Southwestern Public Service Company

Energy Efficiency and Load Management Annual Report

2010

Prepared in Compliance with the Efficient Use of Energy Act and 17.7.2 NMAC (Energy Efficiency Rule)

Case No. 09-00352-UT
May 2, 2011
Amended July 1, 2011

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Glossary of Acronyms and Definition

Acronym/Defined Term	**Meaning**
2010 Plan	SPS's 2010 Energy Efficiency and Load Management Plan
2010 Report	SPS's 2010 Energy Efficiency and Load Management Annual Report
Annual Energy Savings	Equates to Customer savings as approved on March 11, 2010.
ASHP	Air-Source Heat Pump
CFL	Compact Fluorescent Light bulb
BSC	Business Solutions Center
CIL	Contract Interruptible Load
EUEA	New Mexico Efficient Use of Energy Act, as amended by Senate Bill 418 (2007) and House Bill 305 (2008), §§62-17-1 through 62-17-11 NMSA 1978
Evaluator	Independent Program Evaluator, the third-party contractor that will conduct all measurement & verification of the programs.
Generator kW; Generator kWh	Demand and energy savings, respectively, measured at the generator, corrected for transmission line losses and free-rider/drivership.
HES	Home Energy Services
HID	High Intensity Discharge
HVAC	Heating, Ventilation and Air Conditioning
LIHEAP	Low-Income Home Energy Assistance Program
ICO	Interruptible Credit Option
MFA	Mortgage Finance Authority, a low-income community agency
M&V	Measurement and Verification
NEB	Non-Energy Benefits refers to benefits of the energy efficiency and load management programs that are unrelated to the generation, transmission, distribution, or cost of energy.
NMPRC	New Mexico Public Regulation Commission
O&M	Operations and Maintenance
Rule	Energy Efficiency Rule, 17.7.2 NMAC
SPS	Southwestern Public Service Company, a New Mexico corporation
TRC	Total Resource Cost, a test of cost-effectiveness as defined in the Efficient Use of Energy Act

Acronym/Defined Term	**Meaning**
VFD/ASD	variable frequency/adjustable speed drives
Xcel Energy	Xcel Energy Inc.

Document Layout

This 2010 Annual Report includes the following sections:

- Section I provides the Executive Summary consisting of an Introduction, Background, and Summary of Results.
- Section II provides the reporting requirements as stated in 17.7.2.13 NMAC.
- Section III provides the program descriptions including an explanation of deviations from goal and changes during 2010, organized into the Residential, Business, and Planning & Research Segments.
- Appendix A provides the Measurement and Verification ("M&V") Report of SPS's 2010 program year prepared by ADM Associates Inc.

Section I. Executive Summary

Introduction

In accordance with the Efficient Use of Energy Act ("EUEA"), as amended by Senate Bill 418 (2007) and House Bill 305 (2008) (§§62-17-1 through 62-17-11 NMSA 1978, "EUEA"), and the New Mexico Public Regulation Commission's ("Commission" or "NMPRC") Energy Efficiency Rule ("17.7.2 NMAC", "Rule"), Southwestern Public Service Company, a New Mexico corporation ("SPS") respectfully submits for Commission review SPS's 2010 Energy Efficiency and Load Management Annual Report ("2010 Annual Report"). The EUEA and its associated Rule require public utilities to offer cost-effective energy efficiency and load management programs and authorizes them to receive cost recovery for qualified expenditures. Further, 17.7.2.13.B NMAC requires SPS to file with the Commission by May 1 of each year, a report on its energy efficiency and load management programs during the prior calendar year[1]. The specific reporting requirements are discussed in Section II.

With this 2010 Annual Report, SPS provides the expenditures and savings results for 16 energy efficiency and load management direct impact programs in the Residential Segment (including Low-Income) and Business Segment (including Large Customer). In addition, the Report includes a summary of the Planning and Research Segment, which supports the direct impact programs. The M&V Report of SPS's 2010 savings is included as Appendix A.

On July 1, 2011, SPS submitted an Amended 2010 Energy Efficiency and Load Management Annual Report. This amended report primarily revises the verified savings for the Home Energy Services and Low Income Programs. SPS's prior report, filed on May 2, did not include full-year participation for these programs, and thus, understated program savings. Additionally, SPS is filing an amended 2010 M&V Report from ADM Associates that not only corrects the Home Energy Services and Low Income savings, but expands the recommended technical assumptions for SPS.

1[1] SPS's future reports will be filed by May 1 of each year, in accordance to 17.7.2.13.B NMAC (Final Order Repealing and Replacing 17.7.2 NMAC, Case No. 08-00024-UT, effective May 3, 2010).

Background

SPS filed its 2010/2011 Energy Efficiency and Load Management Plan on September 21, 2009 and received final approval from the Commission for its 2010 Plan on March 11, 2010 in Case No. 09-00352-UT. The 2011 Plan was given provisional approval on this date.

The 2010 Plan was SPS's third energy efficiency and load management portfolio to be presented to the Commission under the EUEA.

Summary of Results

In 2010, SPS achieved verified electric savings of 6,403 kW and 26,019,465 kWh at the generator, at a total cost of $6,623,062. (See Table 2 below.)

In compliance with 17.7.2.13 NMAC, Table 1 below, shows SPS's program goals, budgets, and Total Resource Cost ("TRC") Test ratios as approved by the Commission on March 11, 2010 in Case No. 09-00352-UT. Also included are the budget increases for the Home Energy Services Program and the Small Business Lighting Program as approved by the Commission on September 9, 2010.

Table 1: 2010 Program Goals and Budgets (as filed in "Compliance Filing" January 13, 2010 plus budget increases approved on September 9, 2010)

Program	Participants	Budget	Peak Demand Savings kW	Annual Energy Savings kWh	Loss Factor	Generator kW	Generator kWh	TRC Test
Residential Segment								
Electric Water Heating	145	$23,574	6	51,206	11%	7	57,336	1.33
Evaporative Cooling	400	$131,842	393	564,798	11%	442	632,402	23.85
Home Energy Services	4,000	$2,996,356	568	5,719,967	11%	638	6,404,621	3.06
Home Lighting	37,500	$754,977	530	7,537,355	11%	595	8,439,541	4.07
Low-Income	2,660	$295,042	106	847,861	11%	119	949,346	2.10
Refrigerator Recycling	500	$131,050	61	524,502	11%	69	587,283	2.95
School Education Kits	2,500	$145,768	16	540,244	11%	18	604,909	2.40
Residential Energy Efficiency Subtoal	**47,705**	**$4,478,609**	**1,680**	**15,785,932**	**11%**	**1,887**	**17,675,437**	
Saver's Switch - Residential	855	$471,607	921	6,736	11%	1,035	7,543	2.46
Residential Load Management Subtoal	**855**	**$471,607**	**921**	**6,736**	**11%**	**1,035**	**7,543**	
Residential Segment Total	**48,560**	**$4,950,216**	**2,601**	**15,792,669**	**11%**	**2,923**	**17,682,979**	**3.44**
Business Segment								
Cooling Efficiency	45	$323,579	399	926,024	9%	438	999,918	3.23
Custom Efficiency	51	$935,610	594	4,759,018	9%	653	5,138,774	6.25
Large Customer	0	$0	0	0	9%	0	0	0.00
Lighting Efficiency	144	$823,871	1,207	5,098,907	9%	1,326	5,505,784	4.02
Motor & Drive Efficiency	105	$423,096	341	1,913,200	9%	375	2,065,867	3.22
Small Business Lighting	45	$972,388	228	926,152	9%	251	1,000,056	1.34
Business Energy Efficiency Subtoal	**390**	**$3,478,544**	**2,768**	**13,623,301**	**9%**	**3,042**	**14,710,399**	
Interruptible Credit Option	5	$109,475	7,240	65,056	9%	7,956	70,247	22.38
Saver's Switch - Business	82	$174,929	642	8,749	9%	706	9,448	4.53
Business Load Management Subtoal	**87**	**$284,404**	**7,883**	**73,805**	**9%**	**8,662**	**79,694**	
Business Segment Total	**477**	**$3,762,948**	**10,651**	**13,697,106**	**9%**	**11,705**	**14,790,094**	**4.21**
Planning & Research Segment								
Consumer Education		$128,730						
DSM Planning & Administration		$318,000						
Market Research		$55,300						
Measurement & Verification		$107,000						
Product Development		$91,042						
Planning & Research Segment Total		**$700,072**						
2010 TOTAL	**49,037**	**$9,413,236**	**13,252**	**29,489,775**		**14,627**	**32,473,073**	**3.56**

Table 2 below, provides SPS's actual 2010 program achievements, expenditures, and TRC test ratios, verified by the Independent Program Evaluator ("Evaluator"), ADM Associates.

Table 2 (Revised): 2010 Program Achievements and Expenditures (As Verified in M&V Report)

Program	Participants	Actual Spend	Peak Demand Savings kW	Annual Energy Savings kWh	Loss Factor	Generator kW	Generator kWh	TRC Test
Residential Segment								
Electric Water Heating	0	$9,623	0	0	11%	0	0	0.00
Evaporative Cooling	308	$135,615	262	297,317	11%	294	334,064	7.22
Home Energy Services	3,895	$3,020,718	3,362	10,279,810	11%	3,778	11,550,348	3.20
Home Lighting	47,630	$672,049	896	7,848,485	11%	1,007	8,818,522	5.72
Low-Income	268	$231,733	249	560,096	11%	280	629,321	2.93
Refrigerator Recycling	209	$54,181	41	221,669	11%	46	249,066	1.96
School Education Kits	3,362	$133,140	21	692,041	11%	24	777,574	2.87
Residential Energy Efficiency Subtoal	**55,672**	**$4,257,059**	**4,831**	**19,899,418**	**11%**	**5,428**	**22,358,897**	**3.61**
Saver's Switch - Residential	997	$265,166	0	0	11%	0	0	N/A
Residential Load Management Subtoal	**997**	**$265,166**	**0**	**0**	**11%**	**0**	**0**	**N/A**
Residential Segment Total	**56,669**	**$4,522,225**	**4,831**	**19,899,418**	**11%**	**5,428**	**22,358,897**	**3.42**
Business Segment								
Cooling Efficiency	8	$134,871	191	359,605	9%	210	395,170	3.88
Custom Efficiency	3	$105,239	16	111,137	9%	18	122,129	1.24
Large Customer	0	$0	0	0	9%	0	0	N/A
Lighting Efficiency	12	$127,942	258	1,162,038	9%	284	1,276,965	8.03
Motor & Drive Efficiency	14	$109,307	73	524,117	9%	80	575,953	2.78
Small Business Lighting	51	$1,043,275	349	1,174,220	9%	384	1,290,352	1.11
Business Energy Efficiency Subtoal	**88**	**$1,520,634**	**887**	**3,331,117**	**9%**	**975**	**3,660,568**	**2.15**
Interruptible Credit Option	0	$15,766	0	0	9%	0	0	0.00
Saver's Switch - Business	70	$29,748	0	0	9%	0	0	N/A
Business Load Management Subtoal	**70**	**$45,514**	**0**	**0**	**9%**	**0**	**0**	**0.00**
Business Segment Total	**158**	**$1,566,148**	**887**	**3,331,117**	**9%**	**975**	**3,660,568**	**2.11**
Planning & Research Segment								
Consumer Education		$120,831						
DSM Planning & Administration		$296,409						
Market Research		$42,183						
Measurement & Verification		$41,494						
Product Development		$33,772						
Planning & Research Segment Total		**$534,689**						
2010 TOTAL	**56,827**	**$6,623,062**	**5,718**	**23,230,535**		**6,403**	**26,019,465**	**2.79**

As can be derived from Tables 1 and 2, the overall 2010 energy efficiency and load management portfolio met 80% of the energy savings goal while spending 70% of the budget. Each direct impact energy efficiency program was cost-effective, other than Electric Water Heating, and the overall portfolio achieved a TRC test ratio of 2.79.

SPS has been making dramatic progress towards our goals: In 2008 energy savings were 6.1 GWh. In 2009 energy savings were 15.8 GWh. In 2010, we have increased our savings over the previous year by 65% to 26 GWh. The Residential segment exceeded goals by 26% in 2010, due to the strong performance of Home Energy Services and Home Lighting Products. Despite this steady progress, 2010 continued to be a challenging year for the Business segment. The Business programs experienced lower than forecasted participation and the segment as a whole achieved 24% of the energy savings goal, while spending 42% of its budget. The successes and shortfalls of the individual programs are discussed in Section III of this report. SPS is committed to continuing to improve its programs and increase customer awareness of them in the coming years. SPS is optimistic that as customer awareness grows, the programs will see increased participation, which will support cost-effective programs.

SPS worked in good faith to comply with the EUEA and to offer cost-effective energy efficiency and load management programs to all of its customers. SPS will continue to work going forward to meet the statutory goals to obtain all cost-effective and achievable energy efficiency and load management, but no less than a reduction of 5% of 2005 retail sales by 2014 and 10% by 2020.

Section II: 17.7.2.13 NMAC Reporting Requirements

This section of the Annual Report follows the reporting requirements and section headings as specified in the 17.7.2.13.C NMAC.

(1) Independent Measurement and Verification Report

17.7.2.13.C(1) requires that utilities provide an M&V Report compiled by an Independent Program Evaluator ("Evaluator") every year with its Annual Report. In compliance with the reporting requirements, the M&V Report (included as Appendix A) includes:

- Expenditure documentation, at both the total portfolio and individual program levels
- Measured and verified savings
- Cost-effectiveness of all of SPS's energy efficiency and load management programs
- Deemed savings assumptions and all other assumptions used by the Evaluator
- Description of the M&V process, including confirmation that:
    - measures were actually installed
    - installations meet reasonable quality standards
    - measures are operating correctly and are expected to generate the predicted savings

Table 1-8 within the 2010 M&V Report (Appendix A) contains a summary of technical assumption revisions as recommended by the Evaluator (ADM Associates, Inc.). SPS has evaluated these recommendations and will be implementing changes to its technical assumptions for the remainder of 2011.

