2011	115.97	0.87203	0.87203
2012	119.34	0.89133	0.89133
2013	123.05	0.96310	0.96310
2014	126.80	1.02968	1.02968
2015	130.47	1.03847	1.03847
2016	134.23	0.92677	0.92677
2017	138.36	0.96180	0.96180
2018	142.88	1.05257	1.05257
2019	147.75	1.13966	1.13966
2020	152.92	1.20407	1.20407
2021	158.32	1.22945	1.22945
2022	163.95	1.25134	1.25134
2023	169.82	1.27385	1.27385
2024	175.93	1.27357	1.27357
2025	182.27	1.29648	1.29648

Commercial Electric Average Square Footage by Building Type

Year	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2005	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2006	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2007	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2008	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2009	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2010	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2011	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2012	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2013	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2014	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2015	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2016	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2017	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2018	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2019	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2020	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2021	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2022	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2023	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2024	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2025	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284

Commercial Electric Number of Electric Meters Per Building

Year	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel /Motel	School	University	Other
2005	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2006	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2007	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2008	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2009	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2010	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2011	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2012	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2013	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2014	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2015	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2016	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2017	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2018	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2019	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2020	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2021	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2022	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2023	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2024	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290
2025	1.137	1.000	1.140	1.038	1.140	2.489	1.301	1.628	2.000	1.290

Commercial Gas

Commercial Gas Sales Forecast (Therms)

Year	King	Kittitas	Lewis	Pierce	Snohomish	Thurston	Total
2005	138,109,539	94,588	3,327,592	37,516,456	31,849,557	11,055,390	221,953,121
2006	140,811,165	96,483	3,392,075	38,233,906	32,488,858	11,266,781	226,289,268
2007	145,913,660	100,086	3,514,938	39,621,346	33,665,375	11,675,948	234,491,353
2008	151,088,434	103,726	3,639,540	41,028,129	34,858,758	12,090,775	242,809,362
2009	157,538,166	108,238	3,794,855	42,781,043	36,346,338	12,607,592	253,176,232
2010	164,096,176	112,810	3,952,791	44,563,146	37,858,946	13,132,976	263,716,845
2011	170,633,990	117,369	4,110,240	46,339,763	39,366,889	13,656,742	274,224,994
2012	175,947,682	121,091	4,238,199	47,784,024	40,592,401	14,082,575	282,765,972
2013	181,384,954	124,896	4,369,128	49,261,784	41,846,511	14,518,272	291,505,545
2014	186,868,125	128,732	4,501,164	50,752,001	43,111,205	14,957,639	300,318,867
2015	192,636,847	132,764	4,640,090	52,319,801	44,441,665	15,419,872	309,591,038
2016	199,208,746	137,343	4,798,366	54,105,647	45,957,445	15,946,353	320,153,901
2017	206,837,991	142,644	4,982,103	56,178,466	47,717,333	16,557,384	332,415,921
2018	213,736,680	147,445	5,148,243	58,052,945	49,308,640	17,109,971	343,503,923
2019	220,041,486	151,839	5,300,078	59,766,193	50,762,894	17,615,049	353,637,539
2020	226,518,970	156,351	5,456,072	61,526,304	52,257,004	18,133,933	364,048,633
2021	233,495,387	161,203	5,624,089	63,421,865	53,866,223	18,692,728	375,261,495
2022	241,017,804	166,427	5,805,260	65,465,649	55,601,421	19,295,196	387,351,757
2023	248,839,392	171,855	5,993,635	67,590,618	57,405,695	19,921,580	399,922,776
2024	256,936,222	177,470	6,188,642	69,790,296	59,273,483	20,569,977	412,936,090
2025	265,296,816	183,245	6,390,018	72,061,242	61,202,217	21,239,315	426,372,851

