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**DIRECT TESTIMONY OF**  
**DAVID K. PICKLES**  
**ON BEHALF OF**  
**SOUTH CAROLINA ELECTRIC & GAS COMPANY**  
**DOCKET NO. 2013-208-E**

**Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION.**

A. My name is David K. Pickles and my business address is 7160 North Dallas Parkway, Suite 340, Plano, Texas 75024. I am a Senior Vice President for ICF International (“ICF”).

**Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?**

A. I am a 1986 graduate of the University of Wyoming with a Bachelor of Science Degree in Economics and a 1988 graduate of the University of Wyoming with a Master of Science Degree in Regulatory Economics. I have 25 years of experience in the planning, implementation, and evaluation of Demand Side Management (“DSM”) programs. I have been employed by ICF for approximately nine years and currently serve as Senior Vice President in the Energy Efficiency Practice. Prior to joining ICF, I was employed by: Navigant Consulting as Director in the Energy Efficiency Practice; PHI Consulting, where I served as interim Chief

1 Technology Officer for Honeywell's Energy Information Services business  
2 unit; Central and Southwest Utilities (now AEP) as Vice President of  
3 Marketing, Development, and Operations for the unregulated energy  
4 services group; and Synergic Resources Corporation as a Director in the  
5 Energy Efficiency Practice. I previously held positions as Utility Specialist  
6 and Senior Utility Analyst with the Iowa Office of Consumer Advocate,  
7 and Utility Analyst II with the Iowa Utilities Board, where I was  
8 responsible for helping develop positions and testimony regarding energy  
9 efficiency and integrated resource planning. I have led the development of  
10 over 100 individual energy efficiency programs, including: program design,  
11 establishment of incentives, forecasting of participation, creation of  
12 marketing strategies, and estimation of implementation costs. I have also  
13 led the development of energy efficiency potential studies for utility clients  
14 in Arizona, Arkansas, Delaware, Florida, Hawaii, Illinois, Louisiana,  
15 Maryland, Michigan, Mississippi, North Carolina, South Carolina, Texas,  
16 Virginia, Washington, D.C., and Wisconsin.

17 **Q. PLEASE DESCRIBE ICF.**

18 A. Founded in 1969, ICF is a consulting and professional services firm  
19 supporting the energy, environmental, health, technology, and aviation  
20 sectors. Publicly traded (NASDAQ: ICFI) with over 4,500 staff and \$937  
21 million in annual revenue in 2012, ICF currently implements more than 150  
22 energy efficiency programs for 42 utilities in 28 states. ICF has been the

1 lead contractor for EPA's ENERGY STAR<sup>®</sup> program since its inception,  
2 and also supports the U.S. Department of Energy's Better Buildings and  
3 Commercial Building Alliance programs

4 **Q. WHAT ARE YOUR RESPONSIBILITIES AS SENIOR VICE**  
5 **PRESIDENT FOR ICF?**

6 A. I manage ICF's implementation of energy efficiency programs in the  
7 southwestern United States, as well as our energy efficiency policy and  
8 business development activities nationwide. I am responsible for the  
9 conduct and supervision of all regional energy efficiency related work,  
10 including the assessment of energy efficiency potential and the design and  
11 implementation of energy efficiency programs for utilities and the federal  
12 government. I currently supervise the implementation of approximately 30  
13 individual energy efficiency programs.

14 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

15 A. I am testifying on behalf of South Carolina Electric & Gas Company  
16 ("SCE&G" or "Company").

17 **Q. HAVE YOU PRESENTED TESTIMONY TO THE PUBLIC**  
18 **SERVICE COMMISSION OF SOUTH CAROLINA**  
19 **("COMMISSION") BEFORE?**

20 A. Yes. I testified regarding the potential impacts of DSM on the need  
21 for the new nuclear units at the V.C. Summer Nuclear Station in Docket  
22 No. 2008-196-E. I also testified in Docket No. 2009-261-E about the

1 process that ICF used to assess the realistic short-term potential for DSM in  
2 SCE&G's service territory.

3 **Q. WILL YOU INTRODUCE ANY EXHIBITS DURING THE COURSE**  
4 **OF YOUR TESTIMONY?**

5 A. Yes. I will introduce one exhibit. Company Exhibit No. \_\_\_\_ (DKP-  
6 1), which is attached to my testimony, was prepared under my supervision  
7 and direction and is accurate and complete to the best of my knowledge.  
8 This exhibit is substantially identical to the report attached as Exhibit No.  
9 B-2 to the Company's Petition in this matter, but certain amounts set forth  
10 in Tables 8, 9, and 14 have been changed to accurately reflect the  
11 calculations made by ICF. None of these corrections impact or change the  
12 analysis or the total amounts set forth in the original report.

13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A. The purpose of my testimony is to explain the process by which ICF  
15 analyzed and assessed the development of SCE&G's DSM programs for  
16 the proposed Program Years 4-6. As explained in my Exhibit No. \_\_\_\_  
17 (DKP-1), this process included an analysis and review of market changes  
18 since the Company introduced its DSM programs following approval by  
19 this Commission in Order No. 2010-472, dated July 15, 2010, and issued in  
20 Docket No. 2009-261-E. This process also included an analysis of  
21 SCE&G's experience in implementing the approved portfolio of DSM  
22 programs, including an analysis of Evaluation, Measurement, &

1 Verification (“EM&V”) results; programs that were successfully  
2 implemented by other utilities; and feedback from SCE&G customers and  
3 other stakeholders. My testimony will show that the portfolio of DSM  
4 programs proposed for Program Years 4-6 constitutes a balanced suite of  
5 programs that are reasonably practicable for the Company to implement;  
6 will encourage customer participation; are technically and economically  
7 justified; and have a reasonable likelihood of providing savings to  
8 customers and the system.

9 **Q. HAVE YOU CONDUCTED AN ANALYSIS OF THE POTENTIAL**  
10 **FOR THE COMPANY’S PROPOSED PORTFOLIO?**

11 A. Yes. ICF conducted a detailed “bottom up” analysis of potential  
12 DSM programs based on the programs presently provided by the Company,  
13 programs suggested by interested parties, and programs provided by other  
14 utilities throughout the United States. As reflected in the following table,  
15 we estimate that successful implementation of these programs over three  
16 years will result in cumulative annual energy savings of over 378,000 MWh  
17 and demand savings of more than 75 MW by the end of Program Year 6:

1

**Table 1: Summary of Programs Recommended for Implementation**

Program	TRC	Cumulative Program Years 4-6				
		Non-Incentive \$	Incentive \$	Total \$	MWh	MW
ENERGY STAR® Lighting	2.71	\$4,427,523	\$9,996,000	\$14,423,523	171,409	24.23
Home Energy Check-up	1.05	\$1,028,919	\$1,509,750	\$2,538,669	8,211	1.14
Home Performance with ENERGY STAR®	1.01	\$2,550,356	\$1,496,444	\$4,046,799	5,763	1.62
Home Energy Reports	4.53	\$1,721,045	\$1,390,565	\$3,111,610	20,094	15.52
Energy Information Displays	1.36	\$850,000	\$600,000	\$1,450,000	5,938	1.00
Heating & Cooling and Water Heating	2.44	\$5,012,652	\$5,241,471	\$10,254,122	39,656	11.42
ENERGY STAR® New Homes	1.71	\$945,918	\$660,000	\$1,605,918	2,383	0.84
Neighborhood Energy Efficiency Program (NEEP)	1.45	\$672,690	\$840,862	\$1,513,552	4,287	0.61
Appliance Recycling	1.47	\$1,397,255	\$635,116	\$2,032,371	6,987	1.55
<b>Residential Portfolio</b>	<b>2.29</b>	<b>\$18,606,358</b>	<b>\$22,370,208</b>	<b>\$40,976,565</b>	<b>264,728</b>	<b>57.93</b>
EnergyWise for Your Business	1.46	\$11,953,048	\$16,727,300	\$28,680,348	97,648	13.67
Small Business Direct Install	1.10	\$3,665,947	\$6,187,500	\$9,853,447	16,157	4.28
<b>C&amp;I Portfolio</b>	<b>1.39</b>	<b>\$15,618,996</b>	<b>\$22,914,800</b>	<b>\$38,533,796</b>	<b>113,805</b>	<b>17.95</b>
<b>Total Portfolio</b>	<b>1.85</b>	<b>\$34,225,353</b>	<b>\$45,285,008</b>	<b>\$79,510,361</b>	<b>378,533</b>	<b>75.88</b>

2

It is my professional judgment that these anticipated savings and

3

expenditures represent an aggressive commitment to continuing and

4

enhancing the effectiveness of the DSM programs provided by SCE&G.

5 **Q.**

**WHAT WERE THE OBJECTIVES OF YOUR ANALYSIS?**

6 **A.**

The primary objectives of the analysis were as follows:

7

- To estimate the load impacts of installing and providing various

8

DSM programs;

9

- To compare the cost of these programs against SCE&G's

10

generation, transmission, and distribution costs to ensure that the

11

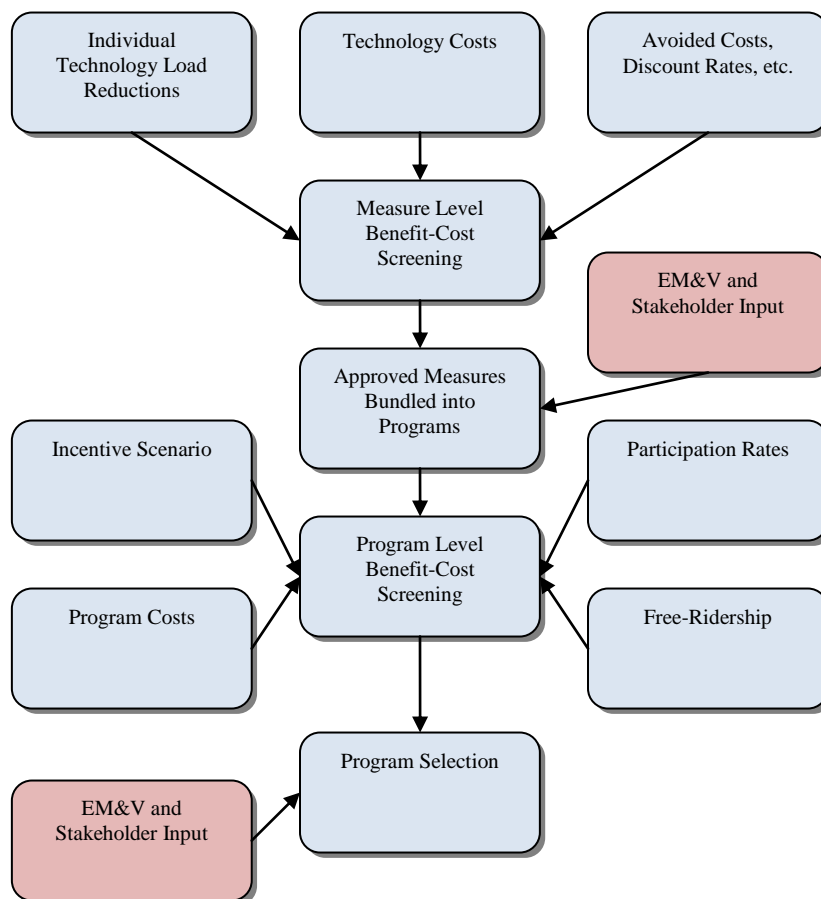
DSM measures are more economical; and

- 1                   • To design and evaluate DSM programs, including an assessment  
2                   of costs, customer participation, and the predicted level of use  
3                   independent of SCE&G’s implementation of the program.