(2) Program Expenditures Not Included in the M&V Report

In 2010, SPS spent a total of $6,623,062 for its energy efficiency programs. These expenditures included all expenses incurred by SPS to develop and implement the programs. All of these expenditures were included in the M&V Report provided by the Evaluator.

(3) Budgeted Funds Not Spent in Program Year, and

(4) Material Variances in Program Costs

SPS's 2010 forecasted budget was approved by the Commission on March 11, 2010. At that time, SPS anticipated that it would spend a total of $7,800,234. On August 3, 2010, SPS filed a motion to increase the budget over 25%, pursuant to 17.7.2.15.C NMAC (from the previous Energy Efficiency Rule), for the Home Energy Services Program and the Small Business Lighting Program through Case No. 09-00352-UT. Commission approval was received on September 9, 2010.   With this approval, the final portfolio budget increased to the final approved budget of $9,413,236.

In 2010 SPS had actual expenditures of $6,623,062. As presented in Table 3, below, SPS had a total of $2,790,174 of unspent funds in 2010. SPS addresses the reasons for these unspent funds in the "Deviation from Goal" section of each program discussion. These unspent funds will not be carried over into 2011. Any over-collection above projected spending is returned to customers, with interest (discussed further in item (5) of this section).

Table 3: 2010 Forecasted Budget, Actual Expenditures and Variance by Program

Program	Budget	Actual Spend	Variance
Residential Segment			
Electric Water Heating	$23,574	$9,623	($13,951)
Evaporative Cooling	$131,842	$135,615	$3,773
Home Energy Services	$2,996,356	$3,020,718	$24,362
Home Lighting	$754,977	$672,049	($82,928)
Low-Income	$295,042	$231,733	($63,309)
Refrigerator Recycling	$131,050	$54,181	($76,869)
School Education Kits	$145,768	$133,140	($12,628)
Residential Energy Efficiency Subtoal	**$4,478,609**	**$4,257,059**	**($221,550)**
Saver's Switch - Residential	$471,607	$265,166	($206,441)
Residential Load Management Subtoal	**$471,607**	**$265,166**	**($206,441)**
Residential Segment Total	**$4,950,216**	**$4,522,225**	**($427,991)**
Business Segment			
Cooling Efficiency	$323,579	$134,871	($188,708)
Custom Efficiency	$935,610	$105,239	($830,371)
Large Customer	$0	$0	$0
Lighting Efficiency	$823,871	$127,942	($695,929)
Motor & Drive Efficiency	$423,096	$109,307	($313,789)
Small Business Lighting	$972,388	$1,043,275	$70,887
Business Energy Efficiency Subtoal	**$3,478,544**	**$1,520,634**	**($1,957,910)**
Interruptible Credit Option	$109,475	$15,766	($93,709)
Saver's Switch - Business	$174,929	$29,748	($145,181)
Business Load Management Subtoal	**$284,404**	**$45,514**	**($238,890)**
Business Segment Total	**$3,762,948**	**$1,566,148**	**($2,196,800)**
Planning & Research Segment			
Consumer Education	$128,730	$120,831	($7,899)
DSM Planning & Administration	$318,000	$296,409	($21,591)
Market Research	$55,300	$42,183	($13,117)
Measurement & Verification	$107,000	$41,494	($65,506)
Product Development	$91,042	$33,772	($57,270)
Planning & Research Segment Total	**$700,072**	**$534,689**	**($165,383)**
2010 TOTAL	**$9,413,236**	**$6,623,062**	**($2,790,174)**

(5) Tariff Collections

January 1, 2010 through April 4, 2010 the tariff rider was set at 2.0881% of the total billed sales not including the EER. After April 5, 2010 billing for the EER became kWh-based following the Commission's Order in Case No. 09-00352-UT on SPS's 2010 Energy Efficiency Program and represented approximately 2.2676% of the total billed sales not including the EER Rider. As of December 31, 2010, SPS had recovered $ 5,734,474. Actual expenditures recorded in 2010 were $ 6,592,682, resulting in an under-recovery of $ 827,116, when taking into account interest applied on the monthly over-recovery balances that occurred throughout the year.

On January 1, 2011, the EER was revised to include $3,300,000 recoverable over a 12-month period to provide a temporary allowance for an energy efficiency incentive and to remove regulatory disincentives, authorized by the Commission's Order in Case No. 10-00161-UT and in accordance with the EUEA, as amended in 2008 and in accordance with the amendments to NMPRC Rule 17.7.2. The revised per-kWh EER effective January 1, 2011 represented approximately 3.1921% of billed sales not including the EER amounts.

The current over-recovery (as of March 31, 2011) is $1,284,953. On April 1, 2011, the per-kWh EER was revised following the Commission's Order in Case No. 09-00352-UT on SPS's 2011 Energy Efficiency Program, and represented approximately 4.4208% of billed amounts not including the tariff rider amounts. At this time, SPS does not propose to update its tariff rider, because the over-recovery balance is likely to decrease as spending continues through 2011. Currently pending before the Commission is Case No. 10-00197-UT, which concerns a method of determining the allowance for an energy efficiency incentive and to remove regulatory disincentives to cover the performance years of 2012, 2013, and 2014 for inclusion in recoveries under the EER. SPS continues to monitor its tariff rider collection on a monthly basis and will request a revision if the balance continues to grow beyond forecast expenditures. In addition, SPS will make an energy efficiency filing on October 1, 2011, at which time SPS will review its EER over- or under-recovery balance.

(6) Program-Specific Metrics
The following table provides SPS's 2010 program expenditures by cost category.

Table 4: Energy Efficiency Program Costs by Cost Category

Program	Total Incentive	Internal Admin.	Third-Party Delivery	Promotion	M&V	Total Cost
Residential Segment						
Electric Water Heating	$0	$9,029	$0	$234	$360	$9,623
Evaporative Cooling	$62,594	$16,103	$0	$39,415	$17,503	$135,615
Home Energy Services	$2,338,171	$104,376	$545,140	$1,061	$31,970	$3,020,718
Home Lighting	$260,309	$56,906	$60,701	$283,262	$10,871	$672,049
Low-Income	$95,055	$23,649	$78,975	$0	$34,054	$231,733
Refrigerator Recycling	$7,500	$7,421	$23,595	$11,320	$4,345	$54,181
School Education Kits	$32,250	$2,212	$96,778	$0	$1,900	$133,140
Residential Energy Efficiency Subtoal	**$2,795,879**	**$219,696**	**$805,189**	**$335,292**	**$101,003**	**$4,257,059**
Saver's Switch - Residential	$0	$94,376	$149,629	$20,450	$711	$265,166
Residential Load Management Subtoal	**$0**	**$94,376**	**$149,629**	**$20,450**	**$711**	**$265,166**
Residential Segment Total	**$2,795,879**	**$314,072**	**$954,818**	**$355,742**	**$101,714**	**$4,522,225**
Business Segment						
Cooling Efficiency	$75,401	$36,093	$0	$11,565	$11,812	$134,871
Custom Efficiency	$4,353	$73,980	$0	$968	$25,938	$105,239
Large Customer	$0	$0	$0	$0	$0	$0
Lighting Efficiency	$26,530	$53,729	$16,474	$3,119	$28,090	$127,942
Motor & Drive Efficiency	$44,705	$45,516	$0	$7,220	$11,866	$109,307
Small Business Lighting	$303,556	$24,676	$686,602	$71	$28,370	$1,043,275
Business Energy Efficiency Subtoal	**$454,545**	**$233,994**	**$703,076**	**$22,943**	**$106,076**	**$1,520,634**
Interruptible Credit Option	$0	$15,645	$0	$121	$0	$15,766
Saver's Switch - Business	$0	$22,867	$6,881	$0	$0	$29,748
Business Load Management Subtoal	**$0**	**$38,512**	**$6,881**	**$121**	**$0**	**$45,514**
Business Segment Total	**$454,545**	**$272,506**	**$709,957**	**$23,064**	**$106,076**	**$1,566,148**
Planning & Research Segment						
Consumer Education	$0	$13,624	$0	$107,207	$0	$120,831
DSM Planning & Administration	$0	$296,409	$0	$0	$0	$296,409
Market Research	$0	$40,783	$0	$0	$1,400	$42,183
Measurement & Verification	$0	$0	$0	$0	$41,494	$41,494
Product Development	$0	$33,772	$0	$0	$0	$33,772
Planning & Research Segment Total	**$0**	**$384,588**	**$0**	**$107,207**	**$42,894**	**$534,689**
2010 TOTAL	**$3,250,424**	**$971,166**	**$1,664,775**	**$486,013**	**$250,684**	**$6,623,062**

The following paragraphs and tables provide program-specific information by items a) through g) which correspond to the items listed in 17.7.2.13.C(6) NMAC.

a. comparison of forecasted savings to verified achieved savings for each of the utility's energy efficiency programs

Please refer to Tables 1 and 2 above for SPS's forecasted and achieved verified savings by program.

b. number of program participants served by each project

Please refer to Table 2 above for the number of program participants.

c. utility and participant costs, including M&V costs broken down by program

d. total avoided supply-side costs broken down by type of avoided cost (generation transmission, distribution, etc.)

Table 5, below, shows the total avoided supply-side costs for each program broken down by type of avoided cost (generation, transmission, and distribution).

Table 5 (Revised): Avoided Costs by Program and Type (As Verified in M&V Report)

Program	Avoided Generation Costs (NPV)	Avoided Transmission and Distribution Costs (NPV)	Avoided Marginal Energy Costs (NPV)	Non-Electric Acquisition Costs (NPV)	Total Avoided Supply-Side Costs (NPV)
Residential Segment					
Electric Water Heating	$0	$0	$0	$0	$0
Evaporative Cooling	$363,368	$72,674	$147,652	$0	$583,693
Home Energy Services	$4,665,120	$933,024	$4,874,972	$383,746	$10,856,862
Home Lighting	$910,171	$182,034	$2,951,124	$0	$4,043,329
Low-Income	$413,741	$82,748	$312,101	$18,983	$827,573
Refrigerator Recycling	$27,778	$5,556	$58,123	$0	$91,456
School Education Kits	$21,188	$4,238	$287,194	$69,617	$382,237
Residential Energy Efficiency Subtoal	**$6,401,365**	**$1,280,273**	**$8,631,166**	**$472,346**	**$16,785,150**
Saver's Switch - Residential	$0	$0	$0	$0	$0
Residential Load Management Subtoal	**$0**	**$0**	**$0**	**$0**	**$0**
Residential Segment Total	**$6,401,365**	**$1,280,273**	**$8,631,166**	**$472,346**	**$16,785,150**
Business Segment					
Cooling Efficiency	$428,972	$85,794	$280,943	$0	$795,709
Custom Efficiency	$39,048	$7,810	$94,666	$0	$141,523
Large Customer	$0	$0	$0	$0	$0
Lighting Efficiency	$502,388	$100,478	$786,842	$0	$1,389,708
Motor & Drive Efficiency	$352,642	$70,528	$446,638	$0	$869,808
Small Business Lighting	$646,095	$129,219	$795,090	$0	$1,570,404
Business Energy Efficiency Subtoal	**$1,969,144**	**$393,829**	**$2,404,179**	**$0**	**$4,767,152**
Interruptible Credit Option	$0	$0	$0	$0	$0
Saver's Switch - Business	$0	$0	$0	$0	$0
Business Load Management Subtoal	**$0**	**$0**	**$0**	**$0**	**$0**
Business Segment Total	**$1,969,144**	**$393,829**	**$2,404,179**	**$0**	**$4,767,152**
Planning & Research Segment					
Consumer Education	N/A	N/A	N/A	N/A	N/A
DSM Planning & Administration	N/A	N/A	N/A	N/A	N/A
Market Research	N/A	N/A	N/A	N/A	N/A
Measurement & Verification	N/A	N/A	N/A	N/A	N/A
Product Development	N/A	N/A	N/A	N/A	N/A
Planning & Research Segment Total	**$0**	**$0**	**$0**	**$0**	**$0**
2010 TOTAL	**$8,370,509**	**$1,674,102**	**$11,035,345**	**$472,346**	**$21,552,302**

e. total cost per kWh and kW saved over the life of the measure

Table 6 below, shows the total cost per actual generator kWh and kW saved over the lifetime of the program.

Table 6 (Revised): Lifetime Cost per Generator kW and kWh Saved (As Verified in M&V Report)

Program	Total Utility Costs	Total Lifetime Generator kWh	Cost per Generator kWh	Total Generator kW	Cost per Generator kW
Residential Segment					
Electric Water Heating	$9,623	0	N/A	0	N/A
Evaporative Cooling	$135,615	3,340,640	$0.0406	294	$461
Home Energy Services	$3,020,718	115,900,699	$0.0261	3,778	$800
Home Lighting	$672,049	61,729,661	$0.0109	1,007	$668
Low-Income	$231,733	6,098,771	$0.0380	280	$828
Refrigerator Recycling	$54,181	1,245,333	$0.0435	46	$1,176
School Education Kits	$133,140	4,753,311	$0.0280	24	$5,643
Residential Energy Efficiency Subtoal	**$4,257,059**	**193,068,415**	**$0.0220**	**5,428**	**$784**
Saver's Switch - Residential	$265,166	0	N/A	0	N/A
Residential Load Management Subtoal	**$265,166**	**0**	**N/A**	**0**	**N/A**
Residential Segment Total	**$4,522,225**	**193,068,415**	**$0.0234**	**5,428**	**$833**
Business Segment					
Cooling Efficiency	$134,871	7,903,397	$0.0171	210	$643
Custom Efficiency	$105,239	2,442,569	$0.0431	18	$5,985
Large Customer	$0	0	N/A	0	N/A
Lighting Efficiency	$127,942	19,154,478	$0.0067	284	$451
Motor & Drive Efficiency	$109,307	11,519,055	$0.0095	80	$1,363
Small Business Lighting	$1,043,275	19,355,271	$0.0539	384	$2,720
Business Energy Efficiency Subtoal	**$1,520,634**	**60,374,770**	**$0.0252**	**975**	**$1,560**
Interruptible Credit Option	$15,766	0	N/A	0	N/A
Saver's Switch - Business	$29,748	0	N/A	0	N/A
Business Load Management Subtoal	**$45,514**	**0**	**N/A**	**0**	**N/A**
Business Segment Total	**$1,566,148**	**60,374,770**	**$0.0259**	**975**	**$1,607**
Planning & Research Segment					
Consumer Education	$120,831	0	N/A	0	N/A
DSM Planning & Administration	$296,409	0	N/A	0	N/A
Market Research	$42,183	0	N/A	0	N/A
Measurement & Verification	$41,494	0	N/A	0	N/A
Product Development	$33,772	0	N/A	0	N/A
Planning & Research Segment Total	**$534,689**	**0**	**N/A**	**0**	**N/A**
2010 TOTAL	**$6,623,062**	**253,443,185**	**$0.0261**	**6,403**	**$1,034**

f. total economic benefits for the reporting period, and
g. net present value of all economic benefits for the life of the measures.

