South Carolina Electric and Gas

DSM Potential Study

Final Report

September 30, 2009

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Prepared for
South Carolina Electric and Gas

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1. Objectives and Methodology

The primary objective of this study is to characterize the realistic short-term potential for a variety of demand side management (DSM) or energy efficiency programs in the South Carolina Electric and Gas (SCE&G) service territory. This study evaluates a variety of potential programs for their cost-effectiveness in comparison to SCE&G's generation alternatives by: forecasting participation in the programs, estimating the cost of implementing the programs, and evaluating their impact on the system peak demand (MW) and annual energy requirements (MWh).

The focus of this study is upon estimating the potential for future programs using the individual DSM measures set forth in the South Carolina Measures Library Database (the "Measures Database") prepared for SCE&G by Morgan Marketing Partners (MMP). However, for the sake of completeness, several measures of interest that are not contained in the Measures Database were included in the analysis.

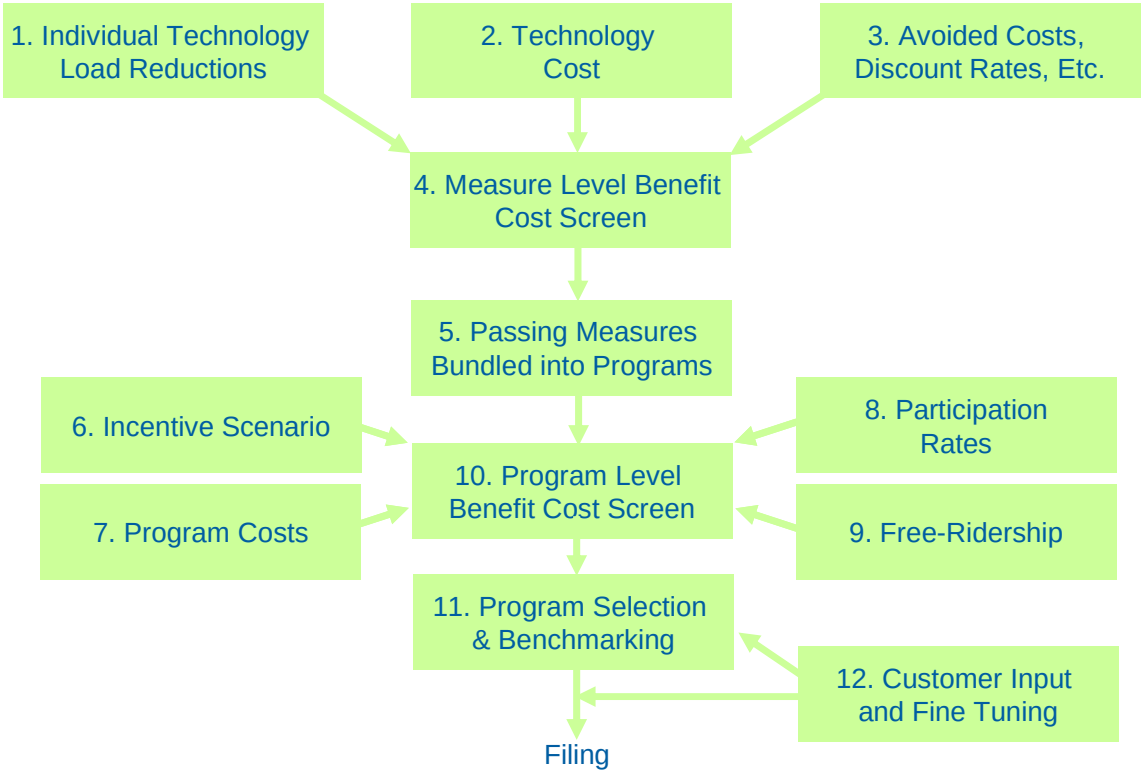
This study therefore, assessed the potential for these measures and programs under the specific set of assumptions contained herein, including assumptions regarding factors outside of SCE&G's control such as regulatory treatment, codes and standards, and other factors. It does not attempt to address the unconstrained potential for all theoretically possible DSM measures, nor does it attempt to characterize the cost-effectiveness or impact of SCE&G's current DSM programs.

The primary steps in the analysis included:

1. **Development of DSM measure load impacts** included in the Measures Database and identification of any gaps or remaining measure information needs
2. **Development of an End-Use Breakdown and Baseline Characteristics** – disaggregating the data into its component end-uses, including characterization of the customer baselines (equipment saturations, customer counts, etc.)
3. **Screening of the individual measures** including the calculation of measure-level benefit cost ratios (and the collection of all necessary cost-effectiveness assumptions)
4. **Bundling of the measures** that pass the screening into groups of measures that would likely be delivered within an individual program
5. **Forecasting of Participation** in each program under a variety of scenarios
6. **Costing of each program** including: incentive; administration; marketing; evaluation, monitoring, and verification (EM&V); and other costs
7. **Program cost-effectiveness screening** based on the bundled measures and program costs

The high-level process for conducting the analysis is illustrated in Figure 1, and each individual step is discussed in detail in following sections of this report.

Figure 1: High-Level Process for Determining DSM Potential



1.1. Development of DSM Measure Load Impacts

Primary inputs for any study of DSM potential include the estimated peak demand and annual energy reductions associated with a single instance of the DSM measures being studied. For this study, the South Carolina Measures Library Database (Measures Database), prepared by Morgan Marketing Partners was the primary source of information. This database provides information on more than 300 individual DSM measures, and documents the specific assumptions regarding the efficiency of the measure, baseline conditions (nature of the equipment or practice the efficient measure replaces), and the methodology for calculation of demand and energy impacts.

The database did not contain information regarding an additional seventeen measures that were of interest to SCE&G. Therefore, the impacts and assumptions for these additional measures were independently developed by ICF. A list of all measures evaluated in this study is included in Appendix A.

1.2. Development of an End-Use Breakdown and Baseline Characteristics

In order to estimate the potential to reduce energy and demand, it is first necessary to understand how electricity is being used, and by which customers.

Table 1 summarizes the number of customers and annual electricity sales by customer segment.

Table 1: Summary of Customers and Annual Energy Usage

Utility Territory	Customers	% of Customers	Sales	% of Sales
Residential	546,787	86%	7,831,935	36%
Commercial	88,298	14%	7,484,562	35%
Industrial	749	0%	6,269,644	29%
Total	**635,834**	**100%**	**21,586,142**	**100%**

As suggested by Table 1, SCE&G's residential customers represent approximately 86% of the total customer base and 36% of the total annual energy consumption. To reflect this, the residential customer class represents a focus of the SCE&G DSM portfolio.

To further understand how energy is being used, an additional analysis of the industrial, commercial, and residential sectors was performed. For the residential sector, the single-family and mobile home segments account for the largest sources of energy savings potential.

Table 2: Residential Energy Consumption by Home Type

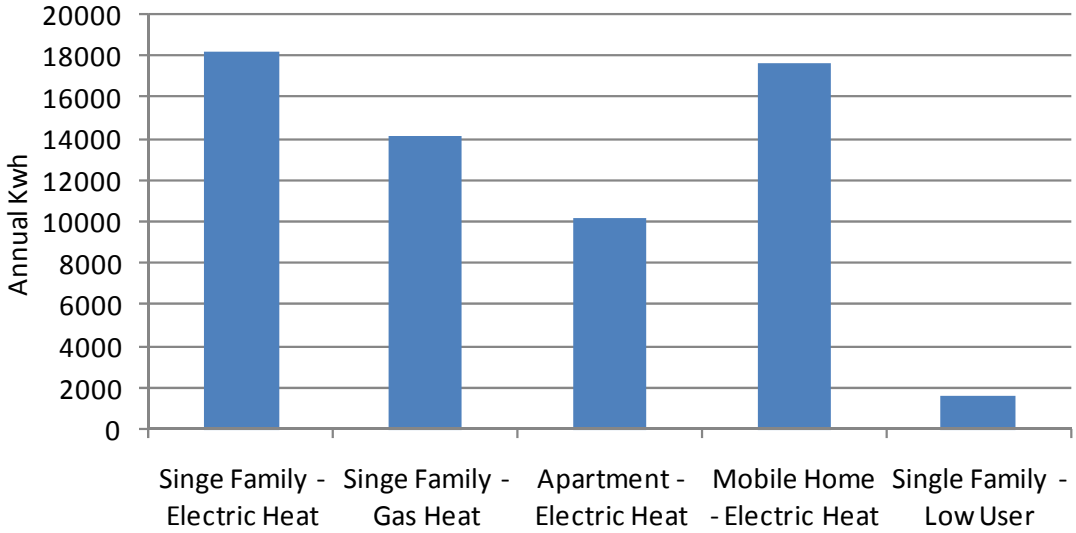
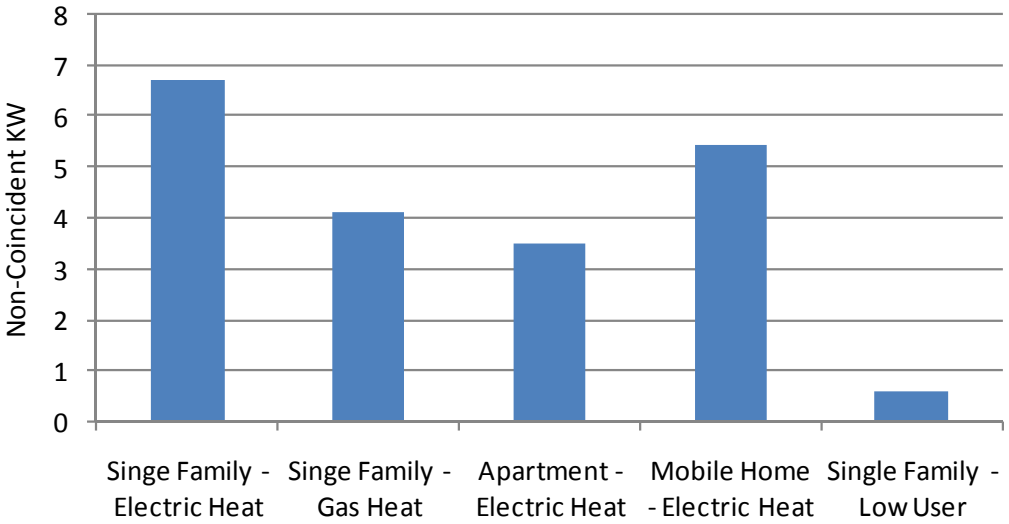


Table 3: Residential Non-Coincident Demand by Home Type



For the commercial sector, Table 4 shows that the retail, office, educational, and food service sectors account for 69% of the total regional commercial consumption. Table 4 also shows that the most prevalent end-uses include lighting, cooling, and office equipment end-uses which account for an estimated 61% of the total regional commercial consumption. These end-uses therefore represent an important (but not exclusive) set of potential DSM program opportunities.

Table 4: Commercial Energy Consumption by Building Type and End-Use

Building Type	MWh	% of Total	Heating	Cooling	Water Heating	Ventilation	Cooking	Lighting	Refrig-eration	Office Equip - PCs	Office Equip - NonPCs	Other
Assembly	384,394	**5.1%**	0.22%	0.63%	0.09%	0.34%	0.04%	1.91%	0.14%	0.29%	0.45%	1.01%
Education	1,215,803	**16.2%**	1.15%	2.47%	1.57%	0.80%	0.08%	5.31%	0.37%	0.82%	1.26%	2.41%
Food Sales	329,206	**4.4%**	0.13%	0.42%	0.30%	0.11%	0.06%	0.47%	2.36%	0.07%	0.10%	0.39%
Food Service	538,705	**7.2%**	0.23%	1.81%	0.19%	0.25%	0.60%	1.29%	1.22%	0.21%	0.32%	1.07%
Health Care	371,296	**5.0%**	0.08%	0.80%	0.10%	0.35%	0.02%	1.26%	0.28%	0.64%	0.99%	0.44%
Lodging	467,233	**6.2%**	0.22%	2.27%	0.32%	0.23%	0.10%	1.18%	0.13%	0.26%	0.40%	1.13%
Office -Large	750,704	**10.0%**	0.20%	0.83%	0.09%	0.62%	0.02%	2.71%	0.03%	1.19%	1.85%	2.49%
Office -Small	492,620	**6.6%**	0.21%	1.02%	0.31%	0.27%	0.01%	1.16%	0.04%	0.79%	1.22%	1.55%
Merc / Service	2,080,565	**27.8%**	1.31%	4.14%	3.07%	1.40%	0.11%	9.79%	0.36%	1.38%	2.13%	4.12%
Warehouse	441,389	**5.9%**	0.14%	0.55%	0.16%	0.07%	0.00%	1.93%	0.14%	0.65%	1.00%	1.26%
Other	412,647	**5.5%**	0.15%	0.62%	0.14%	0.38%	0.03%	0.76%	0.04%	0.68%	1.05%	1.67%
Total (from SCEG)	**7,484,562**		**4.0%**	**15.6%**	**6.3%**	**4.8%**	**1.1%**	**27.8%**	**5.1%**	**7.0%**	**10.8%**	**17.5%**

Indicates Share exceeds 1% of Sector Sales
Indicates Share exceeds 7.5% of Sector Sales

For the industrial sector, the Department of Energy's Energy Information Administration's Manufacturing Energy Consumption Survey 2002 data for the South Census region was used to disaggregate total sector energy consumption by SIC code and end use. Next, an electric consumption profile for each industrial group, (e.g., printing, pharmaceuticals, food industries, and metal durables, etc.) and for each end use (e.g., lighting, motors, and compressed air, etc.) was developed. The results of this analysis are presented in Table 5.