4 **Q. WHAT STEPS DID YOU FOLLOW IN THIS ANALYTICAL**  
5 **PROCESS?**

6 A.               The process that we followed in accomplishing these objectives and  
7               developing appropriate DSM programs is as follows:

8                   **Figure 1: Program Development Process**



9

1           Thus, the analytical process included the following steps:

- 2           • **Step 1. Establishing the demand and energy impacts of a**  
3           **broad range of DSM measures.** We analyzed the estimated  
4           peak demand and annual energy reductions associated with a  
5           single instance of the DSM measure being installed, along with  
6           the estimated incremental cost of the measure.
- 7           • **Step 2. Screening individual measures for cost-effectiveness.**  
8           Using the information gathered in Step 1, each individual  
9           measure was evaluated for cost-effectiveness.
- 10          • **Step 3. Bundling the measures that pass cost-effectiveness**  
11          **into “programs.”** DSM measures that passed the initial cost-  
12          effectiveness screening were bundled into groups representing  
13          program types, which is a group of measures likely to be  
14          delivered under a single umbrella.
- 15          • **Step 4. Forecasting of participation in each program,**  
16          **including estimation of the number of customers that would**  
17          **adopt each efficient measure.** This was done on a measure-by-  
18          measure basis.
- 19          • **Step 5. Costing of each program, including estimation of**  
20          **customer incentives; administration; marketing; EM&V; and**  
21          **other necessary costs.** Total program costs were estimated based  
22          on a combination of the Company’s prior experience as well as



1 the experience of other utilities in implementing similar  
2 programs.

3 • **Step 6. Screening of program cost-effectiveness based on the**  
4 **bundled measures and program costs.** The results of the prior  
5 analyses were combined and each program was screened for  
6 cost-effectiveness.

7 The primary drivers of the recommended program changes described in  
8 Exhibit No. \_\_\_ (DKP-1) include the following:

- 9 • Recommendations from the program evaluations, process  
10 changes, and measure offerings; and
- 11 • The addition of programs specifically mentioned or requested in  
12 stakeholders' comments.

13 **Q. PLEASE DESCRIBE STEP 1, ESTABLISHING LOAD IMPACTS,**  
14 **AND YOUR FINDINGS IN ADDITIONAL DETAIL.**

15 A. Measure impacts include the estimated peak demand and annual  
16 energy reductions associated with a single instance of the DSM measure  
17 being installed, along with the estimated incremental cost of the measure.  
18 The incremental cost of the measure is defined as the additional cost of the  
19 efficient measure over and above the cost of the baseline measure (i.e., the  
20 measure the customer would have installed in the absence of the program).  
21 The sources of data used in this step included evaluations and engineering  
22 reviews prepared by SCE&G's third-party EM&V contractor, Opinion

1 Dynamics Corporation (“ODC”); the South Carolina Measures Database  
2 (“SCMDB” or “Measures Database”); data gathered during program  
3 implementation; and other sources. The list of measures evaluated and key  
4 measure assumptions are provided in Appendix A to Exhibit No. \_\_\_\_  
5 (DKP-1).

6 **Q. PLEASE EXPLAIN THE MEASURES DATABASE.**

7 A. The Measures Database was developed by Morgan Marketing  
8 Partners on behalf of SCE&G, Duke Energy Carolinas, Duke Energy  
9 Progress, and Santee Cooper. This database consists of energy efficiency  
10 measures that provide estimates of energy and demand savings related to  
11 numerous DSM measures. As this Commission stated in Order No. 2010-  
12 472, the Measures Database “quantifies the likely impact on energy usage  
13 and demand related to a broad range of DSM measures and includes data  
14 and analysis specific to South Carolina customers and their usage patterns.”

15 **Q. PLEASE DESCRIBE STEP 2, SCREENING OF INDIVIDUAL**  
16 **MEASURES FOR COST-EFFECTIVENESS, AND YOUR FINDINGS**  
17 **IN ADDITIONAL DETAIL.**

18 A. Using the information gathered in Step 1, each individual measure  
19 was evaluated for cost-effectiveness using the Total Resource Cost  
20 (“TRC”) test, as defined by the California Standard Practice Manual. This  
21 step identifies any measures that are not cost-effective as a stand-alone  
22 measure (i.e., absent consideration of additional program costs or free

1 riders). Absent a compelling reason, measures that are not cost-effective on  
2 their own are not considered for inclusion in a program.

3 The benefits for each measure were calculated based on the present  
4 worth of the energy and demand savings resulting from the measure's  
5 installation over its useful life. The demand (or capacity) and energy  
6 benefits (collectively, the "avoided costs") were calculated separately.

7 The avoided capacity costs were developed by evaluating the kW  
8 saved by the measure at the time of SCE&G system peak, typically around  
9 5 p.m. on a hot summer day. That reduction is valued at the cost SCE&G  
10 would otherwise incur to build peaking capacity (a simple cycle  
11 combustion turbine) to serve that load plus the avoided costs related to  
12 transmission and distribution facilities. For the purposes of this calculation,  
13 a value of \$129.84 per kW (in 2013 dollars) was used, followed by the  
14 application of a 15% reserve margin factor and escalated at 2% annually.

15 The avoided energy costs were evaluated separately in each of four  
16 periods (summer peak, summer off-peak, winter peak, and winter off-peak).  
17 These periods were used to create annual avoided energy costs for each  
18 measure based on when that measure saves energy. Each measure's annual  
19 energy reductions were distributed to the four periods based on the hourly  
20 loadshape (comprised of 8,760 hours in a typical year) associated with the  
21 measure's end-use (residential cooling, water heating, etc.). The  
22 incremental cost of each measure was obtained from a variety of sources

1 including the SCMDB, the California Database for Energy Efficiency  
2 Resources, and evaluation results from the DSM programs of SCE&G and  
3 other utilities. These assumptions are documented in Appendix A to Exhibit  
4 No. \_\_\_\_ (DKP-1).

5 The benefit-cost ratio, or “cost-effectiveness,” of each individual  
6 measure was then calculated according to the following formula:

7 **Equation 1: TRC Formula**

$$Benefits_{TRC} = \sum_{t=1}^{Life} \frac{S_{electricity} \times EAC_t + S_{peak} \times PAC_t}{(1+d)^t}$$
$$Costs_{TRC} = \sum_{t=1}^{Life} \frac{IC_t}{(1+d)^t}$$

8 Where:

- 9 • Life is the life of the measure in years;
- 10 •  $S_{electricity}$  is the annual kWh of the electricity savings for the measure.
- 11 •  $EAC_t$  is the weighted average electricity avoided cost per kWh in  
12 year t (based on the measures' end-use loadshape);
- 13 •  $S_{peak}$  is the coincident peak savings of the measure;
- 14 •  $PAC_t$  is the peak avoided costs per coincident kW in year t;
- 15 •  $IC_t$  is the measures incremental cost in year t; and
- 16 • d is the discount rate (8.44%).

17 The complete results of this analysis are provided in Appendix A to  
18 Exhibit No. \_\_\_\_ (DKP-1), which includes the TRC benefit-cost ratio,  
19 incremental cost, kWh savings, and kW savings for all measures screened.

1 **Q. PLEASE DESCRIBE STEP 3, BUNDLING OF DSM MEASURES,**  
2 **AND YOUR FINDINGS IN ADDITIONAL DETAIL.**

3 A. Measures that passed the initial cost-effectiveness screening were  
4 bundled into groups representing “program types.” A program type  
5 represents a group of measures that are likely to be delivered under a single  
6 “umbrella” typically using similar channels and incentive strategies, and  
7 which can share in the common costs associated with program  
8 implementation. The program types employed were drawn from a review of  
9 best practice program information developed by the American Council for  
10 an Energy Efficient Economy, the Consortium for Energy Efficiency, the  
11 Energy Trust of Oregon, and the California Public Utilities Commission’s  
12 (“CPUC”) Best Practices web site. We also used data from ICF’s internal  
13 review of programs operated by utilities and other program administrators  
14 across the country.

15 Measures that were cost-effective were bundled into at least one  
16 program. In certain cases, non-cost-effective measures were included in a  
17 program if it was believed that the measure should remain for reasons such  
18 as reducing the entry barrier for other measures or meeting the needs of  
19 hard-to-reach customers.

1 **Q. PLEASE DESCRIBE STEP 4, FORECASTING OF**  
2 **PARTICIPATION, AND YOUR FINDINGS IN ADDITIONAL**  
3 **DETAIL.**

4 A. Participation was forecasted on a measure-by-measure basis.  
5 Depending on the program design and whether the program targeted  
6 retrofit, replacement, or new opportunities, the participation forecasting  
7 may have considered:

- 8 • Historic participation in the program;
- 9 • Participation in similar programs offered by other utilities;
- 10 • The incentive strategy and level (% of incremental cost rebated)  
11 and resulting customer payback period;
- 12 • Turnover in the stock of baseline equipment;
- 13 • Level of new construction and/or major remodeling;
- 14 • Changes in future codes and standards;
- 15 • Trade ally feedback; and
- 16 • The level of marketing and promotion.

17 The forecasted participation and associated budget by year is  
18 provided for each program in Section 3 of Exhibit No. \_\_\_ (DKP-1).

1 **Q. PLEASE DESCRIBE STEP 5, THE COSTING OF EACH**  
2 **PROGRAM, AND YOUR FINDINGS IN ADDITIONAL DETAIL.**

3 A. Total program costs were estimated based on a combination of  
4 SCE&G's prior experience and the experience of other utilities  
5 implementing similar programs, adjusted as necessary to reflect the scale  
6 and other unique characteristics of SCE&G's programs. Program costs  
7 generally included:

- 8 • Administrative costs;
- 9 • Implementation and delivery costs;
- 10 • QA/QC costs;
- 11 • Marketing costs;
- 12 • IT costs;
- 13 • Incentive processing costs;
- 14 • Customer service costs;
- 15 • EM&V costs; and
- 16 • Other program costs.

17 The annual costs associated with each program are detailed in  
18 Section 3 of Exhibit No. \_\_\_\_ (DKP-1).

1 **Q. PLEASE DESCRIBE STEP 6, THE SCREENING OF PROGRAM**  
2 **COST EFFECTIVENESS, AND YOUR FINDINGS IN ADDITIONAL**  
3 **DETAIL.**

4 A. Combining the results of the previous steps, each program was  
5 screened for cost-effectiveness using the TRC test. Table 2 highlights the  
6 differences between the “measure specific” and “program” TRC test  
7 calculations:

8 **Table 2: Measure and Program Cost-Effectiveness Screening Comparison**

	<b>Measure</b>	<b>Program</b>
<b>Benefits</b>		
Savings	Gross	Net (includes NTG)
<b>Costs</b>		
Incremental Costs	Gross	Net (includes NTG)
Incentive Costs	-	Net (includes 1 – NTG)
Non-Incentive Costs	-	Gross

9 The two main differences between the measure and program  
10 screening are: a) the use of net savings ratios and b) the inclusion of  
11 program costs. Program cost-effectiveness is based on program net savings  
12 (savings that are attributable directly to a program after netting out free  
13 riders). Net savings are accounted for in the calculation by multiplying  
14 gross program savings by the net-to-gross (“NTG”) ratio. The NTG ratio is  
15 the ratio of the net savings for a program to the gross savings. The  
16 difference between net and gross savings is represented by the savings  
17 realized by customers who would have:



- 1           1. Implemented an efficiency measure even in the absence of a  
2           program (free riders); and
- 3           2. Adopted a measure that is promoted by a program after having  
4           been influenced by the program, but without taking the program  
5           incentive (free drivers or spillover).