Commercial Gas Customer Count Forecast

Year	King	Kittitas	Lewis	Pierce	Snohomish	Thurston	Total
2005	30,103	38	848	8,558	7,127	2,932	49,606
2006	30,950	39	871	8,799	7,328	3,015	51,003
2007	31,821	40	896	9,046	7,534	3,100	52,437
2008	32,709	41	921	9,299	7,744	3,186	53,900
2009	33,622	43	947	9,559	7,961	3,275	55,406
2010	34,558	44	973	9,825	8,182	3,366	56,948
2011	35,511	45	1,000	10,096	8,408	3,459	58,519
2012	36,484	46	1,027	10,372	8,638	3,554	60,122
2013	37,486	48	1,056	10,657	8,875	3,651	61,773
2014	38,522	49	1,085	10,952	9,121	3,752	63,481
2015	39,584	50	1,115	11,253	9,372	3,856	65,230
2016	40,660	52	1,145	11,559	9,627	3,961	67,003
2017	41,760	53	1,176	11,872	9,887	4,068	68,816
2018	42,894	54	1,208	12,194	10,156	4,178	70,684
2019	44,059	56	1,241	12,526	10,432	4,292	72,605
2020	45,256	57	1,274	12,866	10,715	4,408	74,577
2021	46,484	59	1,309	13,215	11,006	4,528	76,600
2022	47,741	61	1,344	13,572	11,304	4,650	78,672
2023	49,030	62	1,381	13,939	11,609	4,776	80,796
2024	50,355	64	1,418	14,316	11,922	4,905	82,980
2025	51,488	65	1,444	14,715	12,270	5,054	85,035

Commercial Gas Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2005	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2006	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2007	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2008	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2009	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668

Commercial Gas Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2010	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2011	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2012	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2013	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2014	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2015	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2016	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2017	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2018	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2019	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2020	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2021	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2022	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2023	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2024	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2025	King	0.104450	0.018432	0.252147	0.006858	0.120457	0.041644	0.047810	0.054901	0.021634	0.331668
2005	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2006	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2007	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2008	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2009	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2010	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2011	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2012	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2013	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2014	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2015	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2016	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2017	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2018	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577

Commercial Gas Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2019	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2020	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2021	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2022	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2023	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2024	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2025	Kittitas	0.214310	0.037819	0.018725	0.005524	0.057017	0.048685	0.080985	0.214680	0.239678	0.082577
2005	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2006	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2007	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2008	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2009	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2010	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2011	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2012	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2013	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2014	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2015	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2016	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2017	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2018	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2019	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2020	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2021	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2022	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2023	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2024	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2025	Lewis	0.200933	0.035459	0.055959	0.000000	0.286611	0.064613	0.025289	0.082369	0.031387	0.217380
2005	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2006	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503

Commercial Gas Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2007	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2008	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2009	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2010	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2011	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2012	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2013	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2014	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2015	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2016	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2017	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2018	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2019	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2020	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2021	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2022	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2023	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2024	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2025	Pierce	0.173205	0.030566	0.131323	0.010872	0.228504	0.071500	0.017294	0.104852	0.012382	0.219503
2005	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2006	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2007	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2008	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2009	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2010	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2011	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2012	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2013	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2014	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2015	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049

Commercial Gas Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2016	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2017	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2018	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2019	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2020	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2021	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2022	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2023	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2024	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2025	Snohomish	0.167209	0.029507	0.186335	0.011317	0.159915	0.051368	0.027461	0.131856	0.004983	0.230049
2005	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2006	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2007	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2008	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2009	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2010	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2011	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2012	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2013	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2014	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2015	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2016	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2017	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2018	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2019	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2020	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2021	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2022	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2023	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386
2024	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386

Commercial Gas Building Type Allocation

Year	County	Dry Goods Retail	Grocery	Office	Restaurant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2025	Thurston	0.159739	0.028189	0.212291	0.011545	0.199104	0.064561	0.032951	0.115326	0.018908	0.157386