Table 5: Industrial Energy Consumption by SIC Code and End-Use

SIC Code	MWh	% of Total	Process Heating	Process Cooling and Refrigeration	Machine Drive	Electro-Chemical Processes	Other Process Use	Facility HVAC	Facility Lighting	Other Nonprocess Use	Other
9 - Fishing, Hunting, Trapping	139,154	2.2%	0.22%	0.14%	0.88%	0.00%	0.01%	0.49%	0.35%	0.10%	0.00%
20 - Food Products	86,169	1.4%	0.17%	0.10%	1.10%	0.01%	0.00%	0.00%	0.00%	0.04%	0.00%
22 - Textile Mill Products	360,597	5.8%	0.55%	0.49%	3.23%	0.01%	0.03%	0.00%	0.00%	0.00%	0.03%
24-25 - Lumber & Wood Products	308,815	4.9%	0.27%	0.06%	3.53%	0.00%	0.01%	0.22%	0.63%	0.02%	0.23%
26 - Paper & Allied Products	529,053	8.4%	0.20%	0.14%	7.03%	0.08%	0.02%	0.38%	0.37%	0.07%	0.15%
28 - Chemicals & Allied Products	1,415,286	22.6%	0.85%	2.12%	13.04%	3.20%	0.03%	1.46%	1.06%	0.30%	0.50%
30 - Rubber & Plastics Products	541,169	8.6%	1.34%	0.71%	4.65%	0.04%	0.08%	0.86%	0.70%	0.23%	0.00%
32 - Stone, Clay, Glass, & Concrete	510,055	8.1%	1.66%	0.29%	4.79%	0.00%	0.05%	0.51%	0.39%	0.11%	0.26%
33-37 - Metals, Machinery, & Equipment	728,079	11.6%	1.92%	0.49%	4.35%	0.75%	0.11%	1.87%	1.29%	0.39%	0.45%
91 - Government	0	0.0%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
99 - Other	1,651,269	26.3%	2.66%	1.72%	10.46%	0.05%	0.13%	5.85%	4.19%	1.22%	0.00%
Total	**6,269,644**										

Indicates Share exceeds 1% of Sector Sales

1.3. Screening of the Individual Measures

Using the demand and energy impact from the Measures Database, each individual measure was evaluated for cost-effectiveness using the Total Resource Cost (TRC) test, as defined by the California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects.[1] The purpose of conducting this screening was to identify any measures that would not be cost-effective on a stand alone basis (i.e., without as yet considering program implementation costs or free-riders.) Typically, it would be inappropriate to include such measures in a DSM program, absent a compelling reason to do so.

The benefits for each measure were calculated based on the present worth of the lifetime of energy and demand savings resulting from the measure's installation. The demand (or capacity) and energy benefits (collectively, the "avoided costs") were calculated separately.

The avoided capacity costs were developed by evaluating the kW saved by the measure at the time of SCE&G system peak, typically around 5 p.m. on a hot summer day, and valuing that reduction at the cost SCE&G would otherwise incur to build peaking capacity (a simple cycle combustion turbine) to serve that load plus the avoided costs related to transmission and distribution facilities. For the purposes of this calculation, a value of $136.41 per kW (in 2009 dollars) was used, followed by the application of a 15% reserve margin factor and escalated at 3.0% annually.

The avoided energy costs were derived by applying the energy saved by the measure (in each of the 8,760 hours of the year, in each future year of the measure's life) against SCE&G's production costs in that hour. The production costs were provided in a four period format – summer peak, summer off-peak, winter peak, and winter off-peak.

If the hour-by-hour distribution of the measure's impact on energy was not available from the Database, the annual energy reductions were distributed based on the estimated 8,760 loadshape associated with the measure-end use (e.g., residential cooling, water heating, etc.) Hourly estimates of avoided energy costs per kWh through 2018 were provided by SCE&G, and include the estimated impact of potential future carbon regulations. Where the measure life

[1] Available at http://drrc.lbl.gov/pubs/CA-SPManual-7-02.pdf

extended past 2018, the avoided costs were escalated at the compound annual growth rate consistent with the period of costs provided.

The incremental cost of each measure (i.e., the cost of the efficient measure over and above the cost of the measure that would otherwise have been installed) was obtained primarily from the Measures Database. Other sources included the California Database for Energy Efficiency Resources (DEER), evaluation results from the program of other utilities, and program specific results from SCE&G and ICF.

The benefit cost ratio or "cost-effectiveness" of each individual measure was then calculated according to the following formula:

Equation 1: TRC Test Formula

$$Benefits_{TRC} = \sum_{t=1}^{Life} \frac{S_{Electricity} \cdot EAC_t + S_{Peak} \cdot PAC_t}{(1+d)^t}$$

$$Costs_{TRC} = \sum_{t=1}^{Life} \frac{IC_t}{(1+d)^t}$$

where:

- Life is the life of the measure in years;
- $S_{Electricity}$ is the annual kWh of electricity savings for the measure;
- EAC_t is the weighted average electricity avoided cost per kWh in year t (based on the measure's individual loadshape) ;
- S_{peak} is the coincident peak savings of the measure;
- PAC_t is the peak avoided costs per coincident kW in year t;
- IC is the measure's incremental cost;
- d is the discount rate (8.59%)

The complete results of this process are provided in Appendix A, which includes the TRC B/C ratio, incremental cost, kW, and kWh for all measures screened. Note that each measure was screened for installation in a variety of building types, to verify the appropriateness of each measure for many different applications, climate zones, and customer types. Table 6 provides an illustration of these results for a subset of residential measures.

Table 6: TRC Test Cost Effectiveness Results for a Subset of Residential Measures

Climate Zone	Sector	Sub-Sector	Vintage	End Use	Technology Type	Efficient Measure	Unit Name	Measure TRC
Charleston	Residential	Basement	1950	HVAC	Air Source Heat Pump	ASHP - SEER 14	ton	3.54
Charleston	Residential	Basement	1950	HVAC	Air Source Heat Pump	ASHP - SEER 15	ton	2.92
Charleston	Residential	Basement	1950	HVAC	Air Source Heat Pump	ASHP - SEER 16	ton	1.89
Charleston	Residential	Basement	1950	HVAC	Air Source Heat Pump	ASHP - SEER 17	ton	1.45
Charleston	Residential	Basement	1950	HVAC	Air Source Heat Pump	ASHP - SEER 18	ton	1.28
Charleston	Residential	Basement	1980	HVAC	Air Source Heat Pump	ASHP - SEER 14	ton	3.31
Charleston	Residential	Basement	1980	HVAC	Air Source Heat Pump	ASHP - SEER 15	ton	2.79
Charleston	Residential	Basement	1980	HVAC	Air Source Heat Pump	ASHP - SEER 16	ton	1.77
Charleston	Residential	Basement	1980	HVAC	Air Source Heat Pump	ASHP - SEER 17	ton	1.34
Charleston	Residential	Basement	1980	HVAC	Air Source Heat Pump	ASHP - SEER 18	ton	1.20
Charleston	Residential	Basement	2000	HVAC	Air Source Heat Pump	ASHP - SEER 14	ton	3.60
Charleston	Residential	Basement	2000	HVAC	Air Source Heat Pump	ASHP - SEER 15	ton	3.07
Charleston	Residential	Basement	2000	HVAC	Air Source Heat Pump	ASHP - SEER 16	ton	1.87
Charleston	Residential	Basement	2000	HVAC	Air Source Heat Pump	ASHP - SEER 17	ton	1.42
Charleston	Residential	Basement	2000	HVAC	Air Source Heat Pump	ASHP - SEER 18	ton	1.19

1.4. Bundling of the Measures

The objective of measure bundling is to group measures into logical bundles representing "program types". A program type is represented by a specific market segment, and high-level incentive, intervention, and delivery strategies. For example, residential lighting and appliance measures passing the TRC test might be bundled into a Residential Lighting and Appliances program. The bundling process is used because very few programs are designed and implemented that include only a single measure. Program designers attempt to build programs around combinations of measures that might appeal to a given market and that can be delivered using similar channels, and which can share in the common costs associated with program implementation.

The generic program types employed were drawn from a review of best practice program information developed by the American Council for an Energy Efficient Economy (ACEEE)[2], the Consortium for Energy Efficiency (www.cee.org), the Energy Trust of Oregon[3], the California Public Utilities Commission's (CPUC) Best Practices web site[4], and from ICF's internal review of programs operated by utilities and other program administrators across the country.

Measures that were cost-effective were bundled into at least one program. In certain cases, a measure was included in a program even if it was shown to be cost-effective for installation in most (but not all) building types if it would be impractical to prohibit participation by individual building types. Table 7 shows the residential measures as they have been bundled into individual programs. Table 8 provides the same information for non-residential measures.

[2] Available at http://www.aceee.org/utility/exemplary_programs/index.htm

[3] Available at http://www.energytrust.org/library/reports/Best_Practices/index.html?link_programs_reports_lin1Page=3

[4] Available at http://www.eebestpractices.com/index.asp

Table 7: Residential Programs – Measure Bundling

Program Name	Measure	Unit Name	Average of Efficient Equipment Life	Average of Total Incremental Cost	Average of Annual kWh Savings	Average of Annual kW Coincident Peak Savings	Average of Measure TRC
Benchmarking	Benchmarking	per home	5	$12	330	0.12	14.61
Information Displays	Information Display	per home	10	$144	500	0.08	2.44
Residential Audits - Tier 1	Quick Audit	per home	10	$250	400	0.08	1.42
Residential Audits - Tier 2	Home Performance w ENERGY STAR	per home	15	$2,000	2,858	0.62	1.49
Residential Lighting and Appliances	CFL bulbs regular	per unit	3	$3	34	0.00	2.45
	CFL bulbs specialty	per unit	3	$10	110	0.00	1.93
	CFL fixtures	per unit	3	$45	227	0.01	0.88
	Heat Pump Water Heaters	per unit	15	$700	2,885	0.50	4.01
	LED Night Light	per unit	12	$5	22	0.00	2.54
	LED Task Light	per unit	12	$25	51	0.00	1.44
	Pump and Motor Single Speed	per unit	10	$85	694	0.36	9.38
	Pump and motor w/auto controls - multi speed	per unit	10	$579	1,081	0.80	2.66
	Torchiere Floor Lamps	per unit	12	$50	477	0.02	6.07
Residential New HVAC and DHW	AC/HP	ton	16	$261	230	0.15	1.92
	Tankless Water Heater - Existing	per home	15	$730	3,660	0.39	1.67
	Tankless Water Heater - New	per home	15	$730	3,660	0.39	1.67
	Gas Water Heater without Facilities	per home	13	$1,025	3,660	0.39	1.50
Residential Existing HVAC Efficiency	AC/HP thermostat	1000 sq ft cond floor area	9	$47	538	0.01	5.05
	AC/HP tuneup	ton	10	$77	64	0.07	1.87
	Duct Insulation	1000 sq ft cond floor area	20	$240	135	0.14	2.12
	Duct sealing	1000 sq ft cond floor area	18	$216	271	0.18	3.11
	ECM HVAC blower	ton	15	$326	664	0.09	1.65
ENERGY STAR Homes	ENERGY STAR Home	per home	20	$750	1,000	0.35	2.05