6           Although both effects should be accounted for in the calculation of a  
7           NTG ratio, evaluations typically estimate only the free-rider effect and thus  
8           data are often not available for the spillover effect. Therefore, the effect of  
9           applying the NTG ratio is to reduce program savings and cost-effectiveness  
10          (since program costs are not reduced by the NTG ratio). The primary  
11          sources for the applied NTG ratios included the third-party EM&V  
12          contractor, ODC; other regionally evaluated similar programs; and the  
13          Energy Efficiency Policy Manual, prepared by the Energy Division of the  
14          CPUC. As needed, other sources were used as appropriate. The NTG  
15          assumed for each program is documented in Section 3 of Exhibit No. \_\_\_\_  
16          (DKP-1).

17          Program cost-effectiveness testing also includes the program  
18          implementation costs. The methodology to develop these program costs  
19          was discussed in Step 5. Additional steps necessary to complete the  
20          program cost-effectiveness screening included:

- 21           • Calculating the value of measure benefits using the same  
22           approach as described earlier under measure screening;

- 1                   • Summing these benefits over all measures and installations
- 2                   included in a program;
- 3                   • Reducing these gross benefits by the NTG ratio;
- 4                   • Calculating the total incentive costs by summing over the number
- 5                   of measures and installations projected;
- 6                   • Summing the total measure incremental costs over all measures
- 7                   and installations included in a program;
- 8                   • Calculating the total non-incentive program costs, calculated as a
- 9                   percentage of total incentive costs as described above; and
- 10                  • Calculating the TRC, and other test benefit-cost ratios over the
- 11                  forecast period, including the following:
- 12                      ○ UCT Test = Utility Avoided Supply Costs divided by
- 13                      Utility Incentive and Program Costs;
- 14                      ○ PCT Test = Participant Savings and Incentives divided by
- 15                      Participant Incremental Costs; and
- 16                      ○ RIM Test = Utility Avoided Supply Costs divided by
- 17                      Utility Revenue Loss.

18                  The program cost-effectiveness results are provided in Table 3  
19                  below, which is taken from Exhibit No. \_\_\_\_ (DKP-1), and are provided in  
20                  more detail for each program in Section 3 of Exhibit No. \_\_ (DKP-1).

1

**Table 3: Program Cost-Effectiveness Summary**

<b>Program</b>	<b>TRC</b>	<b>UCT</b>
Energy Star® Lighting	2.71	3.90
Home Energy Check-up	1.05	1.05
Home Performance with Energy Star®	1.01	1.60
Home Energy Reports	4.53	4.53
Energy Information Display	1.36	2.57
Heating & Cooling and Water Heating	2.44	4.10
Energy Star® New Homes	1.71	2.35
Neighborhood Energy Efficiency Program (NEEP)	1.45	1.36
Appliance Recycling	1.47	1.85
<b>Residential Portfolio</b>	<b>2.29</b>	<b>3.29</b>
EnergyWise for Your Business	1.46	2.36
Small Business Direct Install	1.10	1.24
<b>C&amp;I Portfolio</b>	<b>1.39</b>	<b>2.08</b>
<b>Total Portfolio</b>	<b>1.85</b>	<b>2.71</b>

2 **Q. WHAT IS YOUR PROFESSIONAL OPINION OF THE**  
3 **COMPANY’S PROPOSED SUITE OF DSM PROGRAMS?**

4 A. In my professional opinion, SCE&G’s proposed DSM programs  
5 reflect an appropriate and aggressive commitment to continuing and  
6 enhancing the effectiveness of the DSM programs provided by the  
7 Company. Based on the analysis performed by ICF, we believe these  
8 programs represent a balanced suite of programs that are reasonably  
9 practicable for the Company to implement; encourage customer  
10 participation; are technically and economically justified; and have a  
11 reasonable likelihood of providing savings to customers and the system.

12 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

13 A. Yes.

# South Carolina Electric & Gas

## Comprehensive Report and Demand Side Management Portfolio Plan

Program Years 4 – 6

May 2013

Prepared by:  
ICF International  
9300 Lee Highway  
Fairfax, VA 22031



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## 1. Executive Summary

This Comprehensive Report and Demand Side Management Portfolio Plan (Report) documents the development of the South Carolina Electric and Gas (SCE&G) proposed Program Year 4 through Program Year 6 Demand Side Management (DSM) portfolio. This report includes:

- Program descriptions and rebate tables (where applicable)
- Summaries of major program design changes
- Estimated program participation by year
- Energy and demand savings estimates at the measure level
- Estimated energy and demand savings by program by year
- Comparison to SCE&G's IRP
- Budgets by major category
- Program cost-effectiveness
- Program evaluation plans

The process of developing the programs in the portfolio included the following steps:

1. **Establishment of the demand and energy impacts of a broad range of DSM measures<sup>1</sup>.**
2. **Screening of individual measures for cost-effectiveness.**
3. **Bundling of the measures that pass cost-effectiveness testing into “programs”.**
4. **Forecasting of participation** in each program, including estimation of the number of customers that would adopt each efficient measure.
5. **Costing of each program** including estimation of customer incentives; administration; marketing; Evaluation, Measurement, and Verification (EM&V); and other necessary costs.
6. **Screening of program cost-effectiveness** based on the bundled measures and program costs.

This process included consideration of market changes since SCE&G originally introduced its DSM programs, SCE&G's implementation experience with the existing programs including EM&V results, successful programs delivered by other utilities, and feedback from SCE&G customers and other stakeholders. Each of the above individual steps is discussed in detail in the following sections of this Report.

Recommended programs, as listed in Table 1, include existing programs with enhancements in program design and new programs designed to meet important evolving market opportunities.

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<sup>1</sup> As used in this Report, a “measure” is a single instance of a particular energy efficient technology or activity, such as a single type of efficient lighting. A “program” is a bundle of efficient measures that are delivered within a single programmatic framework and may, for example, include many lighting technologies all delivered under one umbrella.

**Table 1: Summary of Programs Recommended for Implementation**

Program	TRC	Cumulative Program Years 4-6				
		Non-Incentive \$	Incentive \$	Total \$	MWh	MW
ENERGY STAR® Lighting	2.71	\$4,427,523	\$9,996,000	\$14,423,523	171,409	24.23
Home Energy Check-up	1.05	\$1,028,919	\$1,509,750	\$2,538,669	8,211	1.14
Home Performance with ENERGY STAR®	1.01	\$2,550,356	\$1,496,444	\$4,046,799	5,763	1.62
Home Energy Reports	4.53	\$1,721,045	\$1,390,565	\$3,111,610	20,094	15.52
Energy Information Displays	1.36	\$850,000	\$600,000	\$1,450,000	5,938	1.00
Heating & Cooling and Water Heating	2.44	\$5,012,652	\$5,241,471	\$10,254,122	39,656	11.42
ENERGY STAR® New Homes	1.71	\$945,918	\$660,000	\$1,605,918	2,383	0.84
Neighborhood Energy Efficiency Program (NEEP)	1.45	\$672,690	\$840,862	\$1,513,552	4,287	0.61
Appliance Recycling	1.47	\$1,397,255	\$635,116	\$2,032,371	6,987	1.55
<b>Residential Portfolio</b>	<b>2.29</b>	<b>\$18,606,358</b>	<b>\$22,370,208</b>	<b>\$40,976,565</b>	<b>264,728</b>	<b>57.93</b>
EnergyWise for Your Business	1.46	\$11,953,048	\$16,727,300	\$28,680,348	97,648	13.67
Small Business Direct Install	1.10	\$3,665,947	\$6,187,500	\$9,853,447	16,157	4.28
<b>C&amp;I Portfolio</b>	<b>1.39</b>	<b>\$15,618,996</b>	<b>\$22,914,800</b>	<b>\$38,533,796</b>	<b>113,805</b>	<b>17.95</b>
<b>Total Portfolio</b>	<b>1.85</b>	<b>\$34,225,353</b>	<b>\$45,285,008</b>	<b>\$79,510,361</b>	<b>378,533</b>	<b>75.88</b>

The total annual expenditure on the recommended programs is estimated to be \$23,032,658, \$26,799,311, and \$29,678,392 in PY4-PY6 respectively. Cumulative net energy and demand savings associated with these expenditures are 378,533 MWh and 75.88 MW, and the TRC benefit cost ratio of the portfolio of programs is 1.85.

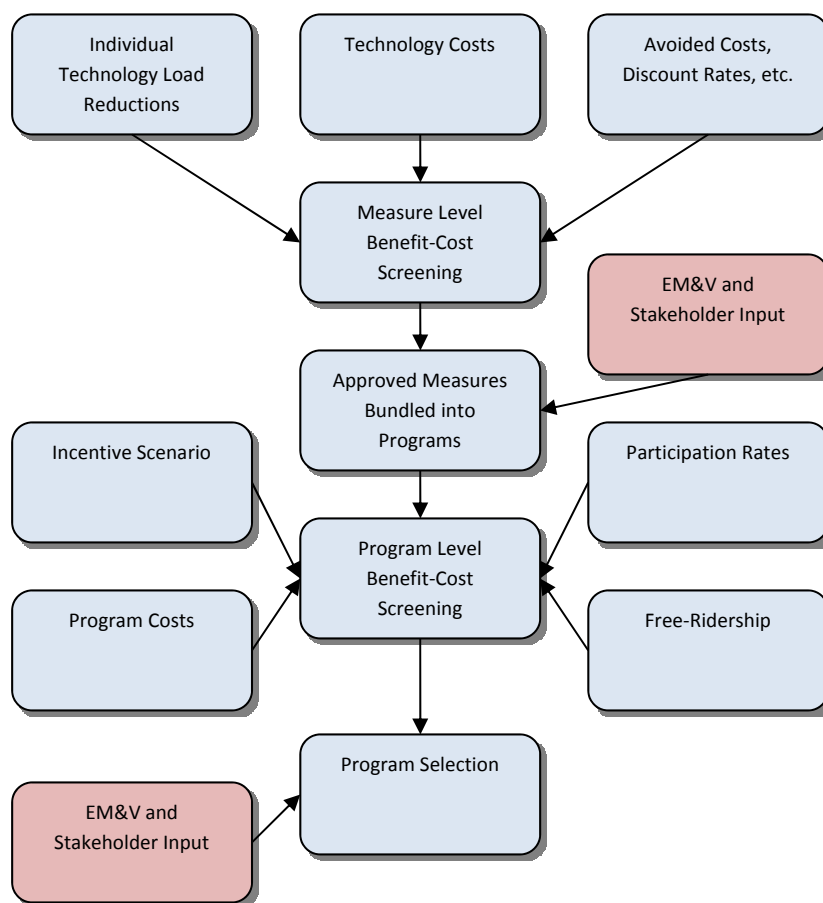
The primary drivers for the recommended changes in the programs include:

- Recommendations from the program evaluations, process changes and measure offerings.
- Addition of programs specifically mentioned and/or requested in stakeholders comments.

## 2. Overview of Methodology

The program development process is illustrated in Figure 1.