Table 7 provides the total economic benefits and TRC net present economic value benefits by program. The total economic benefits are calculated by dividing the total economic net benefits of each program over the lifetime of the program. At the portfolio level, the total lifetime net benefit is divided by the average lifetime of the programs, weighted on the generator kWh provided by each program.

Table 7 (Revised): Total Economic Benefits Derived from 2010 Programs (As Verified in M&V Report)

Program	Total TRC Net Benefits (NPV)	Lifetime (Years)	Total Economic Beneifts Reporting Period
Residential Segment			
Electric Water Heating	-$9,623		
Evaporative Cooling	$502,814	10.00	$50,281
Home Energy Services	$7,466,424	10.03	$744,084
Home Lighting	$3,336,284	7.00	$476,612
Low-Income	$545,595	9.69	$56,299
Refrigerator Recycling	$44,775	5.00	$8,955
School Education Kits	$249,097	6.11	$40,749
Residential Energy Efficiency Subtoal	**$12,135,366**		**$1,376,980**
Saver's Switch - Residential	-$265,166		$0
Residential Load Management Subtoal	**-$265,166**		**$0**
Residential Segment Total	**$11,870,200**		**$1,376,980**
Business Segment			
Cooling Efficiency	$590,464	20.000	$29,523
Custom Efficiency	$27,699		$27,699
Large Customer	$0		$0
Lighting Efficiency	$1,216,665	15.000	$81,111
Motor & Drive Efficiency	$556,845	20.000	$27,842
Small Business Lighting	$156,597	15.000	$10,440
Business Energy Efficiency Subtoal	**$2,548,270**		**$176,615**
Interruptible Credit Option	-$15,766		($15,766)
Saver's Switch - Business	-$29,748		($29,748)
Business Load Management Subtoal	**-$45,514**		**($45,514)**
Business Segment Total	**$2,502,756**		**$131,101**
Planning & Research Segment			
Consumer Education	-$120,831		($120,831)
DSM Planning & Administration	-$296,409		($296,409)
Market Research	-$42,183		($42,183)
Measurement & Verification	-$41,494		($41,494)
Product Development	-$33,772		($33,772)
Planning & Research Segment Total	**-$534,689**		**($534,689)**
2010 TOTAL	**$13,838,267**		**$973,392**

(7) Non-Energy Benefits

Non-energy benefits ("NEB") refer to all monetary benefits of the energy efficiency and load management programs that are unrelated to the generation, transmission, distribution, or cost of energy. NEBs may include greenhouse gas emissions reductions, improvements in safety and comfort, reduced arrearages on customer bills, reduced water consumption, and reduced labor and maintenance costs, amongst others. Generally speaking, non-energy benefits are difficult to quantify. ADM did not consider the value of any NEBs in the TRC Test in this Report.

The following table shows the emission reductions associated with SPS's 2010 energy efficiency portfolio. These values were estimated by applying the lifetime and annual energy savings from the 2010 program achievements to the emission rates for SPS's Cunningham Station - 2 Plant[2], which is believed to be a fair proxy for the generation avoided by the 2010 energy efficiency programs.

Table 8 (Revised): Greenhouse Gas Emissions Avoided With 2010 Programs

Emission Type	Avoided Electric Emissions Rate (lbs/MWh)	Annual Avoided Emissions (lbs)	Lifetime Avoided Emissions (lbs)
CO_2	1,250.000000	32,524,331	316,803,981
SO_2	0.006319	164	1,602
NOx	2.490000	64,788	631,074

The following table shows the amount of water conserved by the 2010 program achievements, due to the reduced need for energy generation. These values are estimated by applying the lifetime and annual energy savings to the water consumption rate for SPS's Cunningham Station Plant average[3], which is believed to be a fair proxy for the energy generation avoided by the energy efficiency programs.

Table 9 (Revised): Water Consumption Avoided With 2010 Programs

Non-Energy Benefit Type	Avoided Water Consumption Rate (gal/MWh)	Annual Avoided Water Consumption (gal)	Lifetime Avoided Water Consumption (gal)
Water Savings	840	21,856,350	212,892,275

(8) Self-Direct Programs

SPS did not propose any goals for the Large Customer (Self-Direct) Program because it was unknown at the time of filing who might choose to participate. This program had no participants or spending in 2010. For more information about this program, please refer to the program discussion in Section III.

[2] Source: Case No. 09-00295-UT, SPS's 2009 Integrated Resource Plan for New Mexico; Table 5-1: Emission Rates (p. 51).
[3] Ibid.

Section III: Segment and Program Descriptions

Residential Segment

SPS has approximately 85,000 customers in its Residential Segment in New Mexico. The service area is relatively rural, with only a few small cities, including Clovis, Roswell, and Hobbs. The climate in this part of New Mexico consists of winters with very little snow and hot, relatively dry summers.

SPS exceeded the goal for the Residential Segment in 2010 due to the strong performance from HES, and Home Lighting Programs. Other programs struggled to gain interest with customers such as Refrigerator Recycling and Evaporative Cooling.

HES performed very well due to experienced contractors that set up offices within SPS's New Mexico service area. Home Lighting again performed above goal due to strong customer interest in reduced price CFLs available at several local home improvement and grocery stores. SPS was also able to reduce the cost per unit sold and increase cost effectiveness through creative promotions and mutually beneficial partnerships.

Customers continued to be reluctant to retire their still-operating secondary refrigerators in 2010. Marketing efforts were increased as the year progressed but the program achieved less than its participation goal.

All energy efficiency programs, other than Electric Water Heating, within the Residential Segment were cost-effective.

Electric Water Heater Rebates

The Water Heater program used rebates to encourage residential customers to choose qualifying high efficiency electric water heating tanks and solar water heating added to electric water heating systems. Approximately 40% of SPS's New Mexico customers use electricity for domestic hot water heating. Qualifying equipment must have an energy factor of 0.95 or greater. Eligible customers are those with existing electric water heaters or new homes that choose to install one of the qualifying electric water heating options.

Deviation from Goal

In 2010, the Water Heater Program did not achieve either its savings goal or budget goal. Despite several marketing tactics, several grassroots including radio interviews, there was no participation for this program in 2010. The program, as ordered by the Commission on 3/15/2011, is being removed in 2011.

Changes in 2010

New program in 2010.

Evaporative Cooling Rebates

The Evaporative Cooling Rebate Program provides a cash rebate to electric customers who purchase and permanently install high-efficiency evaporative cooling equipment for residential use in New Mexico. The program goals are to incent customers to purchase evaporative coolers instead of using units with refrigerated air.

For homes in dry climates, such as New Mexico, evaporative cooling provides cooling similar to an air conditioner, but uses significantly less energy. This program launched in 2009 offering a tiered rebate of $200 (or the cost of the unit, which ever is less) for Tier 1 units with a Cubic Feet per Minute of 2,500 or greater, and $1,000 for Tier 2 units with a minimum media saturation effectiveness of 85%, a remote thermostat, and a periodic purge water control. The program promotes the use of evaporative coolers through consumer education and encouraging trade allies to stock high efficiency units.

Deviation from Goal

The Evaporative Cooling Program exceeded budget by 3% and fell short in energy savings compared to goal but still remained cost-effective. The measurement and verification charges from ADM for 2008, 2009 and 2010 were all charged to the 2010 program budget and marketing efforts were increased to engage additional participation.

Changes in 2010

None.

Home Energy Services

The Home Energy Services Program provides incentives to energy efficiency service provider contractors for the installation of a range of upgrades that save energy and reduce costs for existing residential households. Qualifying customers will receive attic insulation, air infiltration reduction, duct leakage repairs, and high efficiency central air conditioners.

The primary objective of this program is to achieve cost-effective reductions in energy consumption in residential homes. Additional objectives of the program are to:

- Encourage private sector delivery of energy efficiency products and services
- Utilize a whole-house approach to upgrade efficiently
- Significantly reduce barriers to participation by streamlining program procedures.

SPS partners with qualifying third-party contractors to deliver these services to residential households. Contractors must apply to the program and be approved in order to participate. SPS requires contractors to receive pre-approval for targeted multi-family sites prior to installation of any energy efficiency components for which an incentive will be requested.

Deviation from Goal

The program did very well and exceeded goal by mid-year. In order to continue the program for the full year, SPS filed a motion in June to increase the budget over 125%, pursuant to 17.7.2.14.C NMAC (from the previous Energy Efficiency Rule). A total of seven third party contractors participated in the program in 2010. The goal of 6,405 MWh was more than doubled.

Changes in 2010
None

Home Lighting & Recycling
The Home Lighting and Recycling Program helps customers save energy and money by offering energy efficient compact fluorescent light bulbs ("CFL") at a discounted price. This provides a low cost way for customers to save on their energy usage and reduce their impact on the environment. SPS provides two ways for customers to purchase energy saving CFLs, through mail order and instant rebates at retail stores. Customers can purchase a wide variety of CFLs via mail, telephone, or Internet through the mail order option. There are 20 different CFL models available for purchase. SPS also provides instant rebates at participating retailers for the purchase of CFLs. SPS works with retailers and manufacturers to buy down the price of the bulbs to roughly $1.00 each.

SPS also participates in the Environmental Protection Agency's Change-a-Light, Start with Energy Star campaign to increase the sales and awareness of CFLs. In 2011, SPS participated in many local events including the Eastern NM State Fair, annual Chili Cook-off and the Cinco De Mayo celebration. SPS supported the East NM University Roswell Energy Efficiency outreach project that directly installed CFLs into low income households. SPS also partnered with Domino's Pizza to deliver CFLs with each pizza order for a limited time period. This was a unique promotion in that it delivered bulbs directly to customers' homes and was an extremely low cost method to reaching consumers.

The Home Lighting and Recycling Program was very successful in 2010. The program distributed or sold well over 200,000 CFLs.

Deviation from Goal
The Home Lighting and Recycling Program spent less than budgeted because SPS developed promotions and partnerships that were extremely cost effective. SPS continues to make strides by reducing the cost per unit sold. The cost per unit sold for 2010 was under $2.75 each, which is nearly $1.25 less per unit than in 2009. These results were achieved by creating economies of scale in advertising, implementation and contract administration. SPS promoted the Minnesota, Colorado and New Mexico programs using similar advertising and many of the same national retail chains.

In 2009, to help reduce the barriers for CFL disposal, SPS launched a CFL recycling component to the Home Lighting and Recycling Program, which offers free CFL recycling for residential customers at three Ace Hardware stores in the SPS service area. 60 CFLs were recycled in 2010. Although this number is low, SPS continues to build awareness of CFL recycling and promotes the recycling of spent mercury bulbs in all of the program's materials.

Changes in 2010

None

Low-Income Program
The Low-Income Program serves residential customers with household incomes of less than 200 % of the federal poverty level. The purpose of this program is to provide low-income customers in SPS's New Mexico service area with the education and energy efficiency measures necessary to help lower energy costs and improve the comfort and safety of their dwellings.

In 2010 SPS continued the work with New Mexico LIHEAP agencies to put free CFL's into low income homes. At mid-year, the low-income Home Energy Services program was rolled out to provide home weatherization and energy efficiency measures to low-income customers.

There are four energy efficiency offerings that make up the Low-Income Home Energy ServicesProgram:

Infiltration control – Testing and sealing the thermal envelope of homes to reduce infiltration and thus use heating and air conditioning more efficiently.

Duct Efficiency Improvement - Testing and sealing of central heating and air conditioning ductwork in unconditioned spaces to improve the efficiency of the HVAC system

Home Lighting Giveaway - This is a CFL give-away that is offered by third party contractors in the Low-Income Home Energy Services program.

Refrigerator Upgrades - This component provides free upgrades of qualified refrigerators to ENERGY STAR models and recycles the old refrigerator. This program is administered by third party contractors and is available for qualified low-income customers.

Evaporative Cooling Installation - This component provides a free evaporative cooling unit and installation to customers in need. This program is administered by third party contractors and is available for qualified low-income customers.

Deviation from Goal
The Low-Income Program did not meet its goal for 2010 primarily due to the late start of the Low-Income Home Energy Services Program. The program effectively ran for only five months of 2010

Changes in 2010
The Low-Income Program made the following changes for 2010:

- Phased out the partnership with New Mexico Mortgage Finance Authority to provide weatherization for low-income homes.
- Ended distribution of CFL's to LIHEAP agencies in the state, and moved the program into the Low-Income Home Energy Services Program at mid-year
- Moved the refrigerator program into the Low-Income Home Energy Services program

- Moved the Evaporative Cooler program into the Low-Income Home Energy Services program.

Refrigerator Recycling

The Refrigerator Recycling Program was designed to decrease the number of inefficient secondary refrigerators in use in the residential market. This program focuses on reducing energy usage by educating customers on how much energy secondary refrigerators are using and incenting them to dispose of their operable, inefficient secondary refrigerators in an environmentally safe and compliant manner. Residential customers with qualifying units will receive a rebate of $50 as an incentive for program participation in this prescriptive program and will not be directly responsible for any costs associated with pick-up, transportation, disposal, and proper recycling of their refrigerator.

Deviation from Goal

The Refrigerator Recycling Program did not meet its goal in 2010. Many efforts were made to increase participation including bill inserts, radio advertisements, and local grassroots marketing. However, interest has continued to wane. Many of these marketing efforts were above and beyond Xcel Energy's traditional marketing avenues but still the program experienced little success. Additionally, the rebate was increased from $35 to $50 during the course of 2010 with little response from the customer.