Table 8: Non-Residential Programs – Measure Bundling

Program Name	Measure	Unit Name	Average of Efficient Equipment Life	Average of Total Incremental Cost	Average of Annual kWh Savings	Average of Annual kW Coincident Peak Savings	Average of Measure TRC
C&I Prescriptive	AC/HP	ton	15	$115	159	0.10	2.49
	Air-cooled Chiller	ton	20	$42	318	0.16	13.98
	Anti Sweat Heater Control	per door	12	$30	1,335	0.00	0.13
	Anti Sweat Heater Controls	per door	15	$250	1,489	0.00	4.05
	Barrel Wraps Inj Mold and Extruders	per machine ton	5	$2	50	0.01	10.32
	Central Lighting Control	per unit	12	$2,700	11,500	3.12	4.12
	CFL Fixture	per unit	3	$45	294	0.08	1.83
	CFL Screw in	per unit	3	$3	147	0.04	13.69
	Daylight Sensor controls	per unit	12	$3,000	14,800	4.02	4.77
	Efficient Condenser	per ton of load	15	$653	1,211	0.18	0.47
	Efficient Refrigeration Condensor	per ton	15	$35	120	0.12	7.96
	Engineered Nozzles Compressed Air	each	15	$80	7,343	3.68	139.29
	Floating Head Pressure Control	per ton of load	16	$51	1,112	0.00	0.00
	Head Pressure Control	per ton	15	$80	1,264	0.00	10.75
	LED Auto Traffic Signals	per unit	6	$50	275	0.09	3.16
	LED Exit Signs Electronic Fixtures (Retrofit Only)	per unit	15	$25	158	0.02	5.45
	Night covers for displays	per linear foot	15	$35	105	0.00	2.04
	Plug Load Occupancy Sensors Document Stations	per unit	5	$150	803	0.06	1.71
	Pulse Start Metal Halide retrofit only	per unit	7	$150	430	0.12	1.84
	Refrigerant charging correction	ton	10	$38	167	0.12	4.56
	Setback/Setup	1000 sq ft cond floor area	9	$175	1,995	0.06	4.41
	Switching Controls for Multilevel Lighting	per unit	12	$3,000	8,000	2.44	2.71
	Vending Equipment Controller	per unit	5	$160	800	0.21	2.29
	VFD Fan	per fan hp	10	$222	1,472	0.14	0.75
	VFD Pump	per CHW pump hp	10	$212	2,402	0.10	0.69
	Water-Cooled cent Chiller	ton	20	$92	247	0.07	3.95
	Water-cooled screw chiller	ton	20	$90	271	0.09	4.45
	T8	per unit	10	$45	93	0.03	1.67
	T8 HO	per unit	10	$72	184	0.05	2.15
	HPT8	per unit	10	$51	142	0.04	2.27
	LW HPT8	per unit	10	$60	92	0.03	1.29
	LW T8	per unit	5	$2	15	0.00	3.46
	Occupancy Sensors	per unit	12	$150	748	0.21	6.21
	High Bay T5HO	per unit	10	$357	929	0.22	2.45
	High Bay Fluorescent	per unit	10	$230	1,058	0.25	3.63
	Garage HID	per unit	12	$650	1,275	0.15	1.42
	HP Water Heater	per unit	15	$10,600	184,058	36.54	14.29
	Motors	per unit	15	$488	1,003	0.27	2.05
	Pumps	per unit	15	$472	2,103	0.57	4.71
	VFD	per unit	15	$4,272	20,399	4.31	4.17
	ENERGY STAR Commercial Solid Door Refrigerators	per unit	12	$375	987	0.11	2.13
	ENERGY STAR Commercial Solid Door Freezers	per unit	12	$150	520	0.06	2.56
	Energy Efficient Ice Machines	per unit	12	$1,367	3,465	0.40	1.86
	ENERGY STAR Steam Cookers	per unit	12	$4,150	12,914	3.01	2.83
	ENERGY STAR Hot Holding Cabinets	per unit	12	$1,783	3,299	0.60	1.55
	Pellet Dryer Tanks and Ducts	per linear foot	5	$56	185	0.04	1.41
C&I Custom	Custom Measure	per building	10	$50,000	500,000	50.00	6.25
	Window Film	100 sqft glazing	10	$154	1,215	0.44	1.60
	CHW reset	ton	5	$1	5	0.00	0.76

1.5. Forecasting of Participation

Program participation was estimated using a combination of techniques, including estimating the long-run market share of the technology based on its customer payback, and upon survey data that reveals the proportion of customers who say they are willing to accept such a payback. We then estimated the rate at which we would approach the long-run market share using an S-curve. By multiplying the annual values of the S-curve for each year by the long-run market share, applying a growth rate for the number of customers, and making other adjustments as necessary to reflect the naturally occurring rate of adoption of the measure, the annual number of installations was estimated for each year in the three year period. These results were then

validated based on available information from other utility programs and professional judgment as necessary. The estimates of annual penetration were applied to the total eligible number of units. The total eligible number of units was estimated as the product of the following factors shown below:

1. Total Sub-Sector Units – The total number of applicable buildings or homes. The value assigned was dependent upon whether the measure was to be applied to existing structures or new construction. For measures applied to existing construction, the value was the number of existing buildings or homes within the study area. For measures applied to new construction, the value was the annual quantity of new buildings or homes constructed within the study area each year.

2. Technology Units Per Sub-Sector Unit - The number of technology units each building would contain. For example, there are many individual incandescent lamps in a single residence.

3. Applicability - The percentage of those buildings that include the baseline technology. For example, when considering a measure related to central air conditioning systems, the saturation rate of central air conditioning systems was used.

4. Feasibility - The percentage of those units for which it would be technically feasible to upgrade the baseline technology. For many measures, the applicability would be 100%. However, for certain measures, such as the addition of wall insulation to existing homes, variations in wall construction and physical inaccessibility would reduce the applicability below 100%.

5. Not Yet Adopted Rate - The percentage of units that have not already been upgraded to the efficient technology. Because each of the measures considered is commercially available, it is reasonable to expect that some percentage of the market has already adopted the measure and would not be affected by a DSM program.

6. Annual Replacement Eligibility – The annual percentage of units that would be eligible for replacement with the efficient measure. It was primarily assumed that existing units would be eligible for replacement at the end of their useful life and that existing units would reach end of life at an even rate that was inversely proportional to their lifetime. For example, units with an 18 year life would fail at a rate of 1/18, or 6% per year. For retrofit measures, it was assumed that existing units would be eligible for replacement at any time; therefore, a 100% factor was used.

For each program, the penetration rate was also evaluated in the context of the acceptable impact on rates, minimum participation levels to justify a full program, and sufficient time for ramp-up. The penetration rates and number of installations were then compared with available information from other utility programs, and modified as appropriate.

Tables 9 and 10 show the total sector units, based on the results of the usage accounting task discussed in Section 1.2.

Table 9: Residential Customers by Home Type

Residential Home Type	# of Customers	% of Customers
Single Family - w/ Basement	54,679	10%
Single Family - no Basement	410,090	75%
Manufactured Home	82,018	15%
Total	**546,787**	**100%**

Table 10: Commercial Customers by Building Type

Commercial Building Type	# of Customers	% of Customers
Assembly	3,012	3.4%
Big Box Retail	2,390	2.7%
Fast Food	19,492	22.1%
Full Service Restaurant	9,746	11.0%
Grocery	401	0.5%
Large Office	295	0.3%
Primary School	4,583	5.2%
Small Office	9,397	10.6%
Small Retail	38,982	44.1%
Total	**88,298**	**100.0%**

1.6. Costing of Each Program

For purposes of cost-effectiveness screening at the program level, ICF developed estimates of total incentive and non-incentive program costs. Incentives for weather-sensitive measures were included as part of the Measures Database. For non-weather sensitive and other measures, incentives were estimated individually for each measure and typically designed to reduce the customer's payback associated with the energy efficient investment to one year for residential customers and one and half years for non-residential customers, and bounded at a minimum of 25% and a maximum of 75% of the total incremental cost. To calculate non-incentive program costs, we reviewed other regional utility DSM program filings, research, and additional sources as available. Other sources of cost estimates include vendor quotes, monitoring and evaluation reports, and professional judgment as necessary.

Non-incentive program costs include:

- Program administrative costs – these are the utility's internal costs to administer the program.
- Program implementation costs – these are the costs associated directly with implementation of a program.
- Program marketing costs – the costs associated with production of program marketing collateral and the execution of marketing campaigns.

- Other program costs – the costs associated with the startup, implementation, and evaluation of each program.

These costs were developed for each program based on a review of costs from similar programs at other utilities and judgment where appropriate. For the purpose of program modeling, non-incentive program costs were expressed as a percentage of incentive costs.

1.7. Program Cost-Effectiveness Screening

After program costs were developed, the programs were re-screened using the TRC test. Table 11 highlights the difference in the measure and program TRC test calculations:

Table 11: Measure and Program Screening Comparison

	Measure	Program
Benefits		
Savings	Gross	Net (includes NTG)
Costs		
Incremental Costs	Gross	Net (includes NTG)
Incentive Costs	-	Net (includes 1 - NTG)
Non-Incentive Costs	-	Gross

The two main differences between the measure and program screening are the use of net savings ratios and the inclusion of program costs. First, program cost-effectiveness is based on program net savings (savings that are attributable directly to a program after netting out “free riders”). Net savings are accounted for in the calculation by multiplying gross program savings by the net-to-gross (NTG) ratio. The NTG ratio is the ratio of the net savings for a program to the gross savings. The difference between net and gross savings is represented by the savings realized by customers who:

1. would have implemented an efficiency measure even in the absence of a program incenting it (free riders), and
2. did adopt a measure that is promoted by a program after having been influenced by the program, but without taking the program incentive (free drivers or spillover).

Although both effects should be accounted for in the calculation of a NTG ratio, evaluations typically estimate only the free rider effect and thus data are often not available for the spillover effect. Therefore, the effect of applying the NTG ratio is to reduce program savings and cost-effectiveness (since program costs are not reduced by the NTG ratio).

The primary source of NTG ratios was the Energy Efficiency Policy Manual (Policy Manual)[5], prepared by the Energy Division of the CPUC. Other sources were used as appropriate.

Second, program cost-effectiveness includes program costs related to the delivery of measure-based programs. The methodology to develop these program costs was discussed in Section 1.6.

The other key steps to complete the program cost-effectiveness screening included:

- Calculating the value of measure benefits using the same approach as described earlier under measure screening
- Summing these benefits over all measures and installations included in a program
- Reducing these gross benefits by NTG ratios
- Calculating the total incentive costs by summing over the number of measures and installations projected
- Summing the total measure incremental costs over all measures and installations included in a program
- Calculating the total non-incentive program costs, calculated as a percentage of total incentive costs as described above
- Calculating the TRC, and other test benefit-cost ratios over the forecast period
    - PAC Test = Utility Avoided Supply Costs divided by Utility Incentive and Program Costs
    - PCT Test = Participant Savings and Incentives divided by Participant Incremental Costs
    - RIM Test = Utility Avoided Supply Costs divided by Utility Revenue Loss

Table 12 shows the program and portfolio benefit-cost ratios. Additional program summary results are included in Section 2 and Appendix B.

[5] Available at ftp://ftp.cpuc.ca.gov/puc/energy/electric/energy+efficiency/ee+policy/resource4.pdf

Table 12: Program Benefit-Cost Screening

Program	BC Test	
	TRC	PAC
Residential Benchmarking	10.38	10.38
Residential Energy Information Display	1.62	1.81
Residential Energy Check-up and Home Performance Audit	1.07	1.23
Residential Lighting and Appliances	1.67	2.50
Residential New HVAC and Water Heat	1.31	1.65
Residential Existing HVAC Efficiency	2.15	4.56
Residential ENERGY STAR Homes	1.32	2.04
Commercial and Industrial Prescriptive	3.58	5.96
Commercial and Industrial Custom	3.47	4.74
TOTAL	2.35	3.46

2. Program Summary Results

Table 13 shows each program's projected cumulative energy and demand savings.

Table 13: Program Cumulative Savings

Program	MWh			MW		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Residential Benchmarking	8,250	16,603	25,061	3.02	6.09	9.19
Residential Energy Information Display	1,662	3,602	5,863	0.27	0.58	0.94
Residential Energy Check-up and Home Performance Audit	2,250	5,668	10,281	0.48	1.21	2.19
Residential Lighting and Appliances	24,373	51,293	80,822	3.15	6.64	10.46
Residential New HVAC and Water Heat	7,007	15,860	26,606	1.65	3.82	6.51
Residential Existing HVAC Efficiency	3,755	11,359	22,908	1.72	5.20	10.49
Residential ENERGY STAR Homes	225	681	1,373	0.08	0.24	0.48
Commercial and Industrial Prescriptive	36,327	78,380	126,950	3.47	7.49	12.13
Commercial and Industrial Custom	19,029	41,057	66,499	2.87	6.19	10.03
TOTAL	102,878	224,503	366,363	16.71	37.44	62.41

Table 14 shows each program's projected annual program costs and benefit-cost ratios.