Figure 1: Program Development Process



### 2.1 Development of DSM Measure Load Impacts

Measure impacts include the estimated peak demand and annual energy reductions associated with a single instance of the DSM measure being installed, along with the estimated incremental cost of the measure<sup>2</sup>. Sources of data included evaluations and engineering reviews prepared by SCE&G's third-party Evaluation, Measurement and Verification (EM&V) contractor Opinion Dynamics Corporation (ODC), the South Carolina Measures Database (SCMDB), data gathered during program implementation, and other sources. The list of measures evaluated and key measure assumptions are provided in Appendix A.

<sup>2</sup> The incremental cost of the measure is defined as the additional cost of the efficient measure over and above the cost of the baseline measure (i.e., the measure the customer would have installed in the absence of the program.)



## 2.2 Screening of Individual Measures

Using the information gathered in Step 2.1, each individual measure was evaluated for cost-effectiveness using the Total Resource Cost (TRC) test, as defined by the California Standard Practice Manual<sup>3</sup>. This step identifies any measures that are not cost-effective as a standalone measure (i.e., absent consideration of additional program costs or free-ridership.) Usually, measures that are not cost-effective on their own are not considered for inclusion in a program, absent a compelling reason to do so.

The benefits for each measure were calculated based on the present worth of the energy and demand savings resulting from the measure's installation over its useful life. 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. That reduction is valued 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 \$129.84 per kW (in 2013 dollars) was used, followed by the application of a 15% reserve margin factor and escalated at 2% annually.

The avoided energy costs were evaluated separately in each of four periods (summer peak, summer off-peak, winter peak, winter off-peak). These periods were used to create annual avoided energy costs for each measure based on when that measure saves energy. Each measure's annual energy reductions were distributed to the four periods based on the 8,760 hourly loadshape associated with the measure's end-use (residential cooling, water heating, etc.). The incremental cost of each measure was obtained from a variety of sources including the SCMDB, the California Database for Energy Efficiency Resources (DEER), and evaluation results from the DSM programs of SCE&G and other utilities. These assumptions are documented in Appendix A.

The benefit cost ratio or "cost-effectiveness" of each individual measure was then calculated according to the formula provided in Figure 2:

Figure 2: TRC Test Formula

$$Benefits_{TRC} = \sum_{t=1}^{Life} \frac{S_{electricity} \times EAC_t + S_{peak} \times PAC_t}{(1 + d)^t}$$

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

<sup>3</sup> Available at [http://www.energy.ca.gov/greenbuilding/documents/background/07-J\\_CPUC\\_STANDARD\\_PRACTICE\\_MANUAL.PDF](http://www.energy.ca.gov/greenbuilding/documents/background/07-J_CPUC_STANDARD_PRACTICE_MANUAL.PDF)

Where:

- Life is the life of the measure in years
- $S_{\text{Electricity}}$  is the annual kWh of the electricity savings for the measure
- $EAC_t$  is the weighted average electricity avoided cost per kWh in year t (based on the measures' end-use load shape)
- $S_{\text{peak}}$  is the coincident peak savings of the measure
- $PAC_t$  is the peak avoided costs per coincident kW in year t
- IC is the measures incremental cost
- d is the discount rate (8.44%)

The complete results of this analysis are provided in Appendix A, which includes the TRC benefit-cost ratio, incremental cost, kWh savings, and kW savings for all measures screened.

## 2.3 Bundling of Measures

Measures that passed the initial cost-effectiveness screening were bundled into groups representing “program types”. A program type represents a group of measures that are likely to be delivered under a single “umbrella” typically using similar channels and incentive strategies, and which can share in the common costs associated with program implementation. The program types employed were drawn from a review of best practice program information developed by the American Council for an Energy Efficient Economy (ACEEE), the Consortium for Energy Efficiency ([www.cee.org](http://www.cee.org)), the Energy Trust of Oregon, the California Public Utilities Commission’s (CPUC) Best Practices web site, 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, non-cost-effective measures were included in a program if it was believed that the measure should remain for reasons such as reducing the entry barrier for other measures or meeting the needs of hard-to-reach customers.

## 2.4 Forecasting of Participation

Participation was forecasted on a measure-by-measure basis. Depending on the program design and whether the program targeted retrofit, replacement, or new opportunities, the participation forecasting may have considered:

- Historic participation in the program,
- Participation in similar programs offered by other utilities,
- The incentive strategy and level (% of incremental cost rebated) and resulting customer payback period,
- Turnover in the stock of baseline equipment,
- Level of new construction and/or major remodeling,
- Changes in future codes and standards,
- Trade ally feedback; and
- The level of marketing and promotion.

The forecasted participation and associated budget by year is provided for each program in Section 3 of this Report.

## 2.5 Costing of Programs

Total program costs were estimated based on a combination of SCE&G prior experience, and the experience of other utilities implementing similar programs, adjusted as necessary to reflect the scale and other unique characteristics of SCE&G’s programs. Program costs generally included:

- Administrative costs
- Implementation and delivery costs
- QA/QC costs
- Marketing costs
- IT costs
- Incentive processing costs
- Customer service costs
- EM&V costs, and
- Other program costs.

The annual costs associated with each program are detailed in Section 3.

## 2.6 Program Cost-Effectiveness Screening

Combining the results of the previous steps, each program was screened for cost-effectiveness using the TRC test. Figure 3 highlights the differences between the “measure specific” and “program” TRC test calculations:

Figure 3: Measure and Program Cost-Effectiveness Screening Comparison

	Measure	Program
<b>Benefits</b>		
Savings	Gross	Net (Includes NTG)
<b>Costs</b>		
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: a) the use of net savings ratios; and b) the inclusion of program costs. 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 (free riders); and
2. Adopted 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 sources for the applied NTG ratios included the third-party EM&V contractor, ODC, other regionally evaluated similar programs, and the Energy Efficiency Policy Manual (Policy Manual), prepared by the Energy Division of the CPUC. As needed, other sources were used as appropriate. The NTG assumed for each program is documented in Section 3.

Program cost-effectiveness testing also includes the program implementation costs. The methodology to develop these program costs was discussed in Step 2.5. Additional steps necessary 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 the NTG ratio
- 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
  - UCT 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

The program cost-effectiveness results are provided in Table 2 below, and are provided in more detail for each program in Section 3.

**Table 2: Program Cost-Effectiveness Summary**

<b>Program</b>	<b>TRC</b>	<b>UCT</b>
Energy Star® Lighting	2.71	3.90
Home Energy Check-up	1.05	1.05
Home Performance with Energy Star®	1.01	1.60
Home Energy Reports	4.53	4.53
Energy Information Display	1.36	2.57
Heating & Cooling and Water Heating	2.44	4.10
Energy Star® New Homes	1.71	2.35
Neighborhood Energy Efficiency Program (NEEP)	1.45	1.36
Appliance Recycling	1.47	1.85
<b>Residential Portfolio</b>	<b>2.29</b>	<b>3.29</b>
EnergyWise for Your Business	1.46	2.36
Small Business Direct Install	1.10	1.24
<b>C&amp;I Portfolio</b>	<b>1.39</b>	<b>2.08</b>
<b>Total Portfolio</b>	<b>1.85</b>	<b>2.71</b>

## 2.7 Comparison of DSM to the IRP

The energy reductions in this Report, which are short-run (3 year) estimates of energy savings to be achieved by DSM programs, differ slightly from the 2013 SCE&G IRP assumptions. The Program Plan shows net energy savings in 2015 of 128 GWh, exceeding the IRP assumption by approximately 38%. However, Program Plan savings in 2016 of 135 GWh are approximately 70% of the IRP assumption. These estimates vary due to different focuses and data analyses supporting the Program Plan and the IRP. That is, the DSM program impacts are forward-looking based on analyses and estimates concerning the impact of each of the specific programs. In contrast, the IRP is based on historical trends of the electric system in its entirety and focuses more on system demands, including a focus on reducing peak load demands. Therefore, although there are some differences in the projections determined under the Program Plan versus those under the IRP, those differences are not substantial and reflect that the DSM programs implemented and proposed by the Company will lead to energy savings for residential, commercial, and industrial customers. Moreover, SCE&G anticipates refining and updating the DSM impact estimates used in the IRP on an ongoing basis as program experience and future analyses indicate.

### 3. Individual Program Summaries

This section provides an overview of the modeling results and key assumptions for each recommended program. Included in each section are:

- An overview of the program design
- A summary of the program impacts and cost-effectiveness testing
- A discussion of program enhancements relative to the current program, if applicable
- The program incentives budget
- The annual program costs
- The assumed NTG ratio

SCE&G has estimated annual cost, demand savings, energy savings, measure count, and participant count. Factors such as the nature of participants (e.g., the number of measures per participant) and the mix of demand savings versus energy savings per participant may vary from the planning assumptions.

### 3.1 ENERGY STAR® Lighting

#### Program Design

The Residential ENERGY STAR Lighting program provides incentives to retailers and manufacturers to support reductions in the price of energy efficient lighting sold at participating locations throughout the service territory. The objective of the program is to increase market share and the purchase of ENERGY STAR® qualified lighting and lighting products through retail sales channels by discounting prices. Covered lighting measures include a range of ENERGY STAR compact fluorescent lights (CFLs), Solid State Lighting (SSL or LEDs), and associated fixtures. The program is made available to all residential customers within SCE&G’s electric service territory.

#### Rebate Table

The currently anticipated incentive payment per measure is provided in Table 3. SCE&G anticipates updating the incentive payments as program participation, evaluation results, baseline shifts, or other factors dictate during the finalization of program planning and during implementation.

**Table 3: Program Incentives Summary – ENERGY STAR® Lighting**

<b>ENERGY STAR Lighting</b>	
<b>Measure Description</b>	<b>Per Unit Incentive</b>
Standard CFL bulbs	\$2
Specialty CFL bulbs	\$3
LED light bulbs	\$5
CFL fixtures	\$10
LED nightlights	\$1
LED holiday lights	\$0.05 per bulb on a string

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 2.71, to reduce energy demand by 24.23 MW and energy consumption by 171,409 MWh, and to cost \$14,423,523. Year-by-year impacts are summarized in Table 4. The assumed NTG ratio is 0.80.

**Table 4: Program Impact Summary – ENERGY STAR® Lighting**

<b>ENERGY STAR Lighting</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	53,565	58,922	58,922	171,409
Net Annual MW Savings	7.57	8.33	8.33	24.23
Measures	1,785,000	1,963,500	1,963,500	5,712,000
Incentive Costs	\$3,123,750	\$3,436,125	\$3,436,125	\$9,996,000
Non-Incentive Costs	\$1,383,601	\$1,521,961	\$1,521,961	\$4,427,523
Implementation	\$922,401	\$1,014,641	\$1,014,641	\$2,951,682
EM&V	\$153,733	\$169,107	\$169,107	\$491,947
Administration	\$307,467	\$338,214	\$338,214	\$983,894
Total Program Costs	\$4,507,351	\$4,958,086	\$4,958,086	\$14,423,523
TRC Ratio	2.71			
UCT Ratio	3.90			
Net-to-Gross Ratio	0.80			

### **Program Enhancements**

It is estimated that only 18%<sup>4</sup> of lighting sockets in South Carolina households currently have energy efficient lighting. This is consistent with national statistics released by the U. S. Department of Energy (DOE) indicating that although market penetration of CFLs is increasing, saturation is still comparatively low. Despite the anticipated impacts of the Energy Independence and Security Act (EISA) of 2007, SCE&G will continue to draw on many of the same design elements as the existing program and provide incentives for CFLs. In order to keep pace with the changing lighting market and the effects of EISA, the program will monitor the market share of covered measures, evaluate measures for cost-effectiveness, and consider adding or deleting measures or changing incentive levels as baselines or other circumstances change. In addition, SCE&G will increase its efforts to educate customers on the benefits and energy savings associated with CFLs and LEDs.