Commercial Gas Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Dry_Goods_Retail	Other	Gas	1	- - -	- - -	- - -
Dry_Goods_Retail	Space_Heat	Electric	1	- - -	- - -	- - -
Dry_Goods_Retail	Space_Heat	Gas	0.37	0.6	0.02	0.01
Dry_Goods_Retail	Water_Heat	Electric	1	- - -	- - -	- - -
Dry_Goods_Retail	Water_Heat	Gas	0.700	0.225	0.045	0.030
Grocery	Other	Gas	1	- - -	- - -	- - -
Grocery	Space_Heat	Electric	1	- - -	- - -	- - -
Grocery	Space_Heat	Gas	0.37	0.6	0.02	0.01
Grocery	Water_Heat	Electric	1	- - -	- - -	- - -
Grocery	Water_Heat	Gas	0.700	0.225	0.045	0.030
Hospital	Cooking	Electric	1	- - -	- - -	- - -
Hospital	Cooking	Gas	0.95	0.05	- - -	- - -
Hospital	Other	Gas	1	- - -	- - -	- - -
Hospital	Pool_Heat	Gas	1	- - -	- - -	- - -
Hospital	Space_Heat	Electric	1	- - -	- - -	- - -
Hospital	Space_Heat	Gas	0.37	0.6	0.02	0.01
Hospital	Water_Heat	Electric	1	- - -	- - -	- - -
Hospital	Water_Heat	Gas	0.700	0.225	0.045	0.030
Hotel_Motel	Other	Gas	1	- - -	- - -	- - -
Hotel_Motel	Pool_Heat	Gas	1	- - -	- - -	- - -
Hotel_Motel	Space_Heat	Electric	1	- - -	- - -	- - -
Hotel_Motel	Space_Heat	Gas	0.37	0.6	0.02	0.01
Hotel_Motel	Water_Heat	Electric	1	- - -	- - -	- - -
Hotel_Motel	Water_Heat	Gas	0.700	0.225	0.045	0.030
Office	Other	Gas	1	- - -	- - -	- - -

Commercial Gas Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Office	Space_Heat	Electric	1	- - -	- - -	- - -
Office	Space_Heat	Gas	0.37	0.6	0.02	0.01
Office	Water_Heat	Electric	1	- - -	- - -	- - -
Office	Water_Heat	Gas	0.700	0.225	0.045	0.030
Other	Other	Gas	1	- - -	- - -	- - -
Other	Space_Heat	Electric	1	- - -	- - -	- - -
Other	Space_Heat	Gas	0.37	0.6	0.02	0.01
Other	Water_Heat	Electric	1	- - -	- - -	- - -
Other	Water_Heat	Gas	0.700	0.225	0.045	0.030
Restaurant	Cooking	Electric	1	- - -	- - -	- - -
Restaurant	Cooking	Gas	0.95	0.05	- - -	- - -
Restaurant	Other	Gas	1	- - -	- - -	- - -
Restaurant	Space_Heat	Electric	1	- - -	- - -	- - -
Restaurant	Space_Heat	Gas	0.37	0.6	0.02	0.01
Restaurant	Water_Heat	Electric	1	.	.	.
Restaurant	Water_Heat	Gas	0.700	0.225	0.045	0.030
School	Other	Gas	1	- - -	- - -	- - -
School	Pool_Heat	Gas	1	- - -	- - -	- - -
School	Space_Heat	Electric	1	- - -	- - -	- - -
School	Space_Heat	Gas	0.37	0.6	0.02	0.01
School	Water_Heat	Electric	1	.	.	.
School	Water_Heat	Gas	0.700	0.225	0.045	0.030
University	Cooking	Electric	1	- - -	- - -	- - -
University	Cooking	Gas	0.95	0.05	- - -	- - -
University	Other	Gas	1	- - -	- - -	- - -
University	Pool_Heat	Gas	1	- - -	- - -	- - -
University	Space_Heat	Electric	1	- - -	- - -	- - -
University	Space_Heat	Gas	0.37	0.6	0.02	0.01
University	Water_Heat	Electric	1	- - -	- - -	- - -
University	Water_Heat	Gas	0.700	0.225	0.045	0.030
Warehouse	Other	Gas	1	- - -	- - -	- - -
Warehouse	Space_Heat	Electric	1	- - -	- - -	- - -

Commercial Gas Efficiency Shares

bName	nName	fName	Stock	Standard	High	Premium
Warehouse	Space_Heat	Gas	0.37	0.6	0.02	0.01
Warehouse	Water_Heat	Electric	1	- - -	- - -	- - -
Warehouse	Water_Heat	Gas	0.700	0.225	0.045	0.030
Hotel_Motel	Cooking	Electric	1	- - -	- - -	- - -
Hotel_Motel	Cooking	Gas	0.95	0.05	- - -	- - -
School	Cooking	Electric	1	- - -	- - -	- - -
School	Cooking	Gas	0.95	0.05	- - -	- - -
Grocery	Cooking	Electric	1	- - -	- - -	- - -
Grocery	Cooking	Gas	0.95	0.05	- - -	- - -