Table 14: Program Annual Costs and B/C Ratios

Program	Program Costs $M			BC Test	
	Year 1	Year 2	Year 3	TRC	PAC
Residential Benchmarking	0.55	0.43	0.44	10.38	10.38
Residential Energy Information Display	0.71	0.83	0.96	1.62	1.81
Residential Energy Check-up and Home Performance Audit	2.04	3.09	4.18	1.07	1.23
Residential Lighting and Appliances	3.34	3.64	3.99	1.67	2.50
Residential New HVAC and Water Heat	2.89	3.67	4.56	1.31	1.65
Residential Existing HVAC Efficiency	1.35	2.53	3.85	2.15	4.56
Residential ENERGY STAR Homes	0.29	0.34	0.48	1.32	2.04
Commercial and Industrial Prescriptive	2.94	3.10	3.58	3.58	5.96
Commercial and Industrial Custom	2.24	2.42	2.79	3.47	4.74
TOTAL	16.35	20.05	24.84	2.35	3.46

2.1. Conclusions

This Study estimates that successful implementation of these programs over three years will result in savings of over 62 MW and 366,363 MWh per year. This is equivalent to reducing annual retail energy sales by approximately 0.7% per year (in Year 3). These results compare favorably with peer utilities, putting SCE&G approximately 17 out of 41 peer utilities with respect to DSM energy savings as a percent of system retail sales. Similarly, SCE&G's planned

spending on its program in Year 3 at $25 Million is approximately 1.8% of its annual retail revenues. This also compares favorably with a group of peer utilities, putting SCE&G 18 out of 41 utilities.

Note that these findings are sensitive to a number of factors, including the following:

- Generation costs and electricity prices
- Consumer acceptance
- Creation of a comprehensive local delivery infrastructure
- Suitable funding, cost recovery, and other regulatory treatment

3. Appendix A

Sector	Efficient Measure	Unit Name	Average of Efficient Equipment Life	Average of Total Incremental Cost	Average of Annual kWh Savings	Average of Annual kW Coincident Peak Savings	Average of Measure TRC
Residential	AC thermostat - full setback	1000 sq ft cond floor area	9	$47	431	0.05	8.37
	AC thermostat - moderate setback	1000 sq ft cond floor area	9	$47	218	0.01	5.54
	AC tuneup 10% improvement	ton	10	$46	62	0.07	2.61
	AC tuneup 15% improvement	ton	10	$146	92	0.11	1.23
	AC tuneup 5% improvement	ton	10	$38	31	0.04	1.59
	ASHP - SEER 14	ton	15	$98	90	0.11	2.55
	ASHP - SEER 15	ton	15	$196	219	0.16	2.11
	ASHP - SEER 16	ton	15	$294	265	0.17	1.57
	ASHP - SEER 17	ton	15	$392	296	0.16	1.19
	ASHP - SEER 18	ton	15	$490	338	0.19	1.12
	ASHP thermostat - full setback	1000 sq ft cond floor area	9	$47	954	0.00	3.23
	ASHP thermostat - moderate setback	1000 sq ft cond floor area	9	$47	548	0.00	3.07
	ASHP tuneup 10% improvement	ton	10	$46	66	0.08	2.78
	ASHP tuneup 15% improvement	ton	10	$146	99	0.12	1.33
	ASHP tuneup 5% improvement	ton	10	$38	33	0.04	1.67
	Basement Wall Insulation	1000 sq ft basement wall area	20	$690	2	0.01	0.34
	Benchmarking	per home	5	$12	330	0.12	14.61
	Ceiling Fans	fan	15	$275	80	0.04	0.46
	Central AC Load Control	per home	10	$250	48	1.00	5.10
	CFL bulbs regular	per unit	3	$3	34	0.00	2.45
	CFL bulbs specialty	per unit	3	$10	110	0.00	1.93
	CFL fixtures	per unit	3	$45	227	0.01	0.88
	Clothes Washer Energy Star	per unit	12	$425	20	0.08	0.28
	Crawlspace Wall Insulation	1000 sq ft crawl wall area	20	$690	81	0.05	0.38
	Desuperheater for DHW	ton	15	$270	0	0.00	1.13
	DFHP - SEER 14	ton	15	$93	95	0.11	2.66
	DFHP - SEER 15	ton	15	$185	237	0.16	2.21
	DFHP - SEER 16	ton	15	$278	275	0.17	1.65
	DFHP - SEER 17	ton	15	$370	309	0.16	1.26
	DFHP - SEER 18	ton	15	$489	350	0.19	1.13
	Dishwasher Energy Star	per unit	9	$100	138	0.02	0.87
	Duct Insulation	1000 sq ft cond	20	$240	135	0.14	2.12

	floor area					
Duct sealing 15% leakage base	1000 sq ft cond floor area	18	$216	142	0.12	1.88
Duct sealing 15% leakage base with AC	1000 sq ft cond floor area	18	$216	81	0.11	1.72
Duct sealing 15% leakage base with HP	1000 sq ft cond floor area	18	$216	169	0.07	1.22
Duct sealing 20% leakage base	1000 sq ft cond floor area	18	$216	246	0.19	3.07
Duct sealing 20% leakage base with AC	1000 sq ft cond floor area	18	$216	135	0.19	2.92
Duct sealing 20% leakage base with HP	1000 sq ft cond floor area	18	$216	289	0.11	2.02
Duct sealing 25% leakage base	1000 sq ft cond floor area	18	$216	352	0.22	3.96
Duct sealing 25% leakage base with AC	1000 sq ft cond floor area	18	$216	190	0.26	4.12
Duct sealing 25% leakage base with HP	1000 sq ft cond floor area	18	$216	409	0.15	2.76
Duct sealing 30% leakage base	1000 sq ft cond floor area	18	$216	460	0.25	4.80
Duct sealing 30% leakage base with AC	1000 sq ft cond floor area	18	$216	242	0.33	5.26
Duct sealing 30% leakage base with HP	1000 sq ft cond floor area	18	$216	531	0.20	3.62
ECM AC blower - continuous with continuous base	ton	15	$326	664	0.09	1.65
ECM AC blower - continuous with cycling base	ton	15	$326	0	0.04	0.07
ECM ASHP blower - continuous with continuous base	ton	15	$1,064	398	0.07	0.36
ECM ASHP blower - continuous with cycling base	ton	15	$1,064	0	0.01	0.01
ECM furnace only blower - continuous with continuous base	ton	15	$1,111	659	0.08	0.50
ECM furnace only blower - continuous with cycling base	ton	15	$1,111	0	0.00	0.00
Electric Water Heater EF 0.93+	per unit	15	$72	157	0.02	1.95
ENERGY STAR Home	per home	20	$750	1,000	0.35	2.05
Floor Insulation	1000 sq ft floor area	20	$690	36	0.03	0.35
Freezer Recycling	per home	8	$25	997	0.26	27.49
Freezers Energy Star	per unit	12	$93	74	0.01	0.66
Furnace/AC - SEER 14	ton	18	$93	105	0.09	2.60
Furnace/AC - SEER 15	ton	18	$185	119	0.12	1.59
Furnace/AC - SEER 16	ton	18	$278	110	0.15	1.21
Furnace/AC - SEER 17	ton	18	$370	184	0.17	1.17
Gas Instant DHW (0.80 EF)	per home	15	$705	1,830	0.20	1.19
Gas Water Heater with Facilities	per home	15	$325	3,660	0.39	2.14
Gas Water Heater without Facilities	per home	13	$1,025	3,660	0.39	1.50
GSHP - EER 17	ton	18	$180	290	0.15	2.84

	GSHP - EER 17 ASHP Base	ton	18	$6,870	261	0.33	0.12
	GSHP - EER 19	ton	18	$180	397	0.21	3.92
	GSHP - EER 19 ASHP Base	ton	18	$6,870	368	0.39	0.15
	Heat Pump Water Heaters	per unit	15	$700	2,885	0.50	4.01
	Home Performance w ENERGY STAR	per home	15	$2,000	2,858	0.62	1.49
	Infiltration reduction - 10% - AC	1000 sq ft cond floor area	13	$120	26	0.01	0.68
	Infiltration reduction - 10% - ASHP	1000 sq ft cond floor area	13	$120	82	0.02	0.66
	Infiltration reduction - 10% and attic insulation - AC	1000 sq ft cond floor area	13	$877	124	0.11	0.49
	Infiltration reduction - 10% and attic insulation - ASHP	1000 sq ft cond floor area	13	$877	349	0.11	0.44
	Infiltration reduction - 15% - AC	1000 sq ft cond floor area	13	$120	40	0.03	1.10
	Infiltration reduction - 15% - ASHP	1000 sq ft cond floor area	13	$120	123	0.04	1.08
	Infiltration reduction - 15% and attic insulation - AC	1000 sq ft cond floor area	13	$877	139	0.11	0.54
	Infiltration reduction - 15% and attic insulation - ASHP	1000 sq ft cond floor area	13	$877	391	0.13	0.49
	Information Display	per home	10	$144	500	0.08	2.44
	LED Night Light	per unit	12	$5	22	0.00	2.54
	LED Task Light	per unit	12	$25	51	0.00	1.44
	Pool Pump Load Control	per home	10	$125	12	0.25	2.55
	Pump and Motor Single Speed	per unit	10	$85	694	0.36	9.38
	Pump and motor w/auto controls - multi speed	per unit	10	$579	1,081	0.80	2.66
	Quick Audit	per home	10	$250	400	0.08	1.42
	Refrigerator Recycling	per home	8	$50	1,168	0.30	16.10
	Refrigerators Energy Star	per unit	12	$93	86	0.02	0.76
	Refrigerators/Freezers Energy Star	per unit	12	$93	94	0.02	0.83
	Residential PV	(blank)	20	$8,000	1,312	0.47	0.25
	Roof Insulation	1000 sq ft roof area	20	$757	112	0.09	0.65
	Solar Domestic Hot Water	(blank)	20	$4,500	2,236	0.42	0.60
	Time Clock Reset	(blank)	5	$0	0	0.00	0.00
	Torchiere Floor Lamps	per unit	12	$50	477	0.02	6.07
	Wall Insulation	1000 sq ft wall area	20	$1,322	86	0.07	0.33
	Whole House Fan	1000 sq ft cond floor area	15	$1,127	23	0.00	0.01
	Window Replacement	100 sq ft window area	20	$2,277	253	0.19	0.31
Non-Residential	1 Lamp T5 HO with Elec Ballast replacing T12	(blank)	10	$120	55	0.02	0.39

1 Lamp T5 with Elec Ballast replacing T12	(blank)	10	$59	44	0.01	0.63
2 Lamp T5 replacing T12	(blank)	10	$74	44	0.01	0.50
2 Lamp T5HO replacing T12	(blank)	10	$140	70	0.02	0.42
3 Lamp T5 replacing T12	(blank)	10	$79	99	0.03	1.06
3 Lamp T5HO replacing T12	(blank)	10	$175	92	0.03	0.44
4 Lamp T5 replacing T12	(blank)	10	$88	88	0.02	0.85
4 Lamp T5HO replacing T12	(blank)	10	$225	191	0.05	0.72
42W 8 Lamp Hi Bay CFL	(blank)	10	$395	345	0.08	0.70
AC <65,000 1 Ph	ton	15	$56	113	0.08	3.75
AC <65,000 3 Ph	ton	15	$119	84	0.06	1.31
AC >760,000	ton	15	$98	159	0.11	3.00
AC 135,000 - 240,000	ton	15	$111	205	0.14	3.43
AC 240,000 - 760,000	ton	15	$115	108	0.08	1.74
AC 65,000 - 135,000	ton	15	$149	116	0.08	1.44
Air-cooled Chiller	ton	20	$42	318	0.16	13.98
Anti Sweat Heater Control	per door	12	$30	1,335	0.00	0.13
Anti Sweat Heater Controls	per door	15	$250	1,489	0.00	4.05
Barrel Wraps Inj Mold and Extruders	per machine ton	5	$2	50	0.01	10.32
Central Lighting Control	(blank)	12	$2,700	11,500	3.12	4.12
CFL Fixture	(blank)	3	$45	294	0.08	1.83
CFL Screw in	(blank)	3	$3	147	0.04	13.69
CHW reset 10 deg with air-cooled chiller	ton	5	$1	2	0.00	0.38
CHW reset 10 deg with water-cooled chiller	ton	5	$1	6	0.00	0.86
CHW reset 5 deg with air-cooled chiller	ton	5	$1	0	0.00	0.13
CHW reset 5 deg with water-cooled chiller	ton	5	$1	4	0.00	0.65
Combination Ovens	per unit	12	$16,884	18,432	4.20	0.99
Commercial Clothes Washers electric water heater	per unit	10	$240	86	0.12	0.80
Commercial Clothes Washers gas water heater	per unit	10	$240	9	0.03	0.18
Commercial Demand Response	per customer	1	$2,000	0	100.00	7.84
Convection Ovens	per unit	12	$2,713	2,262	0.50	0.74
Cool roof	1000 sq ft roof area	20	$8,455	117	0.06	0.01
Custom Measure	(blank)	10	$50,000	500,000	50.00	6.25
Daylight Sensor controls	(blank)	12	$3,000	14,800	4.02	4.77
Economizer	ton	15	$170	91	0.00	0.20
Efficient Condenser	per ton of load	15	$653	1,211	0.18	0.47