### **Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the South Carolina Public Service Commission (PSCSC). Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

<sup>4</sup> “2011 SCE&G Residential Baseline Study”, Opinion Dynamics Corporation , March 2011



## 3.2 Residential Home Energy Check-up

### Program Design

The Residential Home Energy Check-up (HEC) Program provides electric customers in the SCE&G territory with a home visit that includes a visual inspection of the home and an energy consultation. During the check-up, SCE&G representatives, who are BPI-certified, identify sources of high energy use and provide the customer with a list of various low and no-cost energy-saving recommendations and tips. As part of the consultation with the customer, SCE&G reviews up to two years of consumption data and weather impacts, as well as discusses energy-saving behaviors (thermostat settings, turning lights off, changing air filters, water heater settings, etc). During the check-up, participants are also provided with CFLs, and, if applicable, hot water pipe insulation and an electric water heater insulating external blanket at no additional cost. Residents are encouraged to install the energy efficient measures themselves following the check-up.

### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.05, to reduce energy demand by 1.14 MW and energy consumption by 8,211 MWh, and to cost \$2,538,669. Year-by-year impacts are summarized in Table 5. The assumed NTG ratio is 0.68.

**Table 5: Program Impact Summary – Home Energy Check-up**

Home Energy Check-up	Year 4	Year 5	Year 6	Total
Net Annual MWh Savings	2,571	2,737	2,903	8,211
Net Annual MW Savings	0.36	0.38	0.40	1.14
Participants	3,100	3,300	3,500	9,900
Incentive Costs	\$472,750	\$503,250	\$533,750	\$1,509,750
Non-Incentive Costs	\$322,187	\$342,973	\$363,759	\$1,028,919
Implementation	\$128,875	\$137,189	\$145,504	\$411,568
EM&V	\$64,437	\$68,595	\$72,752	\$205,784
Administration	\$128,875	\$137,189	\$145,504	\$411,568
Total Program Costs	\$794,937	\$846,223	\$897,509	\$2,538,669
TRC Ratio	1.05			
UCT Ratio	1.05			
Net-to-Gross Ratio	0.68			

### Program Enhancements

The Home Energy Check-up program has proven to be popular with SCE&G customers. In line with evolving the program, SCE&G continues to consistently evaluate new measures that prove to be cost-effective for leave behind kits and popular with targeted customers. SCE&G may include such additional measures in the future should they prove to be popular with targeted customers.

### **Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.3 Residential Home Performance with ENERGY STAR®

#### Program Design

The Residential Home Performance with ENERGY STAR (HPwES) program includes a comprehensive assessment and diagnostic testing of the customer's home by trained contractors. The program is designed to help customers recognize energy solutions for their home by taking the “whole-house” approach to energy efficiency. Contractors provide participants with a comprehensive report which outlines recommended energy efficient improvements and specifies the estimated energy savings associated with these measures. Customers initially incur the cost of the home assessment, which can range from \$200 to \$600 (cost set by individual contractors). If at least one eligible measure is installed through the program, the customer can receive a rebate to help offset the cost of the assessment.

Home Performance with ENERGY STAR is often seen as a market transformation program since it brings more contractors into the “whole-house” approach to energy efficiency, as well as increases the general education of customers and influences the manner in which they approach energy efficiency.

#### Rebate Table

The currently anticipated incentive payment per measure is provided in Table 6. SCE&G anticipates updating the incentive payments as program participation, evaluation results, baseline shifts, or other factors dictate during the finalization of program planning and during implementation.

**Table 6: Program Incentives Summary – Residential Home Performance with ENERGY STAR**

<b>Home Performance with ENERGY STAR</b>	
<b>Measure Description</b>	<b>Per Unit Incentive</b>
Air Infiltration Reduction	25% of cost up to \$850
Attic and Wall insulation	25% of cost up to \$850
Duct Sealing	\$150
Duct Insulation	\$150
Programmable Thermostat	\$50
High Efficiency Heat Pump or Central A/C Tier 1	\$200
High Efficiency Heat Pump or Central A/C Tier 2	\$300
High Efficiency Ground Source Heat Pump Tier 1	\$375
High Efficiency Ground Source Heat Pump Tier 2	\$525
Non-Electric Resistance Water Heater	\$250

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.01, to reduce energy demand by 1.62 MW and energy consumption by 5,763 MWh, and to cost \$4,046,799. Year-by-year impacts are summarized in Table 7. The assumed NTG ratio is 0.90.

**Table 7: Program Impact Summary – Residential Home Performance with ENERGY STAR**

<b>Home Performance with ENERGY STAR</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	1,612	2,031	2,120	5,763
Net Annual MW Savings	0.45	0.57	0.60	1.62
Participants	365	460	480	1,305
Incentive Costs	\$418,546	\$527,482	\$550,416	\$1,496,444
Non-Incentive Costs	\$713,318	\$898,976	\$938,062	\$2,550,356
Implementation	\$524,435	\$660,932	\$689,688	\$1,875,036
EM&V	\$50,405	\$63,523	\$66,285	\$180,213
Administration	\$138,478	\$174,520	\$182,108	\$495,107
Total Program Costs	\$1,131,863	\$1,426,458	\$1,488,478	\$4,046,799
TRC Ratio	1.01			
UCT Ratio	1.60			
Net-to-Gross Ratio	0.90			

**Program Enhancements**

In an effort to improve the program, SCE&G will be offering additional measures for rebate during the Home Performance job as they are determined to be cost-effective.

**Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.4 Residential Home Energy Reports

#### Program Design

The Residential Home Energy Reports (HER) program offers qualifying customers monthly/bi-monthly reports comparing their energy usage to a peer group and to themselves over time. The reports also provide information to help participants identify, analyze, and act upon energy efficiency upgrade opportunities and energy saving behaviors to reduce their household energy use. Reports are provided to customers at no additional cost.

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 4.53, to reduce energy demand by 15.52 MW and energy consumption by 20,094 MWh, and to cost \$3,111,610. Year-by-year impacts are summarized in Table 8. The assumed NTG ratio is 1.00.

**Table 8: Program Impact Summary – Home Energy Reports**

Home Energy Reports	Year 4	Year 5	Year 6	Total
Net Annual MWh Savings	6,490	6,703	6,901	20,094
Net Annual MW Savings	5.01	5.18	5.33	15.52
Participants	37,427	38,657	39,797	115,880
Incentive Costs	\$449,121	\$463,886	\$477,558	\$1,390,565
Non-Incentive Costs	\$558,965	\$574,054	\$588,026	\$1,721,045
Implementation	\$402,917	\$412,875	\$422,097	\$1,237,890
EM&V	\$73,434	\$75,849	\$78,084	\$227,367
Administration	\$82,614	\$85,330	\$87,845	\$255,788
Total Program Costs	\$1,008,086	\$1,037,940	\$1,065,584	\$3,111,610
TRC Ratio	4.53			
UCT Ratio	4.53			
Net-to-Gross Ratio	1.00			

#### Program Enhancements

SCE&G is currently researching ways to garner more participation in the web portal portion of the home energy reports program. Because of the popularity of the program, SCE&G will continue to expand the program to a larger customer base in Program Years 4-6.

#### Program Evaluation Plan

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.5 Residential Energy Information Display

#### Program Design

The Residential Energy Information Display (EID) program provides qualifying customers with a discounted in-home display to help increase customer’s awareness of energy consumption in their homes. The device provides energy usage and cost data in a near real-time manner and helps customer’s identify their peak periods of use. The EID program also acts as a touch point for customers in order to get them interested and engaged in their home energy use. Customers often become engaged with their energy use through features of the device including:

- Reporting total home electricity use, showing the customer when they use electricity most and helping them find ways to curb consumption throughout the day
- Calculating current and projected electricity cost and energy use
- Allowing the customer to compare their energy usage over the different time periods

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.36, to reduce energy demand by 1.00 MW and energy consumption by 5,938 MWh, and to cost \$1,450,000. Year-by-year impacts are summarized in Table 9. The assumed NTG ratio is 1.00.

**Table 9: Program Impact Summary – Energy Information Display**

Energy Information Displays	Year 4	Year 5	Year 6	Total
Net Annual MWh Savings	1,629	1,991	2,318	5,938
Net Annual MW Savings	0.27	0.34	0.39	1.00
Participants	3,100	3,790	4,411	11,301
Incentive Costs	\$200,000	\$200,000	\$200,000	\$600,000
Non-Incentive Costs	\$300,000	\$275,000	\$275,000	\$850,000
Implementation	\$190,000	\$165,000	\$165,000	\$520,000
EM&V	\$42,778	\$42,778	\$42,778	\$128,333
Administration	\$67,222	\$67,222	\$67,222	\$201,667
Total Program Costs	\$500,000	\$475,000	\$475,000	\$1,450,000
TRC Ratio	1.36			
UCT Ratio	2.57			
Net-to-Gross Ratio	1.00			

#### Program Enhancements

The energy information display used for Program Year 1-3 is no longer being manufactured. Therefore, SCE&G has selected a device which has previously been tested by the company and is comparable to devices already supplied, and proves to be cost-effective.

### **Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.6 Residential Heating & Cooling and Water Heating Program

#### Program Design

The Residential Heating & Cooling and Water Heating Program offer incentives to residential customers to purchase and install high efficiency HVAC systems and non-electric resistance storage water heaters in new or existing homes. The program’s major goals are to assist customers with reducing electric consumption without compromising comfort in the home. The rebates help to offset the upfront cost for purchases of energy-efficient HVAC equipment and non-electric-resistance water heaters. To participate in this program, the customer must receive residential electric service from SCE&G in a new or existing separately metered residence.

#### Rebate Table

The currently anticipated incentive payment per measure is provided in Table 10. SCE&G anticipates updating the incentive payments as program participation, evaluation results, baseline shifts, or other factors dictate during the finalization of program planning and during implementation.

**Table 10: Program Incentives Summary – Residential Heating & Cooling and Water Heating**

<b>Residential Heating &amp; Cooling and Water Heating Program</b>	
<b>Measure Description</b>	<b>Per Unit Incentive</b>
High Efficiency Heat Pump or Central A/C Tier 1	\$200
High Efficiency Heat Pump or Central A/C Tier 2	\$300
High Efficiency Ground Source Heat Pump Tier 1	\$375
High Efficiency Ground Source Heat Pump Tier 2	\$525
Non-Electric Resistance Water Heater	\$250
Duct Sealing	\$150
Duct Insulation	\$150
Complete Duct Replacement	\$300

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 2.44, to reduce energy demand by 11.42 MW and energy consumption by 39,656 MWh, and to cost \$10,254,122. Year-by-year impacts are summarized in Table11. The assumed NTG ratio is 0.80.