Changes in 2010

Rebate increased from $35 to $50 in the spring of 2010.

School Education Kits

School Education Kits is an educational program that combines energy efficiency curriculum for teachers with easy-to-install energy efficiency measures for students to implement at home. All materials are free of charge to participants. The following measures are included in the student kit:

- One compact fluorescent light bulb
- One electroluminescent night light
- Furnace air filter alarm
- High efficiency shower head (1.5 gpm)
- Kitchen aerator (1.5 gpm)
- Flow rate test bag (for showerhead)
- Toilet leak detector tablets
- Air temperature ruler
- Water temperature check card
- Resource fact wheel

Deviation from Goal

None

Changes in 2010

None

Saver's Switch (Residential)
Saver's Switch is a demand response program that offers bill credits as an incentive for residential customers to allow SPS to control operation of their central air conditioners and electric water heaters on days when the system is approaching its peak. This program is generally utilized on hot summer days when SPS's load is expected to reach near-peak capacity. Saver's Switch helps reduce the impact of escalating demand and price for peak electricity.

When the program is activated, a control signal is sent to interrupt the air conditioning load during peak periods, typically in the afternoons on weekdays. For air conditioners, the program deploys switches utilizing an "adaptive algorithm" cycling strategy. This strategy allows the switches to "learn" how a customer's air conditioning is being operated in order to achieve a 50% reduction in load. For enrolled electric water heaters, the entire load is shed for the duration of the control period.

Deviation from Goal
This product was launched in the fall of 2010. Due to the timing of the launch, SPS has not completed a summer control season. Therefore, savings will be recognized during 2011. $265,166 was spent on launching the program. The main costs of offering the Saver's Switch product are promotional expenses for recruiting participants, the cost of the switches themselves, and the cost of hiring licensed electricians to install the switches. We experienced lower than anticipated participant recurring costs and switch installation costs in 2010 and, therefore, the number of switches installed was significantly below anticipated. In all, we installed 996 residential Saver's Switches in 2010.

Changes in 2010
None

Business Segment

SPS has approximately 19,000 customers in its Business Segment in New Mexico, including commercial, industrial, and agricultural customers of all sizes. In 2010, SPS did not meet its goals in the business segment. The Business Segment made significant strides in building relationships with its business customers and overcoming objections that lead to project starts in 2010 and is optimistic about future years. Many of the barriers to participation expressed in previous years continue to exist such as inexpensive energy, economic and market conditions driving decisions based on first cost. SPS has been able to engage larger customers in long term planning discussions to incorporate energy efficiency and has several projects under construction with estimated completion in 2011 and 2012. SPS exceeded target results in the Small Business Lighting Program and continues to build on these successes in 2011.

The Large Customer Self Direct, Interruptible Credit Option, and Saver's Switch Business Programs had no participation in 2010, however all other Business Programs were cost-effective in 2010.

In 2010, the majority of Business Segment spending was in customer incentives and third party delivery for Small Business Lighting. This is a positive shift from previous years where many of the expenses were driven by promotion and administration.

Cooling Efficiency

The Cooling Efficiency Program offers prescriptive rebates for common high efficiency cooling equipment and custom rebates for newer technologies and system-based high efficiency solutions. The program is designed to influence customers to select the most energy efficient option to meet their cooling requirements.

Deviation from Goal

The Cooling Efficiency Program did not meet its goal in 2010, but did increase participation over 2009 in both small business and commercial/industrial segments. The program also realized significant improvements in kW and kWh achievements over 2009. Spending was in line with 2010 achievements. Interviews with trade representatives confirmed that when a decision to replace or repair is made, lowest price is "key" in making that decision. Some trades were not offering the high efficiency option due to their bids being higher than trades not offering the high efficiency option. SPS is continuing to educate the trade in how to sell lifetime savings of high efficiency cooling products. SPS is continuing to reach out to customers through direct mail and through the account management and Business Solutions Center direct calls.

Changes in 2010

A trade incentive was offered in 2010 to help in the promotion and marketing of high efficiency cooling options. Meetings were held with key trades to discuss how best to reach each customer segment and how to sell not only the rebate, but how to sell the long term savings for installing high efficiency. Account Managers are also working closely with school districts when planning replacements.

Custom Efficiency

The Custom Efficiency Program offers rebates up to $400 per kW saved for energy saving measures with efficiencies higher than the standard that are not covered by our prescriptive programs. The rebate reduces the incremental project cost of the high efficiency option thereby encouraging customers to choose the more energy efficient option. Marketing of this program is primarily done though account managers and their direct relationships with customers. Strategies and budget used to achieve goals in 2010 included customer visits, trade meetings, and direct mail. Technologies analyzed included pump off controllers, energy management systems, controls, VFD's, heat exchanger and motors greater than 500 hp.

Deviation from Goal

In 2010 the Custom Efficiency program did not achieve participant or energy savings targets primarily due to the long sales cycle and construction of complex projects. This resulted in under spending the budget. By nature Custom Efficiency requires customer investment to prepare and explain their facility operations and proposed energy saving project just to determine if the project is eligible for a rebate. While the process is daunting customers that do engage with the program receive validation of the benefits of energy efficiency.

SPS account managers and Business Solutions Center staff has made good progress in working with customers to identify projects and assist with the application process. While only 3 projects were completed in 2010 over 70 project opportunities have been identified and are either preapproved or being prepared for preapproval. We fully expect the program to achieve greater results in 2011 and beyond because we are building the program pipeline through education, awareness, oil & gas segment target market specific outreach and increased sales and marketing initiatives.

We are overcoming market barriers including the customers' hesitancy to invest time in application preparation and submittal. We are educating customers on the benefits of participation and that their time investment will result in energy and cost savings.

Changes in 2010

In April 2010, SPS added an evaluation/study component to its Custom Efficiency Program called the Large C&I study. This effort is a holistic approach to energy conservation and helps customers create and implement a sustainable energy management plan. Initially, SPS is targeting customers with aggregated annual consumption grater than 10 GWh for participation. The study is delivered in three phases that involve energy improvement identification, energy conservation project scoping and implementation. 5 customers participated in a pre phase one meeting. 2 customers participated in an on-site phase one session. One customer is moving on to phase 2.

Large Customer

The Large Customer Program is a self-direct program that allows SPS customers with contiguous facilities that use over 7,000 MWh per year to identify and administer their own energy efficiency and load management projects. This program offers customers two options: 1) a bill credit, or 2) an exemption from the Energy Efficiency Tariff Rider for 24 months. Customers are eligible for a bill credit or an exemption from the Energy Efficiency Tariff Rider of up to 70% of the incremental expenditures made towards cost-effective energy efficiency or load management measures.

Deviation from Goal
No customers attempted to participate in 2010. This program had no expenditures and achievements.

Changes in 2010
None

Lighting Efficiency
The Lighting Efficiency Product, which began in 2008, offers cash rebates to offset the incremental, upfront costs of installing energy efficient lighting equipment. The product provides prescriptive rebates for both existing facilities and new construction projects, as well as custom rebates for new technologies or uncommon lighting solutions.

Subject to pre-approval, rebates are available for lighting retrofit projects that do not qualify for prescriptive rebates but still reduce energy costs and usage, under SPS's Custom Efficiency Product.

The Lighting Efficiency Product is marketed indirectly through lighting and electrical contractors, and directly to business customers through SPS account management staff and by Energy Efficiency Specialists in the inbound and outbound calling center. Additional strategies used to raise awareness and stimulate participation in 2010 included outreach and in-person visits with trade, customer visits, inbound and outbound telemarketing, mailings and sales collateral (applications, program summary), and Web content.

CFLs—hard-wired fixtures and screw-in lamps—represented 41.5% of energy savings in the 2010 Lighting Efficiency Product. SPS will continue to monitor and address its level of reliance on CFLs.

Deviation from Goal
The Lighting Efficiency Product lagged both its 2010 energy savings goal and budget target due to a number of factors

- As awareness and interest grew, more businesses chose to participate in the Small Business Lighting (SBL) product, which offers a free lighting audit, energy saving recommendations, project and paperwork assistance for businesses with peak demand of 400kW or less. Many SBL lighting rebate measures are 50% higher than Lighting Efficiency's, to stimulate participation in the hard-to-reach small and mid-sized business category.
- Although average energy savings per project remained steady, no very-large Lighting Efficiency opportunities were completed in 2010 as was the case in 2009.

- Despite improvements in some market segments, continued economic uncertainty is prompting large businesses to postpone or abandon capital purchase plans or require shorter project payback periods.

Changes in 2010
Added or improved the following measures to stimulate participation:
- Increased rebates for:
  - Fluorescent T12 to T8 or T12 to T5 retrofits and de-lamping, from $10-$22 to $12-$28
  - High bay fluorescent fixtures replacing 310-400 watt high intensity discharge (HID) systems, from $110 to $125
  - 150-750 watt pulse-start and ceramic metal halide fixtures, replacing HID, from $25-75 to $50-100.
  - Wall mounted occupancy sensors or photocells, from $25 to $30.
  - LED Exit signs from $15 to $25.
- Modified CFL rebates to distinguish between screw-based lamps and hardwired fixtures because of the significant price difference between these two types of fixtures. Rebates changed from $3-30 for the CFL category to $1-3 per screw-in CFL and $25-35 per hardwired CFL fixture.

Reduced rebates based on revised cost assumptions:
- Higher-wattage high bay fluorescent fixtures replacing 750-1,000 watt high intensity discharge (HID) systems, from $200-210 to $175 per fixture
- 750 watt and higher pulse-start metal halide fixtures, replacing HID, from $140-120.

Motor & Drive Efficiency
The Motor and Drive Efficiency Program is designed to reduce the barriers that prevent customers from purchasing high efficiency motors and variable frequency/adjustable speed drives ("VFD/ASD"). SPS offers prescriptive and custom rebates for eligible equipment to qualifying customers.

Deviation from Goal
In 2010, the program increased its participation to nine from the two participants the year before. Despite the increase in participation the program fell short of reaching it goal. We have continued an aggressive and broad awareness campaign and personal outreach to both customers and vendors. Customer apprehension and skepticism has been hard to overcome and there is reluctant participation of motor vendors (trade) to embrace this program. Despite this resistance we are pleased to see the program increase in participation.

Changes in 2010
No program changes occurred in 2010.

Small Business Lighting
The Small Business Lighting (SBL) Product, which began in June 2009, offers free lighting audits, energy saving recommendations, paperwork assistance and attractive rebates for business customers with peak demand of up to 400 kW.

Subject to pre-approval, rebates are available for lighting retrofit projects that do not qualify for prescriptive rebates but still reduce energy costs and usage, under SPS's Custom Efficiency Product.

The SBL product is marketed primarily through trade outreach and customer contact by Franklin Energy—the lighting consultant implementing the product—and by Energy Efficiency Specialists in SPS's inbound and outbound calling center. SBL addresses barriers that traditionally prevent small businesses from investing in energy efficiency products: limited financial resources and time, insufficient knowledge of lighting equipment, and lack of access to quality contractors.

Strategies used to raise product awareness and stimulate product participation in 2010 included increased in-person SBL audits and energy-saving recommendations by Franklin Energy's Energy Advisor to build the project opportunity pipeline, electrical and lighting trade outreach, sales literature, direct mail and Web content development.

CFLs – hard-wired fixtures and screw-in lamps – represented 5.5% of the product's energy savings in 2010. SPS will continue to monitor and address its level of reliance on CFLs.

Deviation from Goal

SBL exceeded its 2010 goals for energy savings by 29% and for peak demand reduction by 53% thanks to the appeal of a free, on-site lighting audit, detailed and actionable recommendations for energy savings – including SPS's specific rebates – and Franklin Energy's assistance completing and submitting rebate paperwork on the customer's behalf. Due to a corresponding increase in rebates, the SPS product manager requested and was granted a Program Budget Modification to increase the budget in the middle of 2010 to pursue additional energy savings.

Changes in 2010

Added or improved the following measures to stimulate participation:

- Increased rebates for:
    - Fluorescent T12 to T8 or T12 to T5 retrofits and de-lamping, from $15-$33 to $18-$42
    - High bay fluorescent fixtures replacing high intensity discharge (HID) systems up to 750 watts, from $100-210 to $128-263
    - Pulse-start and ceramic metal halide fixtures up to 750 watts, replacing HID, from $38-113 to $75-150.
    - Wall mounted occupancy sensors or photocells, from $35 to $38.
    - LED Exit signs from $23 to $38.

Modified CFL rebates to distinguish between screw-based lamps and hardwired fixtures because of the significant price difference between these two types of fixtures. Rebates changed from $4.50-45 for the CFL category to $1-3 per screw-in CFL and $38-48 per hardwired CFL fixture.

Reduced rebates based on revised cost assumptions:

- Higher-wattage high bay fluorescent fixtures replacing 750-1,000 watt high intensity discharge (HID) systems, from $315 to $263 per fixture
- 750 watt and higher pulse-start metal halide fixtures, replacing HID, from $210 to $180.

Interruptible Credit Option

The New Mexico Interruptible Credit Option ("ICO") Program was approved in the spring of 2009. The ICO Program was developed to offer significant savings opportunities to our New Mexico business customers who can reduce their electric demand for specific periods of time when notified. In return for participating, customers receive a monthly credit on their demand charges.

A significant marketing effort was made from the latter part of 2009 through the first half of 2010 to promote the new program. These marketing activities included the development of new program collateral and the creation of an ICO web page at xcelenergy.com. To assist account managers in identifying eligible customers, contract interruptible load ("CIL") figures were computed for potential business customers in New Mexico. The ICO Program was then promoted to all eligible New Mexico customers with adequate CIL (minimum 500 kW). We also presented this program to business customers as part of the SPS-sponsored Energy Management sessions held in Amarillo, Roswell, and Lubbock in late July 2009. In addition, an SPS customer meeting was held in February 2010, and an article on the new program was run in the spring 2010 Energy Solutions Newsletter. Unfortunately, our marketing efforts were in vain producing no participation in the program in 2010.

Deviation from Goal

Our 2010 goal was to have 10 customers enrolled with 10 MW of contract interruptible load and an estimated $676,000 in credits paid. However, we did not enroll any customers and spent $15,766 in marketing expenses. Customer promotion budget items included the development of marketing materials such as customer ICO System Guides and program features and benefits collateral. Also included were the costs associated with the February 2010 customer meetings intended to promote the new ICO program.