Efficient Refrigeration Condensor	per ton	15	$35	120	0.12	7.96
Energy Efficient Ice Machines less than 500 lbs	per unit	12	$600	1,652	0.19	2.03
Energy Efficient Ice Machines 500 to 1000 lbs	per unit	12	$1,500	2,695	0.31	1.33
Energy Efficient Ice Machines more than 1000 lbs	per unit	12	$2,000	6,048	0.69	2.23
ENERGY STAR Commercial Solid Door Freezers less than 20ft3	per unit	12	$150	520	0.06	2.56
ENERGY STAR Commercial Solid Door Freezers 20 to 48 ft3	per unit	12	$400	507	0.06	0.94
ENERGY STAR Commercial Solid Door Freezers more than 48ft3	per unit	12	$700	483	0.06	0.51
ENERGY STAR Commercial Solid Door Refrigerators less than 20ft3	per unit	12	$250	905	0.10	2.67
ENERGY STAR Commercial Solid Door Refrigerators 20 to 48 ft3	per unit	12	$500	1,069	0.12	1.58
ENERGY STAR Commercial Solid Door Refrigerators more than 48ft3	per unit	12	$900	1,361	0.16	1.12
ENERGY STAR Fryers	per unit	12	$4,708	983	0.20	0.18
ENERGY STAR Hot Holding Cabinets Full Size	per unit	12	$1,783	5,278	0.96	2.48
ENERGY STAR Hot Holding Cabinets Half Size	per unit	12	$1,783	1,788	0.33	0.84
ENERGY STAR Hot Holding Cabinets Three Quarter Size	per unit	12	$1,783	2,832	0.52	1.33
ENERGY STAR Steam Cookers 3 Pan	per unit	12	$4,150	11,188	2.55	2.43
ENERGY STAR Steam Cookers 4 Pan	per unit	12	$4,150	12,159	2.85	2.67
ENERGY STAR Steam Cookers 5 Pan	per unit	12	$4,150	13,139	3.16	2.92
ENERGY STAR Steam Cookers 6 Pan	per unit	12	$4,150	15,170	3.46	3.30
Engineered Nozzles Compressed Air	each	15	$80	7,343	3.68	139.29
Exterior HID replacement above 175W to 250W HID retrofit	(blank)	12	$500	409	0.00	0.47
Exterior HID replacement above 250W to 400W HID retrofit	(blank)	12	$800	706	0.00	0.50
Exterior HID replacement to 175W HID retrofit	(blank)	12	$400	268	0.00	0.38

Exterior Lighting BiLevel Control w Override, 150 to 1000 HID	(blank)	10	$300	743	0.00	1.22
Floating Head Pressure Control	per ton of load	16	$51	1,112	0.00	0.00
Garage HID replacement above 175W to 250W HID retrofit	(blank)	12	$500	936	0.11	1.37
Garage HID replacement above 250W to 400W HID retrofit	(blank)	12	$800	1,614	0.18	1.48
Garage HID replacement to 175W HID retrofit	(blank)	12	$400	611	0.07	1.12
Griddles	per unit	12	$3,604	1,637	0.40	0.42
GSHP <135,000 17EER	ton	15	$180	278	0.14	2.40
GSHP <135,000 19EER	ton	15	$180	386	0.20	3.33
GSHP <135,000 EER 17 ASHP base	ton	15	$6,870	277	0.29	0.10
GSHP <135,000 EER 19 ASHP base	ton	15	$6,870	384	0.35	0.12
Head Pressure Control	per ton	15	$80	1,264	0.00	10.75
High Bay 3L T5HO Replacing 250W HID	(blank)	10	$180	449	0.11	2.00
High Bay 4LT5HO Replacing 400W HID	(blank)	10	$192	882	0.21	3.67
High Bay 6L T5HO Double fixture replace 1000W HID	(blank)	10	$700	1,456	0.35	1.67
High Bay 6L T5HO replacing 400W HID	(blank)	10	$350	374	0.09	0.86
High Bay Fluorescent 4LF32T8 Replacing 250W HID	(blank)	10	$160	616	0.15	3.09
High Bay Fluorescent 6LF32T8 Replacing 400W HID	(blank)	10	$160	961	0.23	4.82
High Bay Fluorescent 8LF32T8 Double fixture replace 1000W HID	(blank)	10	$400	2,005	0.48	4.02
High Bay Fluorescent 8LF32T8 Replacing 400W HID	(blank)	10	$200	649	0.16	2.60
High Performance Glazing	100 sqft glazing	20	$5,208	1,069	0.44	0.18
HP <65,000 1 Ph	ton	15	$74	137	0.08	3.10
HP <65,000 3 Ph	ton	15	$186	90	0.06	0.84
HP >240,000	ton	15	$130	220	0.13	2.86
HP 135,000 - 240,000	ton	15	$125	166	0.10	2.19
HP 65,000 - 135,000	ton	15	$182	161	0.10	1.50
HP Water Heater 10 to 50 MBH	per unit	15	$4,000	21,156	4.20	5.35
HP Water Heater 100 to 300 MBH	per unit	15	$10,000	141,041	28.00	14.27
HP Water Heater 300 to 500 MBH	per unit	15	$14,000	282,081	56.00	20.39

HP Water Heater 50 to 100 MBH	per unit	15	$7,000	52,890	10.50	7.65
HP Water Heater above 500 MBH	per unit	15	$18,000	423,122	84.00	23.79
HPT8 4ft 1 lamp, T12 to HPT8	(blank)	10	$38	63	0.02	1.41
HPT8 4ft 1 lamp, T8 to HPT8	(blank)	10	$38	19	0.01	0.42
HPT8 4ft 2 lamp, T12 to HPT8	(blank)	10	$41	82	0.02	1.68
HPT8 4ft 2 lamp, T8 to HPT8	(blank)	10	$41	31	0.01	0.62
HPT8 4ft 3 lamp, T12 to HPT8	(blank)	10	$62	145	0.04	1.97
HPT8 4ft 3 lamp, T8 to HPT8	(blank)	10	$62	35	0.01	0.46
HPT8 4ft 4 lamp, T12 to HPT8	(blank)	10	$66	170	0.05	2.16
HPT8 4ft 4 lamp, T8 to HPT8	(blank)	10	$66	52	0.01	0.66
LED Auto Traffic Signals	(blank)	6	$50	275	0.09	3.16
LED Exit Signs Electronic Fixtures (Retrofit Only)	(blank)	15	$25	158	0.02	5.45
LED Pedestrian Signals	(blank)	8	$100	150	0.04	1.08
Light Tube	(blank)	14	$500	361	0.10	0.78
Low Watt T8 lamps	(blank)	5	$2	15	0.00	3.46
LPD reduction 15% no HVAC resizing	1000 sq ft cond floor area	5	$0	1,439	0.34	0.00
LPD reduction 15% with HVAC resizing	1000 sq ft cond floor area	5	$0	1,573	0.36	0.00
LPD reduction 30% no HVAC resizing	1000 sq ft cond floor area	5	$0	3,007	0.69	0.00
LPD reduction 30% with HVAC resizing	1000 sq ft cond floor area	5	$0	3,138	0.72	0.00
LPD reduction 45% no HVAC resizing	1000 sq ft cond floor area	5	$0	4,296	1.01	0.00
LPD reduction 45% with HVAC resizing	1000 sq ft cond floor area	5	$0	4,697	1.08	0.00
LW HPT8 4ft 1 lamp, T8LWT8	(blank)	10	$37	29	0.01	0.66
LW HPT8 4ft 2 lamp, T8LWT8	(blank)	10	$39	48	0.01	1.03
LW HPT8 4ft 3 lamp, T8LWT8	(blank)	10	$58	62	0.02	0.90
LW HPT8 4ft 4 lamp	(blank)	10	$60	92	0.03	1.29
Motors 1 to 5 HP	per unit	15	$88	113	0.03	1.46
Motors 125 to 250 HP	per unit	15	$1,079	2,435	0.66	2.56
Motors 25 to 100 HP	per unit	15	$558	1,056	0.29	2.15
Motors 7.5 to 20 HP	per unit	15	$227	408	0.11	2.04
Night Covers	per linear foot	5	$38	18	0.00	0.02
Night covers for displays	per linear foot	15	$35	105	0.00	2.04
Occupancy Sensors over 500 W	(blank)	12	$100	1,068	0.29	10.33
Occupancy Sensors under 500 W	(blank)	12	$200	427	0.12	2.09
Pellet Dryer Tanks and Ducts 3 dia	per linear foot	5	$33	98	0.02	1.25

Pellet Dryer Tanks and Ducts 4 dia	per linear foot	5	$43	134	0.03	1.33
Pellet Dryer Tanks and Ducts 5 dia	per linear foot	5	$54	175	0.04	1.40
Pellet Dryer Tanks and Ducts 6 dia	per linear foot	5	$65	216	0.05	1.45
Pellet Dryer Tanks and Ducts 8 dia	per linear foot	5	$86	304	0.08	1.61
Plug Load Occupancy Sensors Document Stations	per unit	5	$150	803	0.06	1.71
PTAC	ton	15	$110	52	0.02	0.69
PTAC - HP	ton	15	$138	50	0.02	0.26
PTAC-HP	ton	15	$138	71	0.03	0.75
Pulse Start Metal Halide retrofit only	(blank)	7	$150	430	0.12	1.84
Pumps HP 1.5	per unit	15	$350	353	0.10	1.15
Pumps HP 10	per unit	15	$332	2,355	0.64	8.05
Pumps HP 15	per unit	15	$585	3,533	0.96	6.85
Pumps HP 2	per unit	15	$350	471	0.13	1.53
Pumps HP 20	per unit	15	$850	4,710	1.28	6.29
Pumps HP 3	per unit	15	$350	707	0.19	2.29
Pumps HP 5	per unit	15	$341	1,178	0.32	3.92
Pumps HP 7.5	per unit	15	$498	1,766	0.48	4.03
Refrigerant charging correction	ton	10	$38	167	0.12	4.56
Setback/Setup	1000 sq ft cond floor area	9	$175	1,995	0.06	4.41
Sports Field Lighting HiLo Control	(blank)	10	$400	531	0.00	0.66
Switching Controls for Multilevel Lighting	(blank)	12	$3,000	8,000	2.44	2.71
T12 8ft 1 lamp retrofit to HPT8 T8 4ft 2 lamp	(blank)	10	$41	67	0.02	1.37
T12 8ft 2 lamp retrofit to HPT8 T8 4ft 4 lamp	(blank)	10	$66	49	0.01	0.62
T12HO 8ft 1 lamp retrofit to HPT8 T8 4ft 2 lamp	(blank)	10	$41	174	0.05	3.56
T12HO 8ft 2 lamp retrofit to HPT8 T8 4ft 4 lamp	(blank)	10	$66	293	0.08	3.74
T8 2ft 1 lamp	(blank)	10	$33	29	0.01	0.75
T8 2ft 2 lamp	(blank)	10	$36	37	0.01	0.86
T8 2ft 3 lamp	(blank)	10	$54	74	0.02	1.15
T8 2ft 4 lamp	(blank)	10	$57	81	0.02	1.20
T8 3ft 1 lamp	(blank)	10	$33	40	0.01	1.03
T8 3ft 2 lamp	(blank)	10	$36	37	0.01	0.86
T8 3ft 3 lamp	(blank)	10	$54	44	0.01	0.69
T8 3ft 4 lamp	(blank)	10	$57	74	0.02	1.09
T8 4ft 1 lamp	(blank)	10	$33	52	0.01	1.31
T8 4ft 2 lamp	(blank)	10	$36	63	0.02	1.46
T8 4ft 3 lamp	(blank)	10	$54	118	0.03	1.84
T8 4ft 4 lamp	(blank)	10	$57	140	0.04	2.07