**Table 11: Program Impact Summary – Residential Heating & Cooling and Water Heating**

<b>Heating &amp; Cooling and Water Heating</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	12,784	13,202	13,670	39,656
Net Annual MW Savings	3.61	3.80	4.01	11.42
Participants	7,516	7,929	8,373	23,817
Incentive Costs	\$1,668,169	\$1,745,564	\$1,827,738	\$5,241,471
Non-Incentive Costs	\$1,578,134	\$1,669,013	\$1,765,504	\$5,012,652
Implementation	\$1,104,694	\$1,168,309	\$1,235,853	\$3,508,856
EM&V	\$157,813	\$166,901	\$176,550	\$501,265
Administration	\$315,627	\$333,803	\$353,101	\$1,002,530
Total Program Costs	\$3,246,303	\$3,414,577	\$3,593,242	\$10,254,122
TRC Ratio	2.44			
UCT Ratio	4.10			
Net-to-Gross Ratio	0.80			

**Program Enhancements**

While SCE&G is not proposing to add additional measures to its offerings, the company is proposing to make changes to the program to ease customer participation and reduce administrative costs. Previous measures that were included under the company’s Efficiency Improvement Program will now be offered under the Heating & Cooling and Water Heating program, with the exception of system optimizers.

**Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.7 ENERGY STAR New Homes

#### Program Design

The SCE&G ENERGY STAR New Homes Program aims to accelerate the local market penetration of homes that meet or exceed the Environmental Protection Agency (EPA) ENERGY STAR guidelines by increasing the buyer demand for and builder supply of ENERGY STAR certified homes. To achieve this objective, the Program seeks to partner with area homebuilders and their HERS Raters to secure commitments for an increasing supply of high efficiency homes. In addition to receiving financial incentives, participating homebuilders benefit from technical support and training to help them meet program guidelines as well as marketing support and training to help them gain market differentiation as ENERGY STAR builders.

#### Rebate Table

The currently anticipated incentive payment per measure is provided in Table 12. SCE&G anticipates updating the incentive payments as program participation, evaluation results, baseline shifts, or other factors dictate during the finalization of program planning and during implementation.

**Table 12: Program Incentives Summary – ENERGY STAR New Homes**

ENERGY STAR New Homes	
Measure Description	Per Unit Incentive
ENERGY STAR Certified Home	\$750

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.71, to reduce energy demand by 0.84 MW and energy consumption by 2,383 MWh, and to cost \$1,605,918. Year-by-year impacts are summarized in Table 13. The assumed NTG ratio is 0.90.

**Table 13: Program Impact Summary – ENERGY STAR New Homes**

ENERGY STAR New Homes	Year 4	Year 5	Year 6	Total
Net Annual MWh Savings	745	819	819	2,383
Net Annual MW Savings	0.26	0.29	0.29	0.84
Participants	275	303	303	880
Incentive Costs	\$206,250	\$226,875	\$226,875	\$660,000
Non-Incentive Costs	\$295,599	\$325,159	\$325,159	\$945,918
Implementation	\$206,920	\$227,612	\$227,612	\$662,143
EM&V	\$29,560	\$32,516	\$32,516	\$94,592
Administration	\$59,120	\$65,032	\$65,032	\$189,184
Total Program Costs	\$501,849	\$552,034	\$552,034	\$1,605,918
TRC Ratio	1.71			
UCT Ratio	2.35			
Net-to-Gross Ratio	0.90			

### **Program Enhancements**

During the current delivery of the ENERGY STAR New Homes program, SCE&G has continued to keep its standards in line with the EPA's ENERGY STAR program, which includes updating the ENERGY STAR New Homes certification criteria to ENERGY STAR version 3.0. SCE&G will offer training to its participating builders and builders wishing to begin participating within the program. The trainings are also expanded to HERS Raters, HVAC contractors, and other trade allies.

### **Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.8 Residential Neighborhood Energy Efficiency Program (NEEP)

#### Program Design

The Residential Neighborhood Energy Efficiency (NEEP) program provides qualifying customers energy education, an on-site energy survey of the dwelling, and direct installation of low-cost energy saving measures at no additional cost to the customer. The program is delivered in a neighborhood door-to-door sweep approach and offers customers who are eligible and wish to participate a variety of direct installation energy efficiency measures. The program approaches neighborhoods that have a significant amount of households with income levels equal to or less than 150% of the poverty line as defined by the federal government. The 2012 income qualifying guidelines are shown below.

2012 Poverty Guidelines		
Size of Family Unit	Threshold	Income Level (150%)
1	\$11,170	\$16,755
2	\$15,130	\$22,695
3	\$19,090	\$28,635
4	\$23,050	\$34,575
5	\$27,010	\$40,515
6	\$30,970	\$46,455
7	\$34,930	\$52,395
8	\$38,890	\$58,335
For each additional person add	\$3,960	\$5,940

SCE&G will continue to deliver the program according to these guidelines as refined and updated by the federal government.

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.45, to reduce energy demand by 0.61 MW and energy consumption by 4,287 MWh, and to cost \$1,513,552. Year-by-year impacts are summarized in Table 14Table . The assumed NTG ratio is 1.00.

**Table 14: Program Impact Summary – NEEP**

<b>Neighborhood Energy Efficiency Program (NEEP)<sup>5</sup></b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	1,321	1,412	1,554	4,287
Net Annual MW Savings	0.19	0.20	0.22	0.61
Participants	1,300	1,430	1,573	4,303
Incentive Costs	\$254,037	\$279,441	\$307,385	\$840,862
Non-Incentive Costs	\$203,230	\$223,552	\$245,908	\$672,690
Implementation	\$123,983	\$136,381	\$150,019	\$410,383
EM&V	\$29,398	\$32,338	\$35,572	\$97,307
Administration	\$49,849	\$54,834	\$60,317	\$164,999
Total Program Costs	\$457,266	\$502,993	\$553,292	\$1,513,552
TRC Ratio	1.45			
UCT Ratio	1.36			
Net-to-Gross Ratio	1.00			

**Program Enhancements**

NEEP was filed with the South Carolina Public Service Commission for approval in January 2013. Any lessons learned based on delivery of the program in 2013 will be incorporated into the program for Program Years 4 – 6.

**Program Evaluation Plan**

SCE&G anticipates conducting program evaluation activities similar to its other programs.

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<sup>5</sup> While the NEEP program will be in operational Years 2 – 5, the above results are indicated for Portfolio Years 4 - 6

### 3.9 Residential Appliance Recycling

#### Program Design

The Residential Appliance Recycling Program provides residential electric customers with incentives for allowing SCE&G to collect and recycle less-efficient, but operable, secondary refrigerators, room air conditioners and/or standalone freezers, permanently removing the units from service. The program seeks to achieve savings by permanently removing less-efficient appliances from service, and to prevent older appliances from being transferred within SCE&G electric territory, where they would continue to operate inefficiently. In addition to energy savings and demand reductions generated, the program recycles all participating appliances in an environmentally safe manner. Qualified appliances are collected at no additional costs.

#### Rebate Table

The currently anticipated incentive payment per measure is provided in Table 15. SCE&G anticipates updating the incentive payments as program participation, evaluation results, baseline shifts, or other factors dictate during the finalization of program planning and during implementation.

**Table 15: Program Incentives Summary – Residential Appliance Recycling**

<b>Residential Appliance Recycling</b>	
<b>Measure Description</b>	<b>Per Unit Incentive</b>
Refrigerator Recycling	\$50
Freezer Recycling	\$50
Room Air Conditioner Recycling	\$25

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.47, to reduce energy demand by 1.55 MW and energy consumption by 6,987 MWh, and to cost \$2,032,371. Year-by-year impacts are summarized in Table 16. The assumed NTG ratio is 0.70.

**Table 16: Program Impact Summary – Residential Appliance Recycling**

<b>Appliance Recycling<sup>6</sup></b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	1,863	2,329	2,795	6,987
Net Annual MW Savings	0.41	0.52	0.62	1.55
Participants	3,474	4,343	5,211	13,028
Incentive Costs	\$169,364	\$211,705	\$254,046	\$635,116
Non-Incentive Costs	\$372,601	\$465,752	\$558,902	\$1,397,255
Implementation	\$336,909	\$421,136	\$505,364	\$1,263,409
EM&V	\$15,387	\$19,234	\$23,081	\$57,702
Administration	\$20,305	\$25,381	\$30,457	\$76,143
Total Program Costs	\$541,966	\$677,457	\$812,948	\$2,032,371
TRC Ratio	1.47			
UCT Ratio	1.85			
Net-to-Gross Ratio	0.70			

**Program Enhancements**

The Residential Appliance Recycling program is new for PY4-PY6.

**Program Evaluation Plan**

SCE&G anticipates conducting program evaluation activities similar to its other programs.

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<sup>6</sup> While the Appliance Recycling program will be in operational Years 1 – 3, the above results are indicated for Portfolio Years 4 - 6

### 3.10 Commercial & Industrial EnergyWise for Your Business

#### Program Design

The EnergyWise for your Business Program includes a prescriptive and a custom segment. The prescriptive segment offers a simplified method to make efficient choices on pre-defined energy efficiency measures without requiring complex analysis or participation rules. Incentives and claimed savings are based on pre-defined technologies and calculation methods. The segment covers the majority of common energy saving measures across most customers and end-use markets and through its ease of use and understanding provides an effective way to reach all C&I customers.

The custom segment supports customers in identifying and implementing more complex site-specific opportunities through measures not addressed by the prescriptive measures. The segment provides incentives and technical assistance to customers seeking to improve the efficiency of existing facilities as well as at the time of new equipment purchases, facility modernization, and new construction. Custom projects must be able to show specific and verifiable energy savings and costs, typically developed by a third-party firm.

The EnergyWise for your Business Program is available to all qualifying non-residential customers that have not elected to opt-out, and targets all cost effective energy efficiency retrofit and time dependent opportunities.

#### Rebate Table

The currently anticipated incentive payment per measure is provided in Table 17. SCE&G anticipates updating the incentive payments as program participation, evaluation results, baseline shifts, or other factors dictate during the finalization of program planning and during implementation.