Marketing materials detail:

> The New Mexico ICO System Guide –-This guide will be provided to customers on an annual basis to serve as a valuable reference in navigating the ICO system.
>
> Electric Rate Savings Feature Sheet –- This piece will summarize the program features and benefits, and help potential customers determine their qualification status.
>
> Electric Rate Savings Credit Sheet –- This reference will outline the various control options, and assist customers in understanding the savings they could realize by participating in the program.
>
> New Mexico ICO Website on xcelenergy.com -- Comprehensive program information will be included on the Xcel Energy website for potential customers to assess.

Changes in 2010
A re-filing of this program in the fall of 2010 included a proposal to offer a summer only Interruptible Credit Option (SOICO) and a Voluntary Load Reduction Purchase Option (VLRPO) program in 2011. Based upon customer feedback, the anticipation is that these two new options, will be attractive to customers due to the limited amount of time of interruption and the voluntary nature of the product. Projected participation in all three of these program options in 2011 are projected to be 10 customers and 10,279 of generator kW. The projected budget remains the same at $107,297. The filing was approved in March, 2010.

The SOICO tariff has a contract deadline of May 1, 2011 for customers to participate in 2011.

Saver's Switch (Business)
Saver's Switch is a demand response program that offers bill credits as an incentive for commercial customers to allow SPS to control operation of their central air conditioners on days when the system is approaching its peak. This program is generally utilized on hot summer days when SPS's load is expected to reach near-peak capacity. Saver's Switch helps reduce the impact of escalating demand and price for peak electricity.

When the product is activated, a control signal is sent to interrupt the air conditioning load during peak periods, typically in the afternoons on weekdays. The product deploys switches utilizing an "adaptive algorithm" cycling strategy. This strategy allows the switches to "learn" how a customer's air conditioning is being operated in order to achieve a 50% reduction in load.

Deviation from Goal
After being delayed in 2009 due to technical difficulties relating to the control of deployed switches, the product was launched in the fall of 2010. As the product was launched in the fourth quarter, switch installations and expenditures were below budget for the year. In all we installed 70 Saver's Switches at 14 commercial premises.

With the product launching after the 2010 control season, no customers were actually controlled this year. Savings from this program will be credited in 2011.

The main cost components of the product are the acquisition of switches and the installation of switches. Switch installation costs were more favorable than expected leaving the overall product costs for the year quite low.

Changes in 2010
None

Planning & Research Segment

The Planning and Research Segment consists of internal functions (not customer-facing), which support the direct impact programs. The segment includes energy efficiency and load management-related expenses for Consumer Education, Planning and Administration, Market Research, M&V, and Product Development. The overall purpose of the Planning and Research Segment is to:

- Provide strategic direction for SPS's energy efficiency and load management programs
- Ensure regulatory compliance with energy efficiency legislation and rules
- Guide SPS internal policy issues related to energy efficiency
- Train SPS Marketing staff for effective performance
- Evaluate program technical assumptions, program achievements, and marketing strategies
- Provide oversight of all evaluation, measurement, and verification planning and internal policy guidance
- Provide segment and target market information
- Analyze overall effects of SPS's energy efficiency portfolio on customer usage and overall system peak demand and system energy usage
- Measure customer satisfaction with SPS's energy efficiency efforts
- Develop new conservation and load management programs

In 2010, the Planning and Research segment underspent their budget. We are continually trying to lower the costs of this indirect segment so this is a good result. Each Planning and Research program is discussed below.

Consumer Education

Consumer Education is an indirect program that focuses primarily on creating public awareness of energy efficiency while providing residential customers with information on what they can do in their daily lives to reduce their energy usage. The program will also support the various energy efficiency and load management products SPS will offer to residential customers. The Consumer Education Program started in 2009, and replaced the General Advertising Program from the 2008 Energy Efficiency and Load Management Plan that SPS had used to educate customers about conservation. SPS employs a variety of resources and channels to communicate conservation and energy efficiency messages, including: the Xcel Energy website, bill inserts, events, radio, print, and online advertising.

The Consumer Education Program is targeted to all New Mexico residential electric customers. In the initial implementation of the program, primary emphasis will be placed on:

- Web presence on ResponsibleByNature.com
- Community-based marketing events;
- Messaging through local radio stations as well as online advertising;
- Targeted communications to address seasonal usage challenges;
- Conservation messaging through Xcel Energy's newsletters and bill inserts to residential customers; and

- Publication of reference education materials (in English and Spanish).

SPS has approximately 88,000 residential customers in its New Mexico service territory. SPS plans to touch 80 percent of the residential customer base, or 70,000 customers, through bill inserts, community events, and conservation advertising.

Deviation from Goal
The approved budget for Consumer Education in 2010 was $128,730, with a participation goal of 70,000 customers. Actual achievements were $120,832 spent, and 80,000 customers reached. This budget was developed based on past experience building awareness and community outreach in New Mexico. Additionally, the primary costs associated with the Consumer Education Program were based on projected costs for reaching customers through multiple communication channels and tactics including:

- community-based events;
- bill inserts; and
- advertising, including print, radio, and online

The majority of the budget is driven by customer education, conservation promotion, and labor. As the year progressed, it was discovered that we were able to reach an additional 10,000 participants through bill inserts at a lower than projected cost.

Changes in 2010
No significant changes were made to the NM Consumer Education program in 2010.

DSM Planning & Administration
The Planning and Administration area manages all energy efficiency and load management regulatory filings (including this Report), directs and carries out benefit-cost analyses, provides tracking results of energy conservation achievements and expenditures, and analyzes and prepares cost recovery reports. Planning and Administration, which includes outside legal assistance, coordinates and participates in all DSM related rulemaking activities and litigated hearings. This area also supports the energy and demand conservation component of resource planning and provides planning and internal policy guidance to meet all energy efficiency and load management regulatory requirements. These functions are needed to ensure a cohesive and high-quality energy efficiency portfolio that meets legal requirements as well as the expectations of SPS's customers, regulators, and staff.

Deviation from Goal
In 2010, SPS's Planning and Administration area, including legal expenses, under spent its budget by about 7%. Specific activities that contributed to the 2010 expenditures included preparation of: the settlement and hearing from the 2010/11 Plan filing; the motion to increase the program budgets for Home Energy Services and Small Business Lighting; the preparation of the 2011 Energy Efficiency and Load Management Plan Compliance Report; and the preparation of the Showerhead Evaluation Report.

Changes in 2010
None

Market Research
The Market Research area spearheads energy efficiency-related research efforts that are used to inform SPS's decision-making concerning energy efficiency and load management. In 2010, the Market Research group oversaw the SPS portion of several company-wide projects that were identified in the filing such as the Home Use Study, the E-Source Membership and the Dun & Bradstreet List purchase.

The group also managed the customer research for the Low-Flow Showerhead pilot within the Home Energy Services residential DSM Program. The research consisted of telephones surveys and shower logs with household that had received the showerhead.

The research was used to understand the energy saving performance and customer satisfaction with the low flow showerheads in order to determine whether the product is viable and cost effective. The research also helped determine whether the low flow showerhead should be included in the 2011 Plan.

Deviation from Goal
Market Research under spent its budget in 2010. The main reason for this deviation was the cost savings SPS was able to achieve through effective project cost negotiations and aligning project scopes to more accurately reflect current business information needs.

Changes in 2010
None

Measurement & Verification
Internal staff from the Planning and Administration area oversees M&V planning and internal policy guidance. In addition, this area coordinates the day-to-day activities providing necessary information and program tracking data to the Evaluator as well as serving on the Commission's Evaluation Committee. NMAC 17.7.2.13.C.1 requires that utilities provide an M&V Report provided by an Evaluator every year with its Annual Report. All New Mexico utilities have contracted with ADM Associates, Inc. as their Evaluator for 2008, 2009, and 2010 programs.

In compliance with the reporting requirements, the M&V Report should include:

- Expenditure documentation, at both the total portfolio and individual program levels
- Measured and verified savings
- Cost-effectiveness of all of SPS's energy efficiency and load management programs;
- Deemed savings assumptions and all other assumptions used by the Evaluator
- Description of the M&V process, including confirmation that:
    - measures were actually installed
    - installations meet reasonable quality standards

- measures are operating correctly and are expected to generate the predicted savings

See Appendix A for ADM's M&V Report of SPS's 2010 programs.

Deviation from Goal
This line item budget contains both SPS labor and expenses to manage the M&V process as well as charges from ADM which cover their general administration and report preparation, and are not directly related to individual programs. The actual field inspections and M&V reports for both 2008 and 2009 and part of 2010 were undertaken and completed by ADM in 2010. The $41,494 that was spent in this category in 2010 (under-spending the budget of $107,000) consisted of SPS internal labor and expenses working with ADM; expenses related to being part of the Evaluation Committee and expenses from ADM in administration and report preparation.

Changes in 2010
None

Product Development
Product Development identifies, assesses, and develops new energy efficiency and load management products and services. The product development process starts with ideas and concepts from customers, regulators, energy professionals, interest groups, and Xcel Energy staff. These ideas are then carefully screened and only ideas with the most potential are selected for the development process.

In 2010, the Product Development team launched prescriptive rebates for the following list of products as part of the 2010/11 Plan: Commercial Evaporative Cooling, 5-40 hp VFD Compressed Air and No-loss Drains, Motor Controllers and Low Income Home Energy Services. As part of the 2011 Re-filing, Product Development developed and included the Residential Energy Feedback Pilot and prescriptive rebates for Oil Well Pump Off Controllers. Product Development also began work on developing new products for the 2012 filing.

Deviation from Goal
In 2010, the Product Development area was under budget by 37%. This was due to less Product Development labor focused on developing products for 2010 and 2011 as much of the work was done in 2009 for the 2010/11 Plan.

Changes in 2010
None.

Appendix A: Measurement & Verification Report:
SPS 2010 program year

Provided by ADM Associates Inc., April 2011

DSM Portfolio Evaluation
Southwestern Public Service Company
Program Year 2010

Measurement & Verification Report
May 2011
Final - Amended

Prepared for:

Prepared by:

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1. Executive Summary

This report is to provide a summary of the evaluation effort of the 2010 Demand Side Management (DSM) portfolio by the Southwestern Public Service Company (SPS) in New Mexico. In 2010, the SPS portfolio consisted of eight residential and six non-residential programs. Of these, ADM evaluated seven residential and five non-residential programs, as Residential Electric Water Heating Rebates and Large Customer Self-Direct programs had no participation. ADM estimated gross realization, net savings, and cost-effectiveness for the 12 evaluated programs.

1.1 SUMMARY OF SPS ENERGY EFFICIENCY PROGRAMS

New Mexico Investor-Owned Utilities (IOUs) are required to develop cost-effective DSM programs, using ratepayer funds to reduce energy demand and consumption. IOUs submit their portfolios to the New Mexico Public Regulatory Commission (NMPRC) for approval. In 2010, the SPS DSM portfolio contained the following programs:

- Residential Air Source Heat Pumps[1]
- Residential Evaporative Cooling
- Residential Home Energy Services
- Residential Low Income
- Home Lighting & Recycling
- School Education Kits
- Residential Refrigerator Recycling
- Residential Electric Water Heating[2]
- Business Cooling Efficiency
- Business Lighting Efficiency
- Business Custom Efficiency
- Business Motor Efficiency

[1] This program was combined with Home Energy Services in March, 2010. ADM evaluated savings for the program separately.

[2] This program had no participants in 2010

- Large Customer Self-Direct[3]
- Small Business Lighting Efficiency
- Residential Saver's Switch
- Business Saver's Switch
- Interruptible Credit Option[3]

The Saver's Switch programs were not evaluated, as all 2010 activity for these programs constituted installation of load control switches after the end of the cooling season.

1.2 EVALUATION OBJECTIVES

The objectives of this evaluation include:

- Development of program-specific evaluation plans;
- Design a sample allowing for 90% confidence and +/- 10% statistical precision for each program;
- Conduct onsite verification inspections, telephone surveying, and onsite metering as needed;
- Evaluate gross savings by program;
- Provide net savings totals through evaluation of free-ridership;
- Evaluate cost-effectiveness of each program using the Total Resource Cost (TRC) test; and
- Evaluate programs within the portfolio and make recommendations for amendments and improvements

1.3 SUMMARY OF FINDINGS

Gross savings were estimated by engineering analysis, simulation modeling, participant surveying, and on-site monitoring where appropriate for the program and measure type. The gross impact summary is presented in

[3] This program had no participants in 2010

Table *1-1* and 1-2 below, disaggregated between residential and non-residential segments. The values presented in gross and net impacts are customer kWh savings, which do not incorporate line losses.

Table 1-1 Gross Impact Summary – Residential Sector

Program	Peak Demand Savings (kW)		Annual Energy Savings, (kWh)		Lifetime Energy Savings (kWh)		Gross Realization Rate
	Expected	Realized	Expected	Realized	Expected	Realized	
Air Source Heat Pumps	21	21	89,914	80,657	1,618,452	1,415,826	90%
Evaporative Cooling	490	380	723,800	431,164	7,238,000	4,311,638	60%
Home Energy Services	4,163	3,605	14,742,488	11,012,797	147,536,927	110,182,000	75%
Home Lighting & Recycling	1,195	1,120	11,574,628	9,810,607	87,967,173	68,674,248	85%
Low Income	222	249	518,554	560,096	5,017,191	5,427,906	108%
Refrigerator Recycling	43.7	58	210,426	316,670	1,683,411	1,583,351	150%
School Education Kits	18	21	645,740	692,041	5,720,145	5,223,607	107%
Electric Water Heating	-	-	-	-	-	-	-
Total	6,153	5,454	28,505,550	22,904,032	256,781,299	196,818,576	80%

Table 1-2 Gross Impact Summary – Business Sector

Program	Peak Demand Savings (kW)		Annual Energy Savings, (kWh)		Lifetime Energy Savings (kWh)		Gross Realization Rate
	Expected	Realized	Expected	Realized	Expected	Realized	
Cooling Efficiency	162	220	449,141	413,339	8,982,820	8,266,771	92%
Large Customer Self Direct	-	-	-	-	-	-	-
Custom Efficiency	19	19	165,876	165,876	3,317,520	3,317,520	100%
Lighting Efficiency	338	319	1,094,577	1,434,615	16,418,655	21,519,229	131%
Motor Efficiency	74	29	443,888	103,832	8,877,760	2,076,640	23%
Small Business Lighting	596	377	1,480,114	1,321,940	22,201,710	19,829,100	89%
Total	1,190	1,003	3,633,596	3,796,123	59,798,465	62,139,680	104%

Additionally, ADM estimated free-ridership and associated net-to-gross ratios (NTGRs) for the 10 evaluated programs. They are detailed for the residential and business segments in Tables 1-3 and 1-4 below, respectively.