T8 8ft 1 lamp	(blank)	10	$50	40	0.01	0.68
T8 8ft 2 lamp	(blank)	10	$54	74	0.02	1.15
T8 HO 8 ft 1 Lamp	(blank)	10	$66	92	0.03	1.17
T8 HO 8 ft 2 Lamp	(blank)	10	$72	184	0.05	2.15
Vending Equipment Controller	per unit	5	$160	800	0.21	2.29
VFD Fan	per fan hp	10	$222	1,472	0.14	0.75
VFD HP 1.5 Process Pumping	per unit	15	$1,445	1,623	0.34	1.16
VFD HP 10 Process Pumping	per unit	15	$2,860	10,713	2.29	3.89
VFD HP 15 Process Pumping	per unit	15	$3,265	16,232	3.43	5.14
VFD HP 2 Process Pumping	per unit	15	$1,645	2,165	0.46	1.36
VFD HP 20 Process Pumping	per unit	15	$4,515	21,643	4.57	4.96
VFD HP 25 Process Pumping	per unit	15	$5,120	27,054	5.71	5.46
VFD HP 3 Process Pumping	per unit	15	$1,845	3,246	0.69	1.82
VFD HP 30 Process Pumping	per unit	15	$5,770	32,465	6.86	5.82
VFD HP 40 Process Pumping	per unit	15	$8,095	43,286	9.14	5.53
VFD HP 5 Process Pumping	per unit	15	$2,070	5,357	1.14	2.68
VFD HP 50 Process Pumping	per unit	15	$8,950	54,108	11.43	6.25
VFD HP 7.5 Process Pumping	per unit	15	$2,860	8,116	1.71	2.93
VFD Pump	per CHW pump hp	10	$212	2,402	0.10	0.69
Water-Cooled cent Chiller > 300 ton 0.46 kW/ton with 0.28 kW/ton IPLV	ton	20	$130	388	0.12	4.34
Water-Cooled cent Chiller > 300 ton 0.46 kW/ton with 0.33 kW/ton IPLV	ton	20	$118	345	0.12	4.43
Water-Cooled cent Chiller > 300 ton 0.46 kW/ton with 0.35 kW/ton IPLV	ton	20	$113	323	0.12	4.45
Water-Cooled cent Chiller > 300 ton 0.46 kW/ton with 0.37 kW/ton IPLV	ton	20	$107	303	0.11	4.49
Water-Cooled cent Chiller > 300 ton 0.46 kW/ton with 0.44 kW/ton IPLV	ton	20	$92	240	0.11	4.55
Water-Cooled cent Chiller > 300 ton 0.52 kW/ton with 0.31 kW/ton IPLV	ton	20	$89	286	0.07	4.17
Water-Cooled cent Chiller > 300 ton 0.52 kW/ton with 0.37 kW/ton IPLV	ton	20	$75	238	0.06	4.31
Water-Cooled cent Chiller > 300 ton 0.52	ton	20	$69	213	0.06	4.36

kW/ton with 0.39 kW/ton IPLV						
Water-Cooled cent Chiller > 300 ton 0.52 kW/ton with 0.42 kW/ton IPLV	ton	20	$63	191	0.06	4.44
Water-Cooled cent Chiller > 300 ton 0.52 kW/ton with 0.49 kW/ton IPLV	ton	20	$46	120	0.05	4.55
Water-Cooled cent Chiller > 300 ton 0.58 kW/ton with 0.35 kW/ton IPLV	ton	20	$47	185	0.01	3.70
Water-Cooled cent Chiller > 300 ton 0.58 kW/ton with 0.41 kW/ton IPLV	ton	20	$33	131	0.01	3.85
Water-Cooled cent Chiller > 300 ton 0.58 kW/ton with 0.44 kW/ton IPLV	ton	20	$26	104	0.01	3.87
Water-Cooled cent Chiller > 300 ton 0.58 kW/ton with 0.47 kW/ton IPLV	ton	20	$19	79	0.01	4.01
Water-Cooled cent Chiller 150 - 300 ton 0.51 kW/ton with 0.3 kW/ton IPLV	ton	20	$162	421	0.13	3.79
Water-Cooled cent Chiller 150 - 300 ton 0.51 kW/ton with 0.36 kW/ton IPLV	ton	20	$149	374	0.13	3.82
Water-Cooled cent Chiller 150 - 300 ton 0.51 kW/ton with 0.39 kW/ton IPLV	ton	20	$144	350	0.13	3.81
Water-Cooled cent Chiller 150 - 300 ton 0.51 kW/ton with 0.41 kW/ton IPLV	ton	20	$138	328	0.13	3.81
Water-Cooled cent Chiller 150 - 300 ton 0.51 kW/ton with 0.48 kW/ton IPLV	ton	20	$123	263	0.12	3.75
Water-Cooled cent Chiller 150 - 300 ton 0.57 kW/ton with 0.34 kW/ton IPLV	ton	20	$105	310	0.07	3.80
Water-Cooled cent Chiller 150 - 300 ton 0.57 kW/ton with 0.4 kW/ton IPLV	ton	20	$91	256	0.07	3.84
Water-Cooled cent Chiller 150 - 300 ton 0.57 kW/ton with 0.43 kW/ton IPLV	ton	20	$85	229	0.07	3.83
Water-Cooled cent Chiller 150 - 300 ton 0.57 kW/ton with 0.46 kW/ton IPLV	ton	20	$78	205	0.07	3.85
Water-Cooled cent Chiller 150 - 300 ton 0.57 kW/ton with 0.54 kW/ton IPLV	ton	20	$61	131	0.06	3.75

Water-Cooled cent Chiller 150 - 300 ton 0.63 kW/ton with 0.38 kW/ton IPLV	ton	20	$49	199	0.01	3.81
Water-Cooled cent Chiller 150 - 300 ton 0.63 kW/ton with 0.45 kW/ton IPLV	ton	20	$33	139	0.01	3.96
Water-Cooled cent Chiller 150 - 300 ton 0.63 kW/ton with 0.48 kW/ton IPLV	ton	20	$26	109	0.01	3.97
Water-Cooled cent Chiller 150 - 300 ton 0.63 kW/ton with 0.51 kW/ton IPLV	ton	20	$19	81	0.00	4.10
Water-Cooled Centrifugal Chiller < 150 ton 0.56 kW/ton with 0.34 kW/ton IPLV	ton	20	$203	474	0.15	3.38
Water-Cooled Centrifugal Chiller < 150 ton 0.56 kW/ton with 0.4 kW/ton IPLV	ton	20	$191	421	0.14	3.33
Water-Cooled Centrifugal Chiller < 150 ton 0.56 kW/ton with 0.43 kW/ton IPLV	ton	20	$186	394	0.14	3.29
Water-Cooled Centrifugal Chiller < 150 ton 0.56 kW/ton with 0.46 kW/ton IPLV	ton	20	$181	370	0.14	3.26
Water-Cooled Centrifugal Chiller < 150 ton 0.56 kW/ton with 0.53 kW/ton IPLV	ton	20	$166	293	0.14	3.10
Water-Cooled Centrifugal Chiller < 150 ton 0.63 kW/ton with 0.38 kW/ton IPLV	ton	20	$125	350	0.08	3.61
Water-Cooled Centrifugal Chiller < 150 ton 0.63 kW/ton with 0.45 kW/ton IPLV	ton	20	$112	291	0.08	3.54
Water-Cooled Centrifugal Chiller < 150 ton 0.63 kW/ton with 0.48 kW/ton IPLV	ton	20	$106	261	0.07	3.47
Water-Cooled Centrifugal Chiller < 150 ton 0.63 kW/ton with 0.51 kW/ton IPLV	ton	20	$100	233	0.07	3.42
Water-Cooled Centrifugal Chiller < 150 ton 0.63 kW/ton with 0.6 kW/ton IPLV	ton	20	$83	146	0.07	3.12
Water-Cooled Centrifugal Chiller < 150 ton 0.7 kW/ton with 0.42 kW/ton IPLV	ton	20	$46	227	0.01	4.61
Water-Cooled Centrifugal Chiller < 150 ton 0.7 kW/ton with 0.5 kW/ton IPLV	ton	20	$32	161	0.01	4.78
Water-Cooled Centrifugal Chiller <	ton	20	$25	127	0.01	4.78

150 ton 0.7 kW/ton with 0.53 kW/ton IPLV						
Water-Cooled Centrifugal Chiller < 150 ton 0.7 kW/ton with 0.57 kW/ton IPLV	ton	20	$18	97	0.01	4.93
Water-cooled screw chiller < 150 ton 0.63 kW/ton with 0.38 kW/ton IPLV	ton	20	$194	507	0.18	4.01
Water-cooled screw chiller < 150 ton 0.63 kW/ton with 0.41 kW/ton IPLV	ton	20	$180	480	0.17	4.17
Water-cooled screw chiller < 150 ton 0.63 kW/ton with 0.44 kW/ton IPLV	ton	20	$165	449	0.17	4.33
Water-cooled screw chiller < 150 ton 0.63 kW/ton with 0.47 kW/ton IPLV	ton	20	$151	415	0.17	4.50
Water-cooled screw chiller < 150 ton 0.63 kW/ton with 0.5 kW/ton IPLV	ton	20	$140	391	0.16	4.68
Water-cooled screw chiller < 150 ton 0.63 kW/ton with 0.56 kW/ton IPLV	ton	20	$111	315	0.16	5.20
Water-cooled screw chiller < 150 ton 0.71 kW/ton with 0.43 kW/ton IPLV	ton	20	$149	373	0.10	3.45
Water-cooled screw chiller < 150 ton 0.71 kW/ton with 0.46 kW/ton IPLV	ton	20	$133	343	0.10	3.63
Water-cooled screw chiller < 150 ton 0.71 kW/ton with 0.5 kW/ton IPLV	ton	20	$117	308	0.09	3.81
Water-cooled screw chiller < 150 ton 0.71 kW/ton with 0.53 kW/ton IPLV	ton	20	$101	270	0.09	4.02
Water-cooled screw chiller < 150 ton 0.71 kW/ton with 0.56 kW/ton IPLV	ton	20	$88	242	0.09	4.27
Water-cooled screw chiller < 150 ton 0.71 kW/ton with 0.63 kW/ton IPLV	ton	20	$56	158	0.08	5.20
Water-cooled screw chiller < 150 ton 0.79 kW/ton with 0.47 kW/ton IPLV	ton	20	$103	239	0.02	2.41
Water-cooled screw chiller < 150 ton 0.79 kW/ton with 0.51 kW/ton IPLV	ton	20	$86	206	0.02	2.50
Water-cooled screw chiller < 150 ton 0.79 kW/ton with 0.55 kW/ton IPLV	ton	20	$68	167	0.02	2.54

Water-cooled screw chiller < 150 ton 0.79 kW/ton with 0.59 kW/ton IPLV	ton	20	$50	125	0.01	2.57
Water-cooled screw chiller < 150 ton 0.79 kW/ton with 0.62 kW/ton IPLV	ton	20	$36	94	0.01	2.67
Water-cooled screw chiller > 300 ton 0.51 kW/ton with 0.31 kW/ton IPLV	ton	20	$114	410	0.14	5.51
Water-cooled screw chiller > 300 ton 0.51 kW/ton with 0.33 kW/ton IPLV	ton	20	$104	389	0.14	5.83
Water-cooled screw chiller > 300 ton 0.51 kW/ton with 0.36 kW/ton IPLV	ton	20	$94	363	0.14	6.16
Water-cooled screw chiller > 300 ton 0.51 kW/ton with 0.38 kW/ton IPLV	ton	20	$84	336	0.14	6.55
Water-cooled screw chiller > 300 ton 0.51 kW/ton with 0.4 kW/ton IPLV	ton	20	$76	316	0.13	6.97
Water-cooled screw chiller > 300 ton 0.51 kW/ton with 0.46 kW/ton IPLV	ton	20	$56	255	0.13	8.35
Water-cooled screw chiller > 300 ton 0.58 kW/ton with 0.35 kW/ton IPLV	ton	20	$93	302	0.08	4.45
Water-cooled screw chiller > 300 ton 0.58 kW/ton with 0.37 kW/ton IPLV	ton	20	$82	278	0.08	4.75
Water-cooled screw chiller > 300 ton 0.58 kW/ton with 0.4 kW/ton IPLV	ton	20	$71	249	0.08	5.07
Water-cooled screw chiller > 300 ton 0.58 kW/ton with 0.43 kW/ton IPLV	ton	20	$60	218	0.07	5.49
Water-cooled screw chiller > 300 ton 0.58 kW/ton with 0.45 kW/ton IPLV	ton	20	$51	196	0.07	6.00
Water-cooled screw chiller > 300 ton 0.58 kW/ton with 0.51 kW/ton IPLV	ton	20	$28	128	0.06	8.36
Water-cooled screw chiller > 300 ton 0.64 kW/ton with 0.38 kW/ton IPLV	ton	20	$73	194	0.02	2.77
Water-cooled screw chiller > 300 ton 0.64 kW/ton with 0.42 kW/ton IPLV	ton	20	$60	167	0.02	2.87
Water-cooled screw chiller > 300 ton 0.64	ton	20	$48	135	0.01	2.92