**Table 17: Prescriptive Incentives Summary – EnergyWise for Your Business**

<b>Commercial &amp; Industrial EnergyWise for Your Business</b>			
<b>Prescriptive Offering</b>	<b>Measure</b>	<b>Incentive</b>	<b>Per Unit</b>
Food Service and High Efficiency Equipment	Anti-Sweat Heater Controls Cooler Doors	\$40	door
Food Service and High Efficiency Equipment	Anti-Sweat Heater Controls Freezer Doors	\$40	door
Food Service and High Efficiency Equipment	Clothes Washers All	\$50	unit
Food Service and High Efficiency Equipment	Combination Ovens All	\$1,000	unit
Food Service and High Efficiency Equipment	Convection Ovens All	\$200	oven
Food Service and High Efficiency Equipment	ECM (Coolers/Freezers) Display Cooler	\$40	unit
Food Service and High Efficiency Equipment	ECM (Coolers/Freezers) Display Freezer	\$40	unit
Food Service and High Efficiency Equipment	ECM (Coolers/Freezers) Reach-in Cooler	\$40	unit
Food Service and High Efficiency Equipment	ECM (Coolers/Freezers) Reach-in Freezer	\$40	unit
Food Service and High Efficiency Equipment	ECM (Coolers/Freezers) Walk-in Cooler	\$40	unit



<b>Commercial &amp; Industrial EnergyWise for Your Business</b>			
<b>Prescriptive Offering</b>	<b>Measure</b>	<b>Incentive</b>	<b>Per Unit</b>
Food Service and High Efficiency Equipment	ECM (Coolers/Freezers) Walk-in Freezer	\$40	unit
Food Service and High Efficiency Equipment	Fryers Large Vat	\$150	vat
Food Service and High Efficiency Equipment	Glass Door Reach-in Refrig < 15 cubic feet	\$50	unit
Food Service and High Efficiency Equipment	Glass Door Reach-in Refrig 15 - 30 cubic feet	\$75	unit
Food Service and High Efficiency Equipment	Glass Door Reach-in Refrig 31 - 50 cubic feet	\$100	unit
Food Service and High Efficiency Equipment	Glass Door Reach-in Refrig > 50 cubic feet	\$125	unit
Food Service and High Efficiency Equipment	Griddles All	\$200	unit
Food Service and High Efficiency Equipment	Hot Holding Cabinets Half Size	\$200	unit
Food Service and High Efficiency Equipment	Hot Holding Cabinets 3/4 Size	\$300	unit
Food Service and High Efficiency Equipment	Hot Holding Cabinets Full Size	\$400	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 1 < 450 lbs	\$50	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 1 451-1000 lbs	\$100	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 1 > 1000 lbs	\$150	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 2 (Cube & Nugget) < 450 lbs	\$75	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 2 (Cube & Nugget) 451-1000 lbs	\$125	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 2 (Cube & Nugget) > 1000 lbs	\$150	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 2 (Flake) < 450 lbs	\$100	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 2 (Flake) 451-1000 lbs	\$175	unit
Food Service and High Efficiency Equipment	High Efficiency Ice Maker CEE Tier 2 (Flake) > 1000 lbs	\$250	unit
Food Service and High Efficiency Equipment	LED Refrig Case Lighting Controls All	\$5	door
Food Service and High Efficiency Equipment	LED RefrigCase Lighting All	\$25	door
Food Service and High Efficiency Equipment	Personal Recept Occ Sensors Power Strip with Occupancy Sensor	\$10	control
Food Service and High Efficiency Equipment	Reach-in Freezers < 15 cubic feet	\$60	unit
Food Service and High Efficiency Equipment	Reach-in Freezers 15 - 30 cubic feet	\$75	unit

<b>Commercial &amp; Industrial EnergyWise for Your Business</b>			
<b>Prescriptive Offering</b>	<b>Measure</b>	<b>Incentive</b>	<b>Per Unit</b>
Food Service and High Efficiency Equipment	Reach-in Freezers 31 - 50 cubic feet	\$100	unit
Food Service and High Efficiency Equipment	Reach-in Freezers > 50 cubic feet	\$125	unit
Food Service and High Efficiency Equipment	Refrigeration Night Covers Freezers	\$5	foot
Food Service and High Efficiency Equipment	Refrigeration Night Covers Coolers	\$5	foot
Food Service and High Efficiency Equipment	Reach-in Refrigerators < 15 cubic feet	\$50	unit
Food Service and High Efficiency Equipment	Reach-in Refrigerators 15 - 30 cubic feet	\$75	unit
Food Service and High Efficiency Equipment	Reach-in Refrigerators 31 - 50 cubic feet	\$100	unit
Food Service and High Efficiency Equipment	Reach-in Refrigerators > 50 cubic feet	\$125	unit
Food Service and High Efficiency Equipment	Steam Cookers 3 Pan	\$300	unit
Food Service and High Efficiency Equipment	Steam Cookers 4 Pan	\$400	unit
Food Service and High Efficiency Equipment	Steam Cookers 5 Pan	\$500	unit
Food Service and High Efficiency Equipment	Steam Cookers 6 Pan	\$600	unit
Food Service and High Efficiency Equipment	Vending Machine Controls Refrigerated	\$50	unit
Food Service and High Efficiency Equipment	Vending Machine Controls Non-Refrigerated	\$20	unit
HVAC Chillers	Air-Cooled with Condenser	\$20	ton
HVAC Chillers	Water-Cooled Centrifugal	\$20	ton
HVAC Chillers	Water-Cooled Reciprocating	\$25-\$35	ton
HVAC Chillers	Water-Cooled Screw	\$25-\$35	ton
HVAC VFD	Large Prescriptive VFD	\$650-\$6200	unit
New Construction Lighting	Occupancy Sensor: Wall Switch Replacement	\$20	control
New Construction Lighting	Occupancy Sensor: Ceiling / Wall Mount (Remote)	\$50	control
New Construction Lighting	Occupancy Sensor: Fixture Mounted (High Bay)	\$20	control
New Construction Lighting	Daylight Harvesting (Dimming)	\$40	Ballast Controlled
New Construction Lighting	Daylight Harvesting (On/Off)	\$50	Control

<b>Commercial &amp; Industrial EnergyWise for Your Business</b>			
<b>Prescriptive Offering</b>	<b>Measure</b>	<b>Incentive</b>	<b>Per Unit</b>
New Construction Lighting	Building Method	\$.40 per watt reduced, up to \$30 per fixture	
New Construction Lighting	Space Method	\$.40 per watt reduced, up to \$30 per fixture	
Lighting	LED Downlight Fixtures: Recessed, surface, pendant, or track downlight fixtures	\$40	Fixture
Lighting	LED Refrigerated Case Lighting	\$25	Door
Lighting	4 ft HPT8 Retrofit: 1-2 Lamps	\$ 6	Fixture
Lighting	4 ft HPT8 Retrofit: 3-4 Lamps	\$12	Fixture
Lighting	3 ft T8 Retrofit: 1-4 Lamps	\$6	Fixture
Lighting	2 ft T8 Retrofit: 1-4 Lamps	\$5	Fixture
Lighting	Delamp and Retrofit w/ 4' HPT8 (HO): 2 Lamps	\$30	Fixture
Lighting	Delamp and Retrofit w/ 4' HPT8 (Slimline): 2 Lamps	\$25	Fixture
Lighting	Delamp and Retrofit w/ 4' HPT8 (Standard): 2 Lamps	\$25	Fixture
Lighting	Delamp and Retrofit w/ 4' HPT8: 1 Lamps	\$15	Fixture
Lighting	Delamp and Retrofit w/ 2' T8 Lamps: 2 Lamps	\$15	Fixture
Lighting	New Commodity-Grade fixture w/ 4' HPT8 or T5/T5HO: 1-2 Lamps	\$20	Fixture
Lighting	New Commodity-Grade fixture w/ 4' HPT8 or T5/T5HO: 3-4 Lamps	\$25	Fixture
Lighting	NEW CMDTY-GRADE FIX W/2FT OR 3FT T8 OR T5/T5HO:1-4Lamps	\$15	Fixture
Lighting	New High Efficiency Advanced Fixture w/ 4' HPT8 or T5/T5HO: 1 Lamp	\$30	Fixture
Lighting	New High Efficiency Advanced Fixture w/ 4' HPT8 or T5/T5HO: 2 Lamps	\$40	Fixture
Lighting	Replace 150-250w fixtures with HPT8 or T5HO fixtures	\$40	Fixture
Lighting	Replace 320-400w fixtures with HPT8 or T5HO fixtures	\$55	Fixture
Lighting	Replace 750-1000w fixtures with HPT8 or T5HO fixtures	\$100	Fixture
Lighting	REPL <= 400W HID, INTER/EXTER, W/PULSE STRT MET HALIDE	\$25	Fixture
Lighting	Repl 401-1000 HID, Inter/ Exter,W/PULSE STRT MET HALIDE	\$40	Fixture
Lighting	New hardwired CFL Downlight, Surface, Pendant or Wallpack: 1 Lamp	\$10	Fixture

<b>Commercial &amp; Industrial EnergyWise for Your Business</b>			
<b>Prescriptive Offering</b>	<b>Measure</b>	<b>Incentive</b>	<b>Per Unit</b>
Lighting	New hardwired CFL Downlight, Surface, Pendant or Wallpack: 2 Lamp	\$13	Fixture
Lighting	New hardwired CFL Downlight, Surface, Pendant or Wallpack: 3 Lamp	\$20	Fixture
Lighting	Occupancy Sensor: Wallswitch Replacement	\$20	Control
Lighting	Occupancy Sensor: Ceiling/Wall Mount (Remote)	\$50	Control
Lighting	Occupancy Sensor: Fixture Mounted (High Bay)	\$20	Control
Lighting	Daylight Harvesting (Dimming)	\$40	Ballast Controlled
Lighting	Daylight Harvesting (On/Off)	\$50	Control
Lighting	LED Refrigerated Case Lighting Controls	\$ 5	Door
Lighting	New LED Exit Sign (Incandescent or Fluorescent)	\$10	Sign
Lighting	PAR, BR and R screw-in integral LED replacement lamps, size 30 or larger	\$25	Lamp
Lighting	MR integral LED replacement lamps	\$20	Lamp
Lighting	A-type and size 20 PAR, BR, and R screw-in integral LED replacement lamps	\$15	Lamp
Lighting	Exterior parking garage or canopy fixtures replacing HID or T12HO/VHO fixtures	\$175	Fixture
Lighting	Exterior parking lot, area and flood fixtures, and wallpacks replacing HID fixtures	\$150	Fixture
Unitary HVAC	HVAC Unitary	\$40-60	Ton
Unitary HVAC	Heat Pump	\$40-60	Ton
Unitary HVAC	Packaged Terminal AC	\$20-35	Unit
Unitary HVAC	Packaged Terminal Heat Pump	\$20-35	Unit
Unitary HVAC	Split System	\$40-60	Ton
Unitary HVAC	Water-cooled	\$60	Ton

### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.46, to reduce energy demand by 13.67 MW and energy consumption by 97,648 MWh, and to cost \$28,680,348. Year-by-year impacts are summarized in Table 18. The assumed NTG ratio is 0.70.

**Table 18: Program Impact Summary – C&I EnergyWise for Your Business**

<b>EnergyWise for Your Business</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	28,822	32,710	36,116	97,648
Net Annual MW Savings	3.97	4.59	5.11	13.67
Participants	534	608	674	1,816
Incentive Costs	\$4,859,850	\$5,610,800	\$6,256,650	\$16,727,300
Non-Incentive Costs	\$3,452,779	\$4,013,261	\$4,487,009	\$11,953,048
Implementation	\$2,647,061	\$3,083,582	\$3,450,552	\$9,181,195
EM&V	\$402,859	\$464,839	\$518,228	\$1,385,927
Administration	\$402,859	\$464,839	\$518,228	\$1,385,927
Total Program Costs	\$8,312,629	\$9,624,061	\$10,743,659	\$28,680,348
TRC Ratio	1.46			
UCT Ratio	2.36			
Net-to-Gross Ratio	0.70			

### **Program Enhancements**

The SCE&G EnergyWise for your Business prescriptive offerings are constantly reviewed and compared against market conditions, industry best practices, energy codes, as well as direct experience to date. On an annual basis, or more frequently if needed, SCE&G reviews the current measures and incentive amounts to ensure they're relevant and palatable in the marketplace and energy codes.

Through interaction with SCE&G's customers, key trade allies, and by consistently reviewing programs around the country, SCE&G will look to simplify the custom application process in some cases. Guidance documents have been developed to assist customers and engineers with these custom measures. SCE&G believes that by stream lining the custom application process improved efficiencies will be realized, which will lead to greater participation and savings. SCE&G will also be offering incentives to customers wishing to undertake technical services to assist in the development of energy efficiency projects and customers wishing to perform a full retro-commissioning of their facility.