Table 1-3 Net Impact Summary – Residential Sector

Program	Peak Demand Savings (kW)		Annual Energy Savings, (kWh)		Lifetime Energy Savings (kWh)		NTGR	Net Realization Rate
	Expected	Realized	Expected	Realized	Expected	Realized		
Air Source Heat Pumps	21	10	89,914	37,909	1,618,452	682,362	47%	42%
Evaporative Cooling	294	262	434,280	297,317	4,342,800	2,973,170	69%	68%
Home Energy Services	4,497	3,352	13,710,514	10,241,901	137,209,342	102,469,260	93%	75%
Home Lighting & Recycling	992	896	9,606,941	7,848,485	73,012,753	54,939,398	80%	82%
Low Income	222	249	518,554	560,096	5,017,191	5,427,906	100%	108%
Refrigerator Recycling	27	41	128,360	221,669	1,026,881	1,108,346	70%	173%
School Education Kits	18	21	645,740	692,041	3,985,031	4,230,447	100%	107%
Electric Water Heating	-	-	-	-	-	-	-	-
Total	6,071	4,831	25,134,303	19,899,418	226,212,450	171,830,889	88%	87%

Table 1-4 Net Impact Summary – Business Sector

Program	Peak Demand Savings (kW)		Annual Energy Savings, (kWh)		Lifetime Energy Savings (kWh)		NTGR	Net Realization Rate
	Expected	Realized	Expected	Realized	Expected	Realized		
Cooling Efficiency	152	191	442,193	359,605	8,443,851	7,192,091	87%	85%
Large Customer Self Direct	-	-	-	-	-	-	-	-
Custom Efficiency	17	16	144,312	111,137	2,886,242	2,222,738	67%	77%
Lighting Efficiency	324	258	1,050,794	1,162,038	15,761,909	17,430,575	81%	111%
Motor Efficiency	65	73	386,183	524,117	7,723,660	10,482,340	504%	136%
Small Business Lighting	596	349	1,480,114	1,174,220	22,201,710	17,613,297	89%	79%
Total	1,154	887	3,503,596	3,331,117	57,017,372	54,941,041	88%	95%

Finally, ADM estimated cost-effectiveness of the 2010 programs and overall portfolio using the Total Resource Cost (TRC) test and Program Administrator Cost (PAC) test. The results are provided in Tables 1-5 and 1-6 below for the residential and non-residential segments, respectively. When calculating TRC, ADM used Generator kWh and kW savings, which incorporate line losses of 11% and 8% for residential and non-residential sectors, respectively.

Table 1-5 Cost-Effectiveness Testing of Residential Sector

Program	NPV of Benefits	NPV of TRC Costs	NPV of PAC Costs	TRC	PAC
Air Source Heat Pumps[4]	$0	$0	$0	0.00	0.00
Evaporative Cooling	$583,693	$80,879	$135,615	7.22	4.30
Home Energy Services	$10,856,863	$3,390,438	$3,020,718	3.20	3.59
Home Lighting & Recycling	$4,043,329	$707,045	$672,049	5.72	6.02
Low Income	$827,572	$281,678	$231,733	2.94	3.57
Refrigerator Recycling	$91,456	$46,681	$54,181	1.96	1.69
School Education Kits	$382,237	$133,140	$133,140	2.87	2.87
Electric Water Heating	$0	$9,623	$9,623	0.00	0.00
Residential Saver's Switch	$0	$265,166	$265,166	0.00	0.00
Total, Residential Sector:	$16,785,150	$4,914,650	$4,522,225	3.42	3.71

Table 1-6 Cost-Effectiveness Testing of Business Sector

Program	NPV of Benefits	NPV of TRC Costs	NPV of PAC Costs	TRC	PAC
Cooling Efficiency	$795,709	$205,245	$134,871	3.88	5.90
Custom Efficiency	$141,523	$113,824	$105,239	1.24	1.34
Large Customer Self-Direct	$0	$0	$0	0.00	0.00
Lighting Efficiency	$1,389,708	$173,043	$127,942	8.03	10.86
Motor Efficiency	$869,808	$312,963	$109,307	2.78	7.96
Small Business Lighting	$1,570,404	$1,413,807	$1,043,275	1.11	1.51
Business Saver's Switch	$0	$29,478	$29,748	0.00	0.00
Interruptible Credit Option	$0	$15,766	$15,766	0.00	0.00
Total, Business Sector:	$4,767,152	$2,264,396	$1,566,148	2.11	3.04

A summary of portfolio TRC is presented in Table 1-7 below.

[4] Benefits and costs associated with Air Source Heat Pumps have been rolled into the Home Energy Services TRC Testing.

Table 1-7 Cost-Effectiveness Testing – SPS DSM Portfolio

Program	NPV of Benefits	NPV of TRC Costs	NPV of PAC Costs	TRC	PAC
Residential Sector	$16,785,150	$4,914,650	$4,522,225	3.42	3.71
Business Sector	$4,767,152	$2,264,126	$1,566,148	2.11	3.04
Consumer Education	$0	$120,831	$120,831	0.00	0.00
DSM Planning & Administration	$0	$296,409	$296,409	0.00	0.00
Market Research	$0	$42,183	$42,183	0.00	0.00
Measurement & Verification	$0	$41,494	$41,494	0.00	0.00
Product Development	$0	$33,772	$33,772	0.00	0.00
Total Portfolio:	$21,552,302	$7,713,465	$6,623,062	2.79	3.25

Furthermore, ADM revised tech assumptions for programs as needed, as there were instances in which ADM determined components for deemed savings estimates to be inaccurate. Table 1-8 below presents a summary of these revisions.

Table 1-8 Summary of Tech Assumption Revisions

Program	Parameter	Value from SPS Technical Assumptions	ADM Recommended Revision
Residential Air Source Heat Pumps	Equivalent Full Load Cooling Hours	1,355	1,057
Residential Air Source Heat Pumps	Net-to-Gross Ratio	100%	50%
Residential Evaporative Cooling	Tier I kWh/Unit	2,350	Centrally Ducted: 1,495 Window Units: 1,341
Residential Evaporative Cooling	Tier I kW/Unit	1.59	Centrally Ducted: 1.32 Window Units: 1.18
Residential Evaporative Cooling	Net-to-Gross Ratio	60%	65%
Home Energy Services	kWh/ Sq. Ft Savings – Ceiling Insulation w/ Gas Heating, R-1-R-4 Base	.52 kWh/Sq. Ft	.34 kWh/Sq. Ft
Home Energy Services	kWh/Sq/ Ft Savings – Ceiling Insulation w/ Electric Heating, R-0 Base	5.23 kWh/Sq. Ft	2.72 kWh/Sq. Ft
Home Energy Services	kWh/Sq/ Ft Savings – Ceiling Insulation w/ Heat Pump, R0 Base	2.91 kWh/Sq. Ft	1.57 kWh/Sq. Ft
Home Energy Services	kWh/Sq. ft. Savings – Duct Sealing w/ Gas Heat, Ref AC:	.421	.295

Home Energy Services	kW/Sq. ft. Savings – Duct Sealing w/ Gas Heat, Ref AC:	.000486	.000305
Home Energy Services	kWh/Sq. ft. Savings – Duct Sealing w/ Electric Heat, Ref AC:	3.736	2.347
Home Energy Services	kWh/Sq. ft. Savings – Duct Sealing w/ Electric Heat, No AC:	3.315	2.052
Home Energy Services	kWh/Sq. ft. Savings – Duct Sealing w/ Heat Pump:	1.978	1.243
Home Energy Services	kW/Sq. ft. Savings – Duct Sealing w/ Heat Pump:	.000486	.000305
Home Energy Services	kWh/CFM50 Savings – Infiltration Control w/ Gas Heat, Ref AC:	.126	.088
Home Energy Services	kW/ CFM50 Savings – Infiltration Control w/ Gas Heat, Ref AC:	.000240	.000197
Home Energy Services	kWh/ CFM50 Savings – Infiltration Control w/ Electric Heat, Ref AC:	1.667	1.367
Home Energy Services	kWh/ CFM50 Savings – Infiltration Control w/ Electric Heat, No AC:	1.507	1.278
Home Energy Services	kWh/ CFM50 Savings – Infiltration Control w/ Heat Pump:	.793	.667
Home Energy Services	kW/ CFM50 Savings – Infiltration Control w/ Heat Pump:	.000240	.000197
Home Lighting & Recycling	Installation Rate	100%	85% for Distribution, 96% for Retail
Home Lighting & Recycling	Annual Hours of Use	1,027	913
Home Lighting & Recycling	Effective Useful Life (EUL)	7.6	7
Home Lighting & Recycling	Baseline Wattage	SPS Lookup Table	Revised Look-Up Table, see Table 5-22
Home Lighting & Recycling	Net-to-Gross Ratio	93%	80%
Residential Refrigerator Recycling	Annual kWh Savings Per Unit	SPS Lookup Table	1,300
Residential Refrigerator Recycling	Peak kW Reduction Per Unit	kWh/4,818	.25
Residential Refrigerator Recycling	Net-to-Gross Ratio	61%	65%
Residential Refrigerator Recycling	Effective Useful Life (EUL)	8	5
School Education Kits	Showerhead Install Rate	65%	60%
School Education Kits	CFL Install Rate	74%	70.5%
School Education Kits	Aerator Install Rate	62%	57%
School Education Kits	% Homes w/ Electric Water Heating	40%	54.3%
School Education Kits	Aerator Therms Savings w/ Gas Water Heating	4.14 Therms	1.93 Therms
Business Lighting Efficiency	Hotel Lighting Annual Hours	2,607	1,145 for guestrooms, 8,760 for common areas
Business Lighting Efficiency	NTGR	96%	80%

Business Lighting Efficiency	Linear Fluorescent EUL	18 Years	15 Years
Business Lighting Efficiency	Occupancy Sensor EUL	18 Years	8 Years
Business Cooling Efficiency	Net-to-Gross Ratio	94%	85%
Small Business Lighting	Linear Fluorescent EUL	18 Years	15 Years
Small Business Lighting	Occupancy Sensor EUL	18 Years	8 Years
Small Business Lighting	Net-to-Gross Ratio	100%	85%

2. Program Descriptions

The SPS 2009 DSM portfolio contained eight residential and six non-residential programs. These programs are detailed in the subsections below

2.1 RESIDENTIAL AIR SOURCE HEAT PUMP REBATES

The Residential Air Source Heat Pump Rebate Program (RASHP) is designed to help customers reduce their energy consumption by incenting the purchase of air source heat pumps that are more energy efficient than the standard efficiency equipment. Rebates are provided to customers based upon the results of the ENERGY STAR Calculator, incorporating unit capacity, SEER, HSPF, and Roswell, NM weather data.

The goal of the program is to increase the uptake of high efficiency air source heat pumps. The program is configured as a turnkey, stand-alone energy efficiency initiative. In 2010, the rebates were paid to HVAC contractors, who then marketed the program to end-use customers. The program had 47 participants through February, 2010, but was then cancelled following ADM's completion of evaluation of the 2008 and 2009 program years due to failing cost-effectiveness testing as a stand-alone measure. Starting in the 2010 program year, heat pump rebates were available only as a component measure of SPS' Home Energy Services program.

2.2 RESIDENTIAL EVAPORATIVE COOLING REBATES

The Residential Evaporative Cooling Rebate Program provides a rebate to SPS customers who purchase energy efficient evaporative cooling equipment for residential use. This program is intended to induce consumers to purchase evaporative coolers instead of using refrigerator air systems, and provided rebates for both centrally-ducted and window evaporative coolers. Refrigerated air uses significantly more energy than evaporative cooling, and as such high savings can be realized by inducing SPS residential customers to use evaporative cooling via rebates. The REC program increases uptake of high efficiency cooling equipment by defraying some of the high upfront costs associated with the equipment. The program goals are to educate customers on the benefits of using an evaporative cooler, and to encourage retailers and contractors to stock high efficiency units. In 2010, the REC program issued 308 rebates.

2.3 RESIDENTIAL HOME ENERGY SERVICES

The Home Energy Services Program provides incentives to energy efficiency service providers (EESPs or "contractors") to install a range of residential upgrades to existing homes that save energy and reduce energy costs. Professionally trained technicians use field tested protocols and advanced diagnostic equipment to determine the most cost-effective energy savings measures appropriate for each home. Typical upgrade services include installing insulation in the attic; stopping heat loss around windows, doors, and other infiltration points; repairing leaky ducts; and installing high efficiency central air conditioning. In 2010, no central air conditioning replacements were rebated through the program.

Technicians also test heating units and appliances for dangerous carbon monoxide emissions and gas leaks. Additionally, customers are educated on basic energy-efficiency practices and provided with free literature.

2.4 HOME LIGHTING & RECYCLING

The HLRP program provides upstream incentives to retailers for the sale of CFLs. The goal of the program is to buy down the retail price to $1-2 per bulb (varying by CFL type), in an effort to drive residential customers to replace incandescent lighting with high efficiency CFLs. Additionally, the program provides a mail-order option that allows for distribution to areas that may lack a participating retailer or a specialty bulb type. This program provides benefits to both retailers and customers in that:

- Retailers can achieve a higher sales volume without a reduction in profit margin, as the lost revenue from the price reduction is absorbed by SPS; and
- Customers can save money on their electric bills as well as in replacement costs, as typical lifetime for an incandescent bulb is roughly 1,000 hours, compared to an average lifetime of 8,000 hours for CFLs sold through this program.