kW/ton with 0.45 kW/ton IPLV						
Water-cooled screw chiller > 300 ton 0.64 kW/ton with 0.48 kW/ton IPLV	ton	20	$35	101	0.01	2.94
Water-cooled screw chiller > 300 ton 0.64 kW/ton with 0.51 kW/ton IPLV	ton	20	$25	76	0.01	3.07
Water-cooled screw chiller 150 - 300 ton 0.57 kW/ton with 0.34 kW/ton IPLV	ton	20	$149	460	0.16	4.72
Water-cooled screw chiller 150 - 300 ton 0.57 kW/ton with 0.37 kW/ton IPLV	ton	20	$137	436	0.16	4.95
Water-cooled screw chiller 150 - 300 ton 0.57 kW/ton with 0.4 kW/ton IPLV	ton	20	$125	408	0.16	5.19
Water-cooled screw chiller 150 - 300 ton 0.57 kW/ton with 0.43 kW/ton IPLV	ton	20	$113	377	0.15	5.45
Water-cooled screw chiller 150 - 300 ton 0.57 kW/ton with 0.45 kW/ton IPLV	ton	20	$104	355	0.15	5.73
Water-cooled screw chiller 150 - 300 ton 0.57 kW/ton with 0.51 kW/ton IPLV	ton	20	$80	286	0.14	6.60
Water-cooled screw chiller 150 - 300 ton 0.65 kW/ton with 0.39 kW/ton IPLV	ton	20	$118	339	0.09	3.94
Water-cooled screw chiller 150 - 300 ton 0.65 kW/ton with 0.42 kW/ton IPLV	ton	20	$105	312	0.09	4.17
Water-cooled screw chiller 150 - 300 ton 0.65 kW/ton with 0.45 kW/ton IPLV	ton	20	$91	279	0.09	4.42
Water-cooled screw chiller 150 - 300 ton 0.65 kW/ton with 0.48 kW/ton IPLV	ton	20	$78	245	0.08	4.72
Water-cooled screw chiller 150 - 300 ton 0.65 kW/ton with 0.51 kW/ton IPLV	ton	20	$67	220	0.08	5.09
Water-cooled screw chiller 150 - 300 ton 0.65 kW/ton with 0.57 kW/ton IPLV	ton	20	$40	143	0.07	6.60
Water-cooled screw chiller 150 - 300 ton 0.72 kW/ton with 0.43 kW/ton IPLV	ton	20	$87	217	0.02	2.59
Water-cooled screw chiller 150 - 300 ton 0.72 kW/ton with 0.47 kW/ton IPLV	ton	20	$72	187	0.02	2.69

	Water-cooled screw chiller 150 - 300 ton 0.72 kW/ton with 0.5 kW/ton IPLV	ton	20	$57	151	0.02	2.73
	Water-cooled screw chiller 150 - 300 ton 0.72 kW/ton with 0.54 kW/ton IPLV	ton	20	$42	113	0.01	2.75
	Water-cooled screw chiller 150 - 300 ton 0.72 kW/ton with 0.57 kW/ton IPLV	ton	20	$30	85	0.01	2.87
	Window Film	100 sqft glazing	10	$154	1,215	0.44	1.60
	WLHP <17,000	ton	15	$22	44	0.02	3.00
	WLHP 17,000-65,000	ton	15	$26	39	0.02	2.24
	WLHP 65,000-135,000	ton	15	$27	39	0.02	2.18

4. Appendix B

The suite of DSM programs proposed to be offered are:

1. Residential Benchmarking
2. Residential Energy Information Display
3. Residential Energy Check-up and Home Performance Audit
4. Residential ENERGY STAR® Lighting and Appliance
5. Residential New High Efficiency HVAC and Water Heater
6. Residential Existing HVAC Efficiency
7. Residential ENERGY STAR® New Homes
8. Commercial and Industrial Prescriptive
9. Commercial and Industrial Custom

The following includes a brief summary and metrics of the DSM programs that SCE&G intends to offer to its customers after the Commission approves the programs[6].

The following estimated impacts and costs are based on estimates of the rates of customer acceptance and participation in the proposed programs; the ability to recruit and train trade allies and performance of trade allies; and other factors. The estimates provided have not been adjusted to reflect the opt-out of any eligible customers. The estimates are by twelve month period from the date that the program is publicly made available to customers, i.e., after approval by the Commission and after putting in place the personnel, material, trade allies and other resources necessary to successfully market and deliver the programs.

Residential Benchmarking

This program will use advanced benchmarking and customer education and contact techniques to help customers identify, analyze, and act upon potential energy efficiency measures and behaviors. The Company will develop detailed energy consumption benchmarks for monthly and annual energy use. Benchmarking will include the development of peer groups (e.g., homes with similar construction characteristics, of a similar age, in a similar sub-division, and/or with similar occupancy patterns) and the identification of how the participant's energy usage compares relative to its peer group. This will also include integration of consumption data with available databases on building type (assessor's office data), census data, weather data, and/or customer provided information. Combining this information with recommendations on how to improve energy efficiency, the Company will provide both on-line and hard copy (mailed monthly) benchmarking reports to participants. In addition, customers may receive periodic

[6] These programs are identified by descriptive functional names. For marketing purposes, however, these programs may be identified by different names when the programs are rolled out to SCE&G's customers.

email alarms should their consumption fall outside established ranges. The service will be provided free of charge to customers who elect to participate. Since this approach is relatively new, this program will initially focus on fine-tuning the approach and demonstrating the net savings result.

Residential Benchmarking				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$547,500	$432,843	$438,254	
Incentive Costs	$300,000	$303,750	$307,547	ICF
Non-Incentive Costs	$247,500	$129,094	$130,707	ICF
Annual Net MWh	8,250	8,353	8,458	
Annual Net MW	3.02	3.06	3.10	
TRC Test	10.38			
Utility Test	10.38			
Net to Gross Ratio	1.00			ICF
1st Year $ / kWh	$0.07			
1st Year $ / kW	$181			
No. of Customers in Target Group	546,787	553,622	560,542	
No. of Participants	25,000	25,312	25,629	
Participation Rate	4.6%	4.6%	4.6%	
Program Cost/Participant	$19			

Residential Energy Information Display

This program is designed to address two elements missing from typical customer decision making regarding energy consumption. First, customers often may not know the price of electricity – at least they may not understand that price as an easily referenced figure such as $/hour of energy consumption in their homes. Second, customers may not typically understand how changes in their activities will change their monthly energy costs. The Residential Energy Information Display program will provide customers with a discounted in-home display which will provide a variety of metrics, including current price of energy being consumed in their home ($/kWh and/or $/hour), the cost of energy used in the current month and the variance in cost relative to an energy budget. Depending upon the final in-home display chosen, it may also provide additional information and functionality. The Residential Energy Information Display program will be marketed primarily through direct mail to a targeted set of customers where the SCE&G metering infrastructure is compatible with the in-home display. Participating customers will be charged $40 for the display (which has an estimated value of approximately $150), of which $20 will be refunded once the customer installs and registers the display and SCE&G can validate that it is accurately collecting information. This $40 charge/$20 refund will be waived for low-income customers. Customers will also receive educational materials, and a sample will receive a follow-up phone call to provide advice on using the device and assess participant satisfaction. SCE&G will separately track the usage of participants and a control group of non-

participants, and will carefully evaluate the savings attributable to the program. Note that implementation of this program will be dependent on the final identification of an in-home display that meets the Company's technical and cost criteria.

Residential Energy Information Display				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$707,155	$825,190	$961,749	
Incentive Costs	$494,514	$577,056	$672,552	ICF
Non-Incentive Costs	$212,641	$248,134	$289,197	ICF
Annual Net MWh	1,662	1,940	2,261	
Annual Net MW	0.27	0.31	0.36	
TRC Test	1.62			
Utility Test	1.81			
Net to Gross Ratio	0.80			ICF
1st Year $ / kWh	$0.43			
1st Year $ / kW	$2,659			
No. of Customers in Target Group	546,787	553,622	560,542	
No. of Participants	4,156	4,849	5,652	
Participation Rate	0.8%	0.9%	1.0%	
Program Cost/Participant	$170			

Residential Energy Check-up and Home Performance Audit

These programs will encourage homeowners to use a whole-house approach for reducing energy consumption and help establish and train a network of skilled and credible home energy analysts and contractors. The programs offer two levels of home energy evaluations: a quick home energy check-up (Tier 1 Review) and a comprehensive home performance audit (Tier 2 Audit). Customers participating in either the Tier 1 Review or Tier 2 Audit will also be made aware of the other energy efficiency programs and rebates offered by SCE&G, federal and state tax credits, and other known sources of funding and/or technical support. The Tier 1 Review represents a progression and consolidation of the Company's existing residential consultation programs (Value Visit and In-Home Energy Consultation) and will replace these programs. The Tier 1 Review is a visual checkup and "check-off" audit performed by SCE&G staff, as well as a direct installation of low-cost measures, such as installation of up to six compact fluorescent light bulbs ("CFL"), water heater wraps, and pipe insulation as appropriate. Homeowners will be encouraged to follow-up with more comprehensive energy efficiency improvements, such as air and duct sealing or appliance retrofits, or requesting a Tier 2 Audit. The Tier 1 Review is free to customers if they agree to installation of a subset of the direct installation measures and is estimated at a $250 value. Customers declining the installation of the measures will be charged $25.

The Tier 2 Audit is a comprehensive Home Performance audit, performed by a qualified independent contractor. The audit is a whole home inspection with diagnostic testing, typically

including a blower door and duct blaster test, as well as the use of standardized energy auditing software. After the audit, the contractor reviews its findings with the homeowner and makes recommendations for energy efficiency improvements. In some cases, auditors will be permitted to provide the recommended improvement, subject to Quality Assurance/Quality Control (QA/QC) and inspection standards set by the Company. Homeowners may follow-up with a variety of projects such as insulation, duct sealing and repair, and high-efficiency HVAC systems, lighting, and appliances. SCE&G will provide incentives equal to approximately 15-25% of the cost of the recommended measures, up to a cap of $1,500 per home. Incentives approximating 25–40% of the cost of recommended measure, up to a cap of $2,500 per home will be available for low income customers. The price of the Tier 2 Audit will be set by the participating independent contractors, but it is estimated that contractors will charge $300-$600 for the audit, with some contractors rolling the cost into the cost of any recommended improvements. SCE&G will identify and collaborate with HVAC, remodeling, insulation and weatherization contractors as well as Home Energy Rating System (HERS)[7] raters and other trade allies interested in offering home performance services to their customers, and arrange for them to participate in program training.

Residential Energy Check-up and Home Performance Audit				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$2,036,782	$3,093,362	$4,176,039	
Incentive Costs	$1,366,968	$2,076,082	$2,802,711	ICF
Non-Incentive Costs	$669,814	$1,017,280	$1,373,328	ICF
Annual Net MWh	2,250	3,417	4,614	
Annual Net MW	0.48	0.73	0.98	
TRC Test	1.07			
Utility Test	1.23			
Net to Gross Ratio	0.90			ICF
1st Year $ / kWh	$0.91			
1st Year $ / kW	$4,245			
No. of Customers in Target Group	546,787	553,622	560,542	
No. of Participants	2,050	3,114	4,204	
Participation Rate	0.4%	0.6%	0.8%	
Program Cost/Participant	$993			

[7] A home energy rating involves an analysis of a home's construction plans and onsite inspections. Based on the home's plans, the Home Energy Rater uses an energy efficiency software package to perform an energy analysis of the home's design. This analysis yields a projected, pre-construction HERS Index. The HERS Index is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy home scores a HERS Index of 0. The lower a home's HERS Index, the more energy efficient it is in comparison to the HERS Reference Home. For more information, see http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_HERS.

Residential ENERGY STAR® Lighting and Appliances

The objective of the Residential ENERGY STAR® Lighting and Appliances Program is to increase awareness and purchase of certain ENERGY STAR® qualified lighting products and appliances. The program will offer opportunities to all residential customers to purchase a variety of ENERGY STAR® qualified products through retail sales channels at discounted prices that reflect an incentive provided by SCE&G. SCE&G will also provide informational, educational, and point-of-purchase materials to increase customer awareness of ENERGY STAR® qualified products.

Customers will receive instant markdowns on qualifying products at participating retailers through the use of in-store coupons. Customers will be required to provide information such that SCE&G can validate that they are indeed SCE&G customers.