SCE&G also plans to make efforts to reach more of the Industrial class by identifying specific measures and market trends that are already part of the current program offerings that could initiate some increased engagement and interest from this sector. SCE&G will bring this to market in the form of Industrial specific applications that highlights these measures, trainings geared towards market and technology trends in this sector, and additional testimonials and marketing efforts that will energize the interest of these customers and potentially result in more participation in the programs.

### **Program Evaluation Plan**

The evaluation plan for PY1 – PY3 has been previously filed with the PSCSC. Program results for PY1 – PY3 are filed annually. For PY4 – PY6, SCE&G anticipates conducting similar evaluation activities for this program.

### 3.11 Commercial & Industrial Small Business Direct Install (SBDI)

#### Program Design

The Small Business Direct Install program provides cost-effective, comprehensive retrofit services to small business customers on a turnkey basis. The program offers small business customers the opportunity to receive financial incentives as well as educational and technical assistance for projects involving the replacement of existing equipment where the equipment being replaced continues to function, but is outdated and energy inefficient. SBDI identifies cost-effective efficiency retrofit opportunities and provides the direct installation of measures, financial incentives and other strategies to encourage early replacement of existing equipment with high efficiency alternatives.

Customer incentives are provided to reduce a significant portion of the cost of installing energy efficient equipment and are based on the total installed cost of the retrofits. All qualifying customers are eligible for an incentive up to 80% of the total installed costs for lighting and refrigeration measures. Because of the unique and hard-to-reach customer base that small businesses represent, the program is designed to overcome the most common barriers to participation for these customers, which include:

- Business owners without technical expertise or time to devote to energy efficiency improvements
- Diversity of the small commercial sector in terms of business types
- Limited access to investment capital.

#### Impact and Cost-Effectiveness Summary

Over three years, the program is anticipated to have a TRC benefit cost ratio of 1.10, to reduce energy demand by 4.28 MW and energy consumption by 16,157 MWh, and to cost \$9,853,447. Year-by-year impacts are summarized in Table 19. The assumed NTG ratio is 0.80.

**Table 19: Program Impact Summary – C&I Small Business Direct Install**

<b>Small Business Direct Install<sup>7</sup></b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Total</b>
Net Annual MWh Savings	3,310	5,386	7,461	16,157
Net Annual MW Savings	0.86	1.43	1.99	4.28
Participants	350	575	800	1,725
Incentive Costs	\$1,275,000	\$2,062,500	\$2,850,000	\$6,187,500
Non-Incentive Costs	\$755,407	\$1,221,982	\$1,688,557	\$3,665,947
Implementation	\$592,889	\$959,085	\$1,325,281	\$2,877,255
EM&V	\$86,988	\$140,716	\$194,445	\$422,149
Administration	\$75,530	\$122,181	\$168,832	\$366,543
Total Program Costs	\$2,030,407	\$3,284,482	\$4,538,557	\$9,853,447
TRC Ratio	1.10			
UCT Ratio	1.24			
Net-to-Gross Ratio	0.80			

<sup>7</sup> While the Small Business Direct Install program will be in operational Years 1 – 3, the above results are indicated for Portfolio Years 4 - 6

### **Program Enhancements**

SCE&G has not offered a Small Business Direct Install program during its previous portfolio years. SCE&G will continue to monitor the success and popularity of the program, remain in contact with customers and key trade allies, and evolve the program as it learns through its implementation experience.

### **Program Evaluation Plan**

SCE&G anticipates conducting program evaluation activities similar to its other programs.

## 4. Conclusions

The overall PY4 – PY6 portfolio is summarized in Table 20. With this portfolio, SCE&G is proposing programs which cost-effectively meet the needs of a broad range of customers, including hard-to-reach customers. These programs build on the momentum that SCE&G has created in the last three years, reflect the impact of changing baselines, and incorporate feedback from customers, key trade allies, the third-party evaluator and other stakeholders.



**Table 20: Summary of PY4 - PY6 Portfolio Impacts**

Program	Budget \$1,000(s)			MWh (Net)			MW (Net)			Cost-Effectiveness	
	Year 4	Year 5	Year 6	Year 4	Year 5	Year 6	Year4	Year 5	Year 6	TRC	UCT
ENERGY STAR Lighting	\$4,507.35	\$4,958.09	\$4,958.09	53,565	58,922	58,922	7.57	8.33	8.33	2.71	3.90
Home Energy Check-up	\$794.94	\$846.22	\$897.51	2,571	2,737	2,903	0.36	0.38	0.40	1.05	1.05
Home Performance with ENERGY STAR	\$1,131.86	\$1,426.46	\$1,488.48	1,612	2,031	2,120	0.45	0.57	0.60	1.01	1.60
Home Energy Reports	\$1,008.09	\$1,037.94	\$1,065.58	6,490	6,703	6,901	5.01	5.18	5.33	4.53	4.53
Energy Information Display	\$500.00	\$475.00	\$475.00	1,629	1,991	2,318	0.27	0.34	0.39	1.36	2.57
Heating & Cooling and Water Heating	\$3,246.30	\$3,414.58	\$3,593.24	12,784	13,202	13,670	3.61	3.80	4.01	2.44	4.10
ENERGY STAR New Homes	\$501.85	\$552.03	\$552.03	745	819	819	0.26	0.29	0.29	1.71	2.35
Neighborhood Energy Efficiency Program (NEEP)	\$457.27	\$502.99	\$553.29	1,321	1,412	1,554	0.19	0.20	0.22	1.45	1.36
Appliance Recycling	\$541.97	\$677.46	\$812.95	1,863	2,329	2,795	0.41	0.52	0.62	1.47	1.85
<b>Residential Portfolio</b>	<b>\$12,689.62</b>	<b>\$13,890.77</b>	<b>\$14,396.17</b>	<b>82,580</b>	<b>90,146</b>	<b>92,002</b>	<b>18.13</b>	<b>19.61</b>	<b>20.19</b>	<b>2.29</b>	<b>3.29</b>
EnergyWise for Your Business	\$8,312.63	\$9,624.06	\$10,743.66	28,822	32,710	36,116	3.97	4.59	5.11	1.46	2.36
Small Business Direct Install	\$2,030.41	\$3,284.48	\$4,538.56	3,310	5,386	7,461	0.86	1.43	1.99	1.10	1.24
<b>C&amp;I Portfolio</b>	<b>\$10,343.04</b>	<b>\$12,908.54</b>	<b>\$15,282.22</b>	<b>32,132</b>	<b>38,096</b>	<b>43,577</b>	<b>4.83</b>	<b>6.02</b>	<b>7.10</b>	<b>1.39</b>	<b>2.08</b>
<b>Total Portfolio</b>	<b>\$23,032.66</b>	<b>\$26,799.31</b>	<b>\$29,678.39</b>	<b>114,712</b>	<b>128,242</b>	<b>135,579</b>	<b>22.96</b>	<b>25.63</b>	<b>27.29</b>	<b>1.85</b>	<b>2.71</b>

## Appendix A: List of Measures and TRC Measure Cost Effectiveness Results

Sector	Efficient Measure Definition	Unit Name	Efficient Measure Life	Total Incremental Cost	Annual kWh Savings	Annual kW Savings	Measure TRC
Residential	CFLs - Regular	Bulb	5	\$3.00	64	0.006	3.72
	CFLs - Specialty	Bulb	5	\$10.00	110	0.005	2.81
	CFLs - Fixtures	Fixture	5	\$45.00	227	0.005	1.22
	LEDs	Bulb	12	\$10.00	79	0.009	5.20
	LED Holiday Lights	Strand	20	\$30.00	47	-	1.16
	LED Night Lights	Bulb	12	\$5.00	19	0.001	2.07
	Refrigerator Recycling	Unit	8	\$107.50	760	0.114	3.57
	Freezer Recycling	Unit	8	\$107.50	760	0.114	3.57
	Room AC Recycling	Unit	3	\$70.50	145	0.900	5.44
	Duct Sealing (A/C)	Job	18	\$648.00	1,069	0.495	2.40
	Duct Sealing (HP)	Job	18	\$648.00	2,221	0.495	3.63
	Duct Insulation (A/C)	Job	20	\$720.00	360	0.168	0.78
	Duct Insulation (HP)	Job	20	\$720.00	749	0.168	1.17
	Duct Work Replacement (A/C)	Job	20	\$720.00	1,393	0.645	2.99
	Duct Work Replacement (HP)	Job	20	\$720.00	2,895	0.645	4.53
	Gas Storage Water Heater	Unit	15	\$325.00	3,660	0.619	1.86
	Gas Tankless Water Heater	Unit	15	\$730.00	3,660	0.619	1.50
	Propane Tankless Water Heater	Unit	15	\$730.00	3,660	0.619	4.31
	Heat Pump Water Heater	Unit	15	\$700.00	2,187	0.370	2.69
	Solar Hot Water Heater	Unit	20	\$4,500.00	2,236	0.420	0.53
	Propane Storage Water Heater	Unit	15	\$325.00	3,660	0.619	9.68
	HPwES - Job	Job	19	\$3,125.22	4,669	1.248	1.91
	Home Energy Report	Home	5	\$12.00	165	0.121	9.55
	Energy Information Display	Home	10	\$169.00	500	0.080	1.85
	NEEP Home Visit	Home	15	\$269.14	1,086	0.196	2.79
	New Home	Home	30	\$1,500.00	2,864	0.959	4.05
	Central AC Tier 1	Unit	18	\$277.86	387	0.321	2.85
	Central AC Tier 2	Unit	18	\$833.57	584	0.486	1.44
	Heat Pump Tier 1	Unit	15	\$293.81	507	0.432	3.20
	Heat Pump Tier 2	Unit	15	\$881.42	793	0.606	1.55

Sector	Efficient Measure Definition	Unit Name	Efficient Measure Life	Total Incremental Cost	Annual kWh Savings	Annual kW Savings	Measure TRC
	Ductless Heat Pump	Unit	15	\$381.95	507	0.432	2.46
	Ductless AC	Unit	18	\$361.21	387	0.321	2.19
	Ground Source Heat Pump - Tier 1	Unit	18	\$6,870.00	1,043	0.545	0.23
	Ground Source Heat Pump - Tier 2	Unit	18	\$6,870.00	1,430	0.756	0.32
	Home Energy Check-up	Home	6	\$149.22	829	0.124	3.37
Non-Residential	Commercial Kitchen	Job	12	\$640.00	2,869	0.571	3.44
	Commercial Refrigeration	Job	12	\$2,000.00	17,367	1.415	5.38
	HVAC Chillers	Job	15	\$38,400.00	80,000	19.000	2.02
	HVAC Unitary	Job	15	\$11,500.00	5,200	3.500	0.73
	Performance Based Lighting	Job	11	\$13,750.00	150,000	20.000	6.97
	Retrofit Lighting	Job	11	\$25,000.00	70,000	8.000	1.72
	VF Variable Frequency Drives	Job	10	\$12,600.00	120,000	11.000	5.19
	Commercial Plug Load	Job	15	\$320.00	1,439	0.270	3.98
	Custom - Retrofit	Job	15	\$44,000.00	175,000	28.000	3.37
	Custom - New Construction	Job	15	\$46,666.67	115,000	25.000	2.29
	Small Business - Lighting	Job	10	\$3,750.00	10,000	3.000	2.07
	Small Business - Refrigeration	Job	12	\$9,375.00	18,750	1.500	1.24