2.5 LOW INCOME PROGRAM

The Low-Income Program provides a suite of energy efficiency measures to SPS low income customers. The program provides these measures via two channels:

- Direct Install; and
- CFL Distribution.

The Direct Install component of the Low Income Program (LIP) provides a range of measures, including:

- Duct Sealing;
- Infiltration Control;
- Ceiling Insulation;
- CFLs;
- Low-Flow Shower Heads;
- Evaporative Cooling Installation;
- Refrigerator Replacement; and
- Central Air Conditioning Replacement;

In 2010, the Direct Install component had participation in the Duct Efficiency, Infiltration Control, CFL, and Low-Flow Shower Head components.

The CFL distribution component provides CFLs to low income customers through a variety of non-profit and government assistance agencies. In 2010, these channels distributed a total of 650 CFLs.

2.6 RESIDENTIAL REFRIGERATOR RECYCLING PROGRAM

The Refrigerator Recycling Program (RRP) is designed to help customers reduce their energy consumption by removing second refrigerators from their homes to recycle them. SPS benefits because the second refrigerator, which is generally more inefficient, will be permanently removed from the system. The recycling process also includes safe disposal of environmentally harmful material, providing collateral benefits from the SRR program.

The goal of the program is to reduce the number of old, inefficient refrigerators that customers have moved to their garages or other locations such as basements and patios. Many areas in which spare units are placed are not space conditioned, and most refrigerators used in that environment operate under a heavy thermal load during the summer. This is exacerbated by the fact the refrigerators are usually quite old and inefficient. Previous studies by the Environmental Protection Agency (EPA), the Department of Energy (DOE) and other utilities have determined that removing these refrigerators, and properly recycling them, performs an energy saving service.

In 2010, the program was configured as a turnkey, stand-alone energy efficiency initiative. The program was advertised to the public via ads, bill stuffers, point-of-sale flyers and media events. The program requires that refrigerators to be recycled be in working condition. The customer receives pick-up and removal service in addition to a $50 rebate per recycled unit.

Removing old, inefficient refrigerators prevents them from being resold or transferred to another SPS customer. The program provides annual electric energy savings for the remaining life of the unit by permanently removing the unit from service. As an added environmental benefit, 95% of the materials from these units are able to be recycled (metals, plastic, glass, oil, etc.) and disposed of in an environmentally responsible manner (hazardous materials), thus preventing the materials from reaching landfills and contaminating the environment. In 2010, a total of 209 refrigerators were recycled through the RRP.

2.7 RESIDENTIAL SCHOOL EDUCATION KITS

The Residential School Education Kit Program is a fully implemented multi-resource efficiency/education program designed to facilitate installation of efficiency measures in homes and build knowledge of environmental issues in the SPS New Mexico service territory. The program yields a variety of measurable energy and water savings results by assigning students to bring educational materials and information to their home, discussing the information with their parents and installing measures included in the kit. The program delivered a proven blend of 140 teacher-designed classroom activities with hands-on home projects to install high efficiency devices and introduce resource-conscious behavior to 3,362 students and their families.

2.8 BUSINESS LIGHTING EFFICIENCY

SPS is offering the Lighting Efficiency to facilitate the implementation of cost-effective efficient lighting in non-residential facilities. This program is available to existing nonresidential customers as well as new construction and offers prescriptive and custom incentives.

- Prescriptive incentives are offered on a per unit basis for lamps and fixtures for the following lighting types:
  - Compact fluorescent
  - T8 & T5 Fluorescent
  - Ceramic Metal Halide
  - Pulse-Start Metal Halide
  - LED exit signs
- In addition to lamp and fixtures, prescriptive incentives are offered on a per-unit basis for the following measures:
  - Occupancy Sensors
  - Photocells
  - T8 Delamping
- Custom incentives are determined based on the estimated amount of electrical energy and peak demand savings, calculated at rates per kWh for on peak or non-peak hour time frames.

In 2010, the BLEP had eight participants installing a total of 12 projects.

2.9 BUSINESS COOLING EFFICIENCY

The Business Cooling Efficiency Program (BCEP) is designed to help non-residential customers reduce their energy consumption by installing high efficiency cooling equipment. SPS is offering the Business Cooling Efficiency Program in New Mexico to facilitate the implementation of cost-effective cooling efficiency improvements in businesses. This program is available to existing nonresidential customers as well as new construction applications and offers prescriptive and custom incentives.

Prescriptive incentives are offered on a per-ton basis for common several classes of cooling equipment. These include the following:

- Condensing Units
- Split Systems
- Rooftop Units
- PTAC
- Water-Source Heat Pumps
- Chillers
- VAV Boxes

Custom incentives are available as well, and are determined based on the estimated amount of electrical energy and peak demand savings, calculated at rates per kWh for on peak or non-peak hour time frames. However, the BCEP had no custom projects in 2010. The BCEP had a total of eight participants installing nine projects in 2010, all comprising prescriptive measures.

2.10 BUSINESS CUSTOM EFFICIENCY

The Business Custom Efficiency Program (BCEP) is designed to help customers reduce their energy consumption by providing rebates for a wide variety of unique or unusual equipment and process improvements that are not covered by available prescriptive programs.. This program is available to existing nonresidential customers as well as new construction applications.

The measures covered by this program fall outside of the scope of other SPS business programs; Business Lighting Efficiency, Business Cooling Efficiency, and Business Motor & Drive Efficiency each have custom components in addition to prescriptive measures, and cover a large amount of custom measures.

Businesses can receive rebates of up to $400 per kW saved. Participants must receive pre-approval for a measure before installation. In an effort to expand this program, beginning in 2010 SPS is targeting customers with aggregated annual consumption greater than 10 GWh in order to increase awareness of the program. SPS intends to

- Increase awareness of energy conservation measures;
- Identify specific conservation opportunities;
- Drive customers to participate in existing prescriptive and customized rebate programs; and
- Drive customers to implement low-capital or short payback measures, even though they may not qualify for an implementation rebate under existing programs.

The Business Custom Efficiency Program had three participants in 2010. ADM's evaluation effort consisted of savings estimations for these completed projects as well as engineering reviews for four additional custom program projects that were not completed before year's end.

2.11 LARGE CUSTOMER SELF-DIRECT

SPS is offering the Large Customer Self Direct Program in New Mexico to encourage SPS' largest customers to self-direct their own energy efficiency projects. Qualifying businesses must have consumption exceeding 7,000 MWh per year. These facilities account for 47% of the peak kW and 55% of the annual consumption of all SPS commercial and industrial customers but account for only 0.2% of all commercial and industrial facilities. Participants of this program are still eligible for other Business Segment programs offered by SPS.

There is no stated restriction as to the measure types that qualify for this program, with the caveat that any measure must be cost-effective, which SPS defines as having a payback period greater than one year but less than seven years. Lighting, HVAC, compressed air, motors &

drives, processes improvements, refrigeration, and other categories are all eligible under this program. Participants have two options for rebates. They can apply for either:

- A bill of credit up to 70% of the energy efficiency tariff rider charges for approved incremental expenditures made towards cost-effective energy efficiency or load management; or
- An exemption of up to 70% of the energy efficiency tariff rider charges for 24 months if the customer demonstrates that is has exhausted all cost-effective energy efficiency or load management projects at its facility.

The Large Customer Self-Direct program had no participants in 2010.

2.12 BUSINESS MOTOR EFFICIENCY

SPS is offering the Business Motor & Drive Efficiency Program in New Mexico to facilitate the implementation of cost-effective energy efficiency improvements in businesses. This program is available to existing nonresidential customers as well as new construction applications and offers prescriptive and custom incentives.

- Prescriptive incentives are offered on a per HP or kW basis for the following measure types:
  - 1-500 HP motors meeting or exceeding NEMA Premium Efficiency standards
  - Variable frequency drives (VFDs)
  - Constant speed motor controllers
  - Energy efficient compressed air equipment upgrades
  - No-loss air drains
- Custom incentives are determined based on the estimated amount of electrical energy and peak demand savings, calculated at rates per kWh for on peak or non-peak hour time frames.

Businesses participating in the Motor & Drive Efficiency Program can receive:

- Cash incentives to help alleviate the costs of installing efficient motors/controls;
- Custom measures that address customers specific needs;
- Cost reductions in electricity bills; and
- Education via a motor inventory assessment.

In addition, participants will benefit from reduced downtime due to motor failure and lower maintenance expenses as NEMA Premium Efficiency Motors are manufactured with high quality materials and standards. In 2010, the BMEP had seven participants installing a total of 14 projects.

2.13 SMALL BUSINESS LIGHTING

SPS is offering the Small Business Lighting Program to facilitate the implementation of cost-effective efficient lighting in non-residential facilities with peak demand of up to 400 kW. This program is available to existing nonresidential customers and offers prescriptive and custom incentives. In addition, customers receive a free energy audit, with recommendations for lighting as well as other measures, including heating, cooling, ventilation, motors, and recommissioning of their existing equipment. The program provides outreach to small businesses, who traditionally have lower participation rates in utility-sponsored energy efficiency rebate programs than larger businesses.

- Prescriptive incentives are offered on a per unit basis for lamps and fixtures for the following lighting types:
  - Compact fluorescent
  - T8 & T5 Fluorescent
  - Ceramic Metal Halide
  - Pulse-start metal halide
  - LED exit signs
- In addition to lamp and fixtures, prescriptive incentives are offered on a per-unit basis for the following measures:
  - Occupancy Sensors
  - Photocells
  - T8 Delamping

Custom incentives are determined based on the estimated amount of electrical energy and peak demand savings, calculated at rates per kWh for on peak or non-peak hour time frames. In 2010, the SBLP had 51 participants installing a total of 71 projects.

3. GENERAL METHODOLOGY

This chapter details general impact evaluation methodologies by program-type as well as data collection methods applied. This chapter will present full descriptions of:

- Gross Savings Estimation;
- Sampling Methodologies;
- Free-Ridership determination; and
- Data Collection Procedures.

3.1 GLOSSARY OF TERMINOLOGY

As a first step to detailing the evaluation methodologies, ADM provides a glossary of terms to follow:

- *Ex Ante* – A program parameter or value used by implementers/sponsoring utilities in estimating savings before implementation
- *Ex Post* – A program parameter or value as verified by ADM following completion of the evaluation effort
- *Deemed Savings* – A savings estimate for homogenous measures, in which an assumed average savings across a large number of rebated units is applied (e.g., assuming 398 kWh savings for a low-flow showerhead)
- *Gross Savings* – Energy or demand savings as determined through engineering analysis and verification
- *Gross Realization Rate* – Ratio of Ex Post Savings / Ex Ante Savings (eg. If ADM verifies 300 kWh per showerhead, Gross Realization Rate = 300/398 = 75%)
- *Free-Ridership* – Percentage of participants who would have implemented the same energy efficiency measures in a similar timeframe absent the program
- *Net Savings* – Gross savings subtracting off free-ridership, (eg., if Free-Ridership for low-flow showerheads = 50%, net savings = 398 kWh x 50% = 199 kWh)
- *Ex Ante Net Savings* – Ex Ante Gross Savings x Ex Ante Free-Ridership Rate
- *Ex Post Net Savings* – Ex Post Gross Savings x Ex Post Free-Ridership Rate
- *Net Realization Rate* – Ex Post Net Savings / Ex Ante Net Savings
- *Effective Useful Life (EUL)* – The average lifetime of a measure, denominated in years
- *Gross Lifetime kWh* = Ex Post Gross Savings x EUL
- *TRC* – Total Resource Cost Test, taking the ratio of net benefits over net costs, including both participant and utility costs

3.2 OVERVIEW OF METHODOLOGY

ADM's methodology in the evaluation of the 2010 SPS DSM Portfolio is intended to provide:

- Net impact results at the 90% confidence and +/-10% precision level;
- Program feedback and recommendations via process evaluation; and
- Cost effectiveness testing at the program and portfolio level.

In doing so, ADM's evaluation will provide the NMPRC with verified net savings results, provide the sponsoring utilities with recommendations for program improvement, and ensure cost-effective use of ratepayer funds. By leveraging experience and lessons learned from impact evaluation of the 2009 program years, ADM has been able to expand upon the 2010 evaluation effort, in order to use the results of this impact evaluation to better inform SPS as to methods by which program and portfolio performance could be improved.

3.3 SAMPLING

Sampling is necessary to evaluate savings for the SPS DSM portfolio insomuch as verification of a census of program participants is typically cost-prohibitive. As per NMPRC requirements, samples are drawn in order to ensure 90% confidence at the +/- 10% precision level. Programs are evaluated on one of three bases:

- Census of all participants
- Simple Random Sample
- Stratified Random Sample

3.3.1 Census of Participants

A census of participant data was used for select programs where such review is feasible. Examples include use of participant billing data in evaluating savings from the Home Energy Services (HES) program. In this evaluation, ADM used billing data and housing characteristics from all participants in developing a regression model to provide weather-normalized, typical-year savings.

Additionally, some programs had a census approach to a subset of the analysis. Home Lighting & Recycling was evaluated by reviewing the deemed savings calculations for a census of line items in the provided tracking data, ensuring that energy and demand savings for each rebated CFL were calculated appropriately.

3.3.2 Simple Random Sampling

For programs with relatively homogenous measures (largely in the residential portfolio), ADM conducted a simple random sample of participants. The sample size for verification surveys is calculated to meet 90% confidence and 10% precision (90/10). The sample size to meet 90/10 requirements is calculated based on the coefficient of variation of savings for program participants, which is assumed at .5 based on our previous experience with air-source heat pump rebate programs. Coefficient of Variation (CV) is defined as:

$$CV(x) = \frac{Standard\ Deviation\ (x)}{Mean(x)}$$

Where x is the average kWh savings per participant. Without data to use as a basis for a higher value, it is typical to apply a CV of .5 in residential program evaluations. The resulting sample size is estimated at:

$$n_0 = \left(\frac{1.645 * CV}{RP}\right)^2$$

Where,

1.645 = Z Score for 90% confidence interval in a normal distribution

CV = Coefficient of Variation

RP = Required Precision, 10% in this evaluation

With 10% required precision (RP), this calls for a sample of 68 for programs with a sufficiently large population. However, in some instances, programs did not have sufficient participation to make a sample of this size cost-effective. In instances of low participation, ADM then applied a finite population correction factor, defined as:

$$n = \frac{n_0}{1 + {n_0}/{N}}$$

Where

n_0 = Sample Required for Large Population

N = Size of Population

n = Corrected Sample

For example, if a program were to have only 100 participants, the finite population correction would result in a final required sample size of 41. ADM applied finite population correction factors in instances of low participation in determining samples required for surveying or onsite verification.

3.3.3 Stratified Random Sampling

For the SPS business portfolio, Simple Random Sampling is not an effective sampling methodology as the CV values observed in business programs are typically very high because the distributions of savings are generally positively skewed. Often, a relatively small number of projects account for a high percentage of the estimated savings for the program.

For example, the 2010 SPS Small Business Lighting Program had a CV of 1.52 at year's end. Using the base simple random sample function, this would call for a sample of 625. The 2010 SBLP had 71 participating facilities, and as such, a finite population adjustment is needed. Adjusting for the population, the required simple random sample is 64, nearly a census of participants.

To address this situation, we use a sample design for selecting projects for the M&V sample that takes such skewness into account. With this approach, we select a number of sites with large savings for the sample with certainty and take a random sample of the remaining sites. To further improve the precision, non-certainty sites are selected for the sample through systematic random sampling. That is, a random sample of sites remaining after the certainty sites have been selected is selected by ordering them according to the magnitude of their savings and using systematic random sampling. Sampling systematically from a list that is ordered according to the magnitude of savings ensures that any sample selected will have some units with high savings, some with moderate savings, and some with low savings. Samples cannot result that have concentrations of sites with atypically high savings or atypically low savings.

As a result of this methodology, the required sample for the SBLP was reduced to 17, with the top 6 savings sites sampled with certainty and the remaining population broken into three strata, with a total of 11 sample points from these three lower strata.

3.3.4 Free-Ridership

In determining ex post net savings for the SPS DSM portfolio, ADM provides estimates of free-ridership for individual programs. Free-riders are program participants that would have implemented the same energy efficiency measures at nearly the same time absent the program. Rather than apply a binary scoring (0% vs. 100% free-ridership), ADM applied a free-ridership probability to program participants, based upon four factors:

(1) Financial ability to purchase high efficiency equipment absent the rebate

(2) Importance of the rebate in the decision-making process

(3) Prior planning to purchase high efficiency equipment

(4) Demonstrated behavior in purchasing similar equipment absent a rebate

In this methodology, Part (1) is essentially a gateway value, in that if a participant does not have the financial ability to purchase energy efficient equipment absent a rebate, the other components of free-ridership become moot. As such, if they could not have afforded the high efficiency equipment absent the rebate, free-ridership is scored at 0%. If they did have the financial capability, ADM then examines the other three components, each contributing an equal scoring of 33% to free-ridership. It should be noted that having financial ability does not necessarily imply free-ridership; it just opens the possibility that other factors could contribute. A participant that was financially able to purchase high efficiency lighting, for example, could still be scored at 0% free-ridership if it is demonstrated that:

(1) The rebate factored into their decision-making process;

(2) They did not have prior plans to install high efficiency equipment before learning of the available rebates; and

(3) They did not demonstrate prior behavior of purchasing similar equipment absent a rebate.

There are other contributing factors to free-ridership, specifically in instances of programs that provide outreach to customers. For example, if in a large commercial retrofit, a sponsoring utility provides assistance in energy efficiency measure recommendation, or in providing cost-benefit analysis of a measure to a business, these could factor into the decision-making in ways that mitigate free-ridership, in that there are cases where a participant did not need a rebate to participate, but was induced to participate by the sponsoring utility's efforts in recommending and/or evaluating energy efficiency measures for them. Additional issues such as this are addressed on a program-by-program basis in methodology sections to follow.

For residential programs, free-ridership is calculated as the average score determined for the sample of participants surveyed. For business programs, a weighted average is taken of verified kWh savings, as the free-ridership scores of high-savers contribute a larger share of the overall free-ridership rate. Once free-ridership is determined, ADM then estimates the Net-to-Gross Ratio (NTGR), calculated as:

NTGR = 1 – % Free-Ridership

3.4 DATA COLLECTION

This subsection provides descriptions of ADM's data collection procedures, including:

- Telephone Surveying;
- Residential On-Site Verification; and
- Business On-Site Verification & Metering.

3.4.1 Telephone Surveying

ADM conducted a large volume of telephone surveys in evaluating the 2010 SPS DSM portfolio. These surveys were designed to collect a variety of data needed in the evaluation effort, including:

- Verification of installation of rebated equipment;
- Parameters used in gross savings calculations (room of installation for residential CFLs, whether a refrigerator was used indoors vs. outdoors, etc.);
- Data on decision-making to be used in determining program free-ridership; and

- Feedback from participants from their experiences with the program.

Table 3-1 below presents the total surveys conducted by program.

Table 3-1 Telephone Surveys by Program

Program	***Surveys***
Residential Air Source Heat Pump - Participants	22
Residential Evaporative Cooling Participants -Window Units	50
Residential Evaporative Cooling Participants –Centrally Ducted	34
Residential Home Energy Services – Weatherization	160
Residential Home Energy Services – Low-Flow Showerheads	40
Residential Home Energy Services – Trade Ally Interviews	4
Home Lighting & Recycling - Purchasers	120
Low Income Program – Weatherization Participants	60
Low Income Program – CFL Recipients	17[5]
Low Income Program – Showerhead Recipients	3[1]
Low Income Program – CFL Distributors	7
Refrigerator Recycling – Participants	55
Residential Electric Water Heating – Participants	0[6]
Business Lighting Efficiency – Participants	5
Business Cooling Efficiency – Participants	6
Business Custom Efficiency – Participants	2
Large Customer Self-Direct - Participants	0[7]
Business Motor & Drive Efficiency – Participants	3
Small Business Lighting - Participants	19
Business Portfolio – Rebate Consultancies	2
Business Portfolio – Trade Allies	2
Total Surveys:	611

Surveys with business program participants, rebate consultancies, CFL distributing agencies, and trade allies were conducted by ADM staff. Surveys with residential program participants were conducted by Research America, an experienced survey firm, with ADM performing quality control checking on the survey programming and monitoring a sample of phone calls. This ensured that interviewers were adhering to the survey script and that all questions were read correctly.

3.4.2 Onsite Surveys

On-site data collection procedures varied by program. For residential programs, site visits constituted a verification inspection of rebated equipment. For business participants, ADM conducted onsite metering at facilities where factors contributing to energy savings, including

[5] Subset of the 60 surveys of Weatherization Participants

[6] Zero participants at year’s end

[7] Zero participants at year’s end

lighting schedule and motor load factors, were subject to high uncertainty. Table 3-2 below provides a summary of on-site visits by program.

Table 3-2 Summary of Site Visits by Program

Program	***# Site Visits***
Residential Air Source Heat Pumps	15
Residential Evaporative Cooling	15
Residential Home Energy Services	15
Home Lighting & Recycling	0
Low Income Program	0
Refrigerator Recycling	0
School Education Kits	0
Residential Electric Water Heating[3]	0
Business Lighting Efficiency	4
Business Cooling Efficiency	5
Business Custom Efficiency	4
Large Customer Self-Direct[3]	0
Business Motor & Drive Efficiency	4
Small Business Lighting	17
Total	79

4. M&V METHODOLOGIES

This section will present the M&V methodology for each evaluated program.

4.1 Residential Air Source Heat Pumps

The M&V approach for the Residential Air-Source Heat Pump Rebate Program is aimed at the following:

- Verifying counts of air-source heat pumps installed as a result of the project;
- Specification and the extent to which installed air-source heat pumps are used;
- Providing estimates of net-to-gross savings and free-ridership; and
- Estimating cost effectiveness of the ASHP Program in 2010.

Table 4-1 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-1 Data Sources for Gross Impact Parameters – Residential Air Source Heat Pumps

Parameter	***Source***
Unit Capacity/Efficiency	Program Tracking Data
Equivalent Full Load Hours (Heating & Cooling)	Simulation of typical New Mexico housing stock using Roswell TMY weather data

4.1.1 Air-Source Heat Pumps - Review of Deemed Savings Estimates

In ADM's prior evaluation of the 2009 program year, we reviewed the deemed savings estimates for measures rebated through the program. A key assumption for measures in this program was the Equivalent Full Load Hours (EFLH) of operation. For other residential cooling programs in this service territory, EFLH for cooling totaled 1,057 hours per year. The Energy Star Heat Pump savings calculator used to provide ex ante savings estimates used a higher value than this, so ADM revised the cooling EFLH to correspond with residential cooling program offerings in SPS and other New Mexico service territories in a similar weather zone. ADM determined the EFLH used for heating to be reasonable and did not revise it. At this point, all heat pumps rebated through the 2010 program (through February 2010) had been calculated at the old EFLH value, and as such required revision in the manner detailed above.

ADM had validated the 1,057 EFLH figure through simulations of typical Roswell NM housing stock, and the resultant annual savings estimates by ADM for this measure were within 5% of deemed savings values and as such ADM did not revise the deemed amount for kWh savings; the level of savings estimated by ADM was within a reasonable error margin of the level claimed by SPS.

After reviewing the calculation methodology, ADM did not revise peak kW calculations; the only part of the calculations warranting revision was the EFLH, which does not affect peak demand reduction.

4.1.2 Air-Source Heat Pumps - Verification of Installed Measures

Verification of the cooling systems installed was done in two steps;

(1) Review of the tracking data presented; and

(2) Surveys of customers who installed air-source heat pumps.

ADM's first aspect of conducting measurements of program activity was to verify the numbers of efficient air-source heat pumps installed. Verification work is based on using detailed program tracking data. To begin the verification effort, we reviewed the tracking system data on reported rebated units to determine that all reported units were eligible for the program.

This sample was contacted via telephone for verification and net-to-gross surveying. ADM did not conduct on-site verifications due to the low amount of equipment implementation, kWh savings, and program budget.

4.1.3 Air Source Heat Pumps - Net Savings Estimates

Evaluation of net savings from the RASHP requires determination of free-ridership through participant surveying. ADM applies the general methodology described in Section 0, in separating free-ridership into four component parts: financial ability, prior planning, importance of the rebate in decision making, and the likelihood of installing similar equipment without a rebate. The four components were addressed with questions detailed in the subsections to follow.

4.1.3.1 Financial Ability

For Part 1, customers were asked:

> Question 13: Would you have been able to purchase the high efficiency heat pump if the rebates offered through the program were not available?

If the customer answered No to this, then they are assigned 0% free-ridership, as without the financial ability to purchase high efficiency air-source heat pump equipment, other factors in the decision making process are not relevant. Having financial ability does not inherently make one a free-rider, however, as they could still have been program-induced.

4.1.3.1 Prior Planning

Following this, customers are asked as to any plans they had to install the high efficiency air-source heat pump. This is addressed in the following questions:

> Question 4: Did you have specific plans to install the efficient heat pump <u>before</u> you talked with anyone about the Residential Air Source Heat Pump Rebate Program?
>
> Question 14: If SPS had not paid a portion of the equipment cost, would you have purchased the same equipment <u>within one year of when it was installed</u>?

If the respondent answers "Yes" to both of the above questions, then the respondent is considered to have been planning to install higher efficiency heat pump equipment and is thus a partial-free rider. Additionally, the respondent is asked:

> Question 6: When did you become aware of the rebate SPS offered for purchasing higher efficiency heat pumps?

To this question, respondents are asked to indicate if they learned of the available rebate before, at the same time, or after deciding to purchase the high efficiency air-source heat pump. If the respondent indicates that they became aware of the rebate only after having decided to purchase high efficiency heat pump equipment, then they are scored a partial free-rider on this component in the same manner as if they had answered "Yes" to both Questions 4 and 14.

4.1.3.1 Importance of Rebate in Decision Making

Once customers learn of the rebate, it is possible that this knowledge will sway their decision making process to install standard vs. high efficiency air-source heat pump. To address this, we examined responses to the following two questions:

> Question 5: What factors motivated you to install the high efficiency air-source heat pump through this program in 2009?
>
> Question 9: How important was SPS's rebate in your decision to buy the high efficiency air-source heat pump?

Question 5 does not prompt answers. If the respondent indicates unprompted that the rebate was a motivating factor for their installation of high efficiency air-source heat pump then they are not considered a partial free-rider in this component of net-to-gross analysis. Additionally, the respondent is scored in the same manner of on Question 9 they indicate that the rebate was "Very Important".

4.1.3.1 Likelihood of Installing Similar Equipment without Rebate

Finally, customers are asked whether they would have installed high efficiency air-source heat pump equipment if the rebate were not available. This is addressed with two questions:

> Question 11: Did you have to change the quantity of equipment or the efficiency level of equipment you installed in order to qualify for the program's available rebate?
>
> Question 12: If you had not been able to receive the rebate through the Residential Air-Source Heat Pump Rebate Program, how likely is it that you would have installed the same equipment anyway?

If the respondent answered "Yes" to Question 11, then it can be safely asserted that they would not have purchased the same equipment without the program. Additionally, if the respondent indicates that they "Definitely would have installed" high efficiency heat pump equipment without the rebate, then they can be considered to be a partial free-rider in this aspect of net-to-gross analysis.

4.2 Residential Evaporative Cooling Rebates

This chapter provides a description of the methodologies applied by ADM for the measurement and verification of the Residential Evaporative Cooling Rebate Program. The M&V approach for the Residential Evaporative Cooling Rebate Program is aimed at the following:

- Verifying counts of evaporative cooling installed as a result of the project;
- Specification and the extent to which installed cooling systems are used; and
- Providing estimates of net-to-gross savings and free-ridership.

Table 4-2 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-2 Data Sources for Gross Impact Parameters – Residential Evaporative Cooling

Parameter	***Source***
Unit Capacity/Efficiency	Program Tracking Data
Equivalent Full Load Hours (Heating & Cooling)	Simulation of typical New Mexico housing stock using Roswell TMY weather data
Equivalent Sizing for Refrigerated