The initial list of qualifying equipment and illustrative incentives include:

- CFL bulbs (standard) - $2
- CFL bulbs (specialty) - $3
- CFL fixtures - $10
- LED night lights - $1
- LED task lights - $1

Incentive levels vary based on the measure and the packaging, but are generally between 25% and 75% of the incremental cost of the measure. Other measures may be added over time, under the condition that they are cost effective from the Total Resource Costs (TRC) perspective.

Residential Lighting and Appliances				
	Year 1	Year 2	Year 3	Source
Program Costs	$3,343,171	$3,637,457	$3,989,835	
Incentive Costs	$2,058,232	$2,273,410	$2,493,647	ICF
Non-Incentive Costs	$1,284,939	$1,364,046	$1,496,188	ICF
Annual Net MWh	24,373	26,921	29,529	
Annual Net MW	3.15	3.48	3.82	
TRC Test	1.67			
Utility Test	2.50			
Net to Gross Ratio	0.70			ICF
1st Year $ / kWh	$0.14			
1st Year $ / kW	$1,060			
No. of Customers in Target Group	546,787	553,622	560,542	
No. of Participants	113,434	125,293	137,431	
Participation Rate	20.7%	22.6%	24.5%	
Program Cost/Participant	$29			

Residential New High Efficiency HVAC and Water Heater

This program will provide incentives to eligible customers for the purchase of high efficiency central air conditioners, heat pumps, and non-electric resistance storage water heaters in new construction or upon replacement in existing construction. The program's major goals are to promote high efficiency equipment when customers are in the market to purchase new equipment, along with quality installation of the new high efficiency equipment, including proper sizing of the unit, refrigerant charge, air flow, and duct inspection where applicable. The services will be delivered through a network of independent HVAC and plumbing contractors that are trained in program protocols and participation processes. A recruiting and training program will be used to inform contractors of the available incentives and program requirements.

Illustrative incentives include:

- Central AC system (minimum SEER[8] 14) - $300
- Air Source Heat Pump system (minimum SEER 14) - $300
- Ground Source Heat Pump system (minimum EER[9] 19) - $300
- Any non-electric resistance storage water heater - $250

[8] Seasonal Energy Efficiency Ratio

[9] Energy Efficiency Ratio

SCE&G will develop a schedule of specific incentives providing incentives based on the tonnage and efficiency of the units, including incentives for SEERs above 14. Upon submission of a qualifying incentive application, participants may elect to receive their incentive in the form of a check, or may choose to assign the incentive to their contractor, who will receive a check monthly for all assigned incentives. Over time, SCE&G may also introduce specific requirements for sizing and quality of installation.

Residential New HVAC and Water Heat				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$2,887,748	$3,665,163	$4,564,078	
Incentive Costs	$1,511,944	$1,998,936	$2,497,868	ICF
Non-Incentive Costs	$1,375,805	$1,666,227	$2,066,211	ICF
Annual Net MWh	7,007	8,854	10,746	
Annual Net MW	1.65	2.16	2.69	
TRC Test	1.31			
Utility Test	1.65			
Net to Gross Ratio	0.70			ICF
1st Year $ / kWh	$0.41			
1st Year $ / kW	$1,749			
No. of Customers in Target Group	36,452	36,908	37,369	
No. of Participants	5,390	7,108	8,868	
Participation Rate	14.8%	19.3%	23.7%	
Program Cost/Participant	$520			

Residential Existing HVAC Efficiency

This program will provide one-time incentives to eligible contractors and customers to improve the efficiency of existing central air conditioner and heat pump systems. The program's major goals are to assist customers with energy efficient maintenance and repair opportunities. These opportunities include HVAC tune-ups, refrigerant charge and air flow correction, and duct sealing and insulation. SCE&G will also initiate a marketing and education campaign to inform customers of the benefits of these opportunities and of how to participate in the program. The services will be delivered through a network of independent HVAC contractors that are trained in program protocols and participation processes.

Illustrative incentives include:

- HVAC Tune-up - $60
- Duct Insulation - $150
- Duct Sealing - $150

Upon submission of a qualifying incentive application, participants may elect to receive their incentive in the form of a check or may choose to assign the incentive to their contractor, who will receive a check monthly for all assigned incentives.

Residential Existing HVAC Efficiency				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$1,350,978	$2,533,230	$3,847,343	
Incentive Costs	$694,988	$1,407,350	$2,137,413	ICF
Non-Incentive Costs	$655,990	$1,125,880	$1,709,930	ICF
Annual Net MWh	3,755	7,604	11,549	
Annual Net MW	1.72	3.48	5.29	
TRC Test	2.15			
Utility Test	4.56			
Net to Gross Ratio	0.80			ICF
1st Year $ / kWh	$0.36			
1st Year $ / kW	$786			
No. of Customers in Target Group	546,787	553,622	560,542	
No. of Participants	6,576	13,317	20,225	
Participation Rate	1.2%	2.4%	3.6%	
Program Cost/Participant	$193			

Residential ENERGY STAR® New Homes

The objective of the Residential ENERGY STAR® Homes Program is to accelerate the penetration of ENERGY STAR® qualified homes and the ENERGY STAR® Advanced Lighting Package for new homes. ENERGY STAR® qualified homes must be at least 15% more efficient than homes built to the 2004 International Residential Code (IRC) and often are 20% to 30% more efficient than standard homes. The program will teach builders how to successfully construct, market, and sell energy efficient homes, allowing them to recoup their costs and provide an opportunity to increase profits and homeowner satisfaction. The program will also provide financial incentives to help offset the barrier of increased costs for more energy efficient features in new homes. In addition, incentives will be indirectly provided through the form of a co-op advertising partnership to help increase homebuyer awareness of the value of ENERGY STAR® qualified homes. Incentives will be paid to the builder/developer on a per home basis.

Incentives shall initially be set at:

- ENERGY STAR® Home - $300 (HERS rating of 85)
  $450 (HERS rating of 80)
  $600 (HERS rating of 75)
- Additional Advanced Lighting Package (if not used to obtain HERS rating) - $100

- Non-Electric Resistance Storage Water Heater (if not used to obtain HERS rating)- $250

SCE&G will also institute a QA/QC process to validate the quality of the homes and energy savings entered into the program.

ENERGY STAR Homes				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$292,750	$343,819	$483,268	
Incentive Costs	$75,000	$151,875	$230,660	ICF
Non-Incentive Costs	$217,750	$191,944	$252,608	ICF
Annual Net MWh	225	456	692	
Annual Net MW	0.08	0.16	0.24	
TRC Test	1.32			
Utility Test	2.04			
Net to Gross Ratio	0.90			ICF
1st Year $ / kWh	$1.30			
1st Year $ / kW	$3,717			
No. of Customers in Target Group	5,000	5,063	5,126	
No. of Participants	250	506	769	
Participation Rate	5.0%	10.0%	15.0%	
Program Cost/Participant	$734			

Commercial and Industrial Prescriptive

The primary objective of the Commercial and Industrial Prescriptive Program is to provide an expedited, simple solution for nonresidential customers interested in purchasing common energy efficient technologies. The Program will offer financial incentives according to a standard schedule of incentives and equipment efficiency and performance standards. Typical measures will include high efficiency lighting, lighting controls, motors, HVAC systems, and food service equipment. This program will offer a simplified method to make efficient purchase choices from an established list of common measures without requiring complex analysis or participation rules. SCE&G anticipates modifying the list of qualifying equipment and incentives over time, with the requirement that all measures must consistently pass the TRC test under any reasonable set of assumptions regarding customer usage patterns.

Below is an example Prescriptive incentive schedule for interior lighting systems. Note that the measures descriptions and the proposed initial incentive amounts are subject to change.

MEASURE DESCRIPTION	MINIMUM WATTS SAVED	PER UNIT INCENTIVE
T12 relamp/reballast: replace T12 systems with HPT8 lamps and electronic ballast 1-4 lamps	10	$15/fixture
Fluorescent relamp/reballast: replace with Reduced Wattage lamps and HPT8 ballast 1-4 lamps	10	$15/fixture
New commodity HPT8 or Reduced Wattage fixtures: Includes 4 ft and 8 ft strips, wraps, basic troffers and commodity parabolic fixtures – 1-4 lamp	10	$25/fixture
New high efficiency HPT8 2-lamp troffer (lens or parabolic) fixture	11	$35/fixture
New High Efficiency Advanced Recessed fixture: with HPT8/T5/T5HO 1- or 2-lamp	19	$50/fixture
New 4 ft Fluorescent Fixtures with Reflectors	10	$30/fixture
New 8 ft Fluorescent Fixtures with Reflectors	11	$35/fixture
New indirect or direct/indirect suspended or wall mount fixtures: with HPT8/T5/T5HO 1 to 3 lamp per 4 ft section	N/A	$50/4 ft section
New High Intensity Fluorescent Bay Fixtures: HPT8/T5HO 3-12 lamp	23	$90/fixture
Hard-wired compact fluorescent fixture: new or retrofit kit 1-2 lamp	10	$25/fixture
New compact fluorescent fixture: with dimmable ballast 1-2 lamp	12	$40/fixture
LED exit signs	10	$25/sign

The Company also intends to offer the measures listed in Appendix A as Commercial and Industrial measures, to the extent that they pass the TRC Test and are not disqualified for other reasons.

Trade allies will be recruited to participate in training sessions, which will be designed to inform them about program incentives, participation processes, and requirements. Customers will be recruited through program communication and outreach activities, SCE&G account representative referrals, and trade allies. Customers will submit incentive applications and required documentation after installation of qualifying energy efficiency measures has been completed. Incentive applications will be subject to a QA/QC review to ensure all required forms and documentation have been submitted and that incentive calculations are correct. SCE&G will perform pre- and post-installation verifications on a sample of all projects, and will verify all projects over certain size and cost thresholds.

C&I Prescriptive				
	Year 1	Year 2	Year 3	Source
Program Costs	$2,941,028	$3,103,619	$3,584,638	
Incentive Costs	$1,600,614	$1,852,907	$2,140,082	ICF
Non-Incentive Costs	$1,340,414	$1,250,712	$1,444,556	ICF
Annual Net MWh	36,327	42,053	48,571	
Annual Net MW	3.47	4.02	4.64	
TRC Test	3.58			
Utility Test	5.96			
Net to Gross Ratio	0.80			ICF
1st Year $ / kWh	$0.08			
1st Year $ / kW	$847			
No. of Customers in Target Group	89,047	90,160	91,287	
No. of Participants	374	433	500	
Participation Rate	0.4%	0.5%	0.5%	
Program Cost/Participant	$7,366			

Commercial and Industrial Custom

The Commercial and Industrial Custom Program will provide calculated incentives (on a $/kW and $/kWh saved basis) to offset the cost of qualifying large energy efficiency projects. This program is focused upon those technologies or customer applications that are not covered by the prescriptive program. Customers will be recruited primarily through direct outreach activities. Referrals by SCE&G managed-account representatives will also be a key element of customer recruitment. Customers will apply for the program in advance of initiating any work, specifying the nature of the equipment to be replaced (or the equipment that would otherwise be purchased in the absence of the incentive in the case of new construction), calculations identifying the energy and demand to be saved, cost of the work, nature of the operations, and supporting documentation necessary for SCE&G to validate the customer's calculations.

SCE&G shall validate the energy savings and cost calculations, and will assess the likelihood that the customer will make the improvements even in the absence of an incentive from SCE&G. Where SCE&G believes that the incentive is crucial in the customer's decision to make the improvements, SCE&G shall calculate a custom incentive unique to each project, ensuring that the project is cost effective from the TRC perspective. SCE&G will pre-inspect a sample of projects to verify pre-installation conditions, and will post-inspect sampled projects to verify the installation and operation of the equipment. Customers with qualifying projects will have the opportunity to receive an incentive payout of up to $25,000 per year. No more than $25,000 will be paid to a customer during a calendar year.

C&I Custom				
	Year 1	**Year 2**	**Year 3**	**Source**
Program Costs	$2,238,079	$2,417,209	$2,791,843	
Incentive Costs	$1,193,188	$1,381,262	$1,595,339	ICF
Non-Incentive Costs	$1,044,891	$1,035,947	$1,196,504	ICF
Annual Net MWh	19,029	22,028	25,442	
Annual Net MW	2.87	3.32	3.84	
TRC Test	3.47			
Utility Test	4.74			
Net to Gross Ratio	0.80			ICF
1st Year $ / kWh	$0.12			
1st Year $ / kW	$780			
No. of Customers in Target Group	89,047	90,160	91,287	
No. of Participants	105	122	140	
Participation Rate	0.1%	0.1%	0.2%	
Program Cost/Participant	$20,286			