Commercial Gas Electric Price Forecast ($/kWh)

Year	Price Deflator	Commercial Average Price	Commercial Marginal Price
2005	100.00	0.07395	0.07395
2006	102.29	0.07665	0.07665
2007	104.61	0.07528	0.07528
2008	107.08	0.07694	0.07694
2009	109.72	0.07868	0.07868
2010	112.67	0.08066	0.08066
2011	115.97	0.08284	0.08284
2012	119.34	0.08505	0.08505
2013	123.05	0.08736	0.08736
2014	126.80	0.08991	0.08991
2015	130.47	0.09273	0.09273
2016	134.23	0.09558	0.09558
2017	138.36	0.09863	0.09863
2018	142.88	0.10190	0.10190
2019	147.75	0.10536	0.10536
2020	152.92	0.10895	0.10895
2021	158.32	0.11267	0.11267
2022	163.95	0.11653	0.11653
2023	169.82	0.12049	0.12049
2024	175.93	0.12458	0.12458
2025	182.27	0.12881	0.12881

Commercial Gas Gas Price Forecast ($/therm)

Year	Price Deflator	Commercial Average Price	Commercial Marginal Price
2005	100.00	0.98069	0.98069
2006	102.29	0.98887	0.98887
2007	104.61	0.97624	0.97624
2008	107.08	0.88972	0.88972
2009	109.72	0.86538	0.86538
2010	112.67	0.79505	0.79505
2011	115.97	0.87203	0.87203
2012	119.34	0.89133	0.89133
2013	123.05	0.96310	0.96310
2014	126.80	1.02968	1.02968
2015	130.47	1.03847	1.03847
2016	134.23	0.92677	0.92677
2017	138.36	0.96180	0.96180
2018	142.88	1.05257	1.05257
2019	147.75	1.13966	1.13966
2020	152.92	1.20407	1.20407
2021	158.32	1.22945	1.22945
2022	163.95	1.25134	1.25134
2023	169.82	1.27385	1.27385
2024	175.93	1.27357	1.27357
2025	182.27	1.29648	1.29648

Commercial Gas Average Square Footage by Building Type

Year	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2005	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2006	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2007	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2008	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2009	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2010	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2011	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2012	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2013	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2014	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2015	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2016	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2017	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2018	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2019	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2020	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2021	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2022	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2023	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2024	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284
2025	6,421	8,637	12,985	12,772	9,525	8,153	3,126	22,241	32,392	15,284

Commercial Gas Number of Gas Meters Per Building

Year	Dry Goods Retail	Grocery	Office	Restau-rant	Ware-house	Hospital	Hotel/ Motel	School	University	Other
2005	1	1	1	1	1	1	1	1	1	1
2006	1	1	1	1	1	1	1	1	1	1
2007	1	1	1	1	1	1	1	1	1	1
2008	1	1	1	1	1	1	1	1	1	1
2009	1	1	1	1	1	1	1	1	1	1
2010	1	1	1	1	1	1	1	1	1	1
2011	1	1	1	1	1	1	1	1	1	1
2012	1	1	1	1	1	1	1	1	1	1
2013	1	1	1	1	1	1	1	1	1	1
2014	1	1	1	1	1	1	1	1	1	1
2015	1	1	1	1	1	1	1	1	1	1
2016	1	1	1	1	1	1	1	1	1	1
2017	1	1	1	1	1	1	1	1	1	1
2018	1	1	1	1	1	1	1	1	1	1
2019	1	1	1	1	1	1	1	1	1	1
2020	1	1	1	1	1	1	1	1	1	1
2021	1	1	1	1	1	1	1	1	1	1
2022	1	1	1	1	1	1	1	1	1	1
2023	1	1	1	1	1	1	1	1	1	1
2024	1	1	1	1	1	1	1	1	1	1
2025	1	1	1	1	1	1	1	1	1	1

Appendix D: Demand-Response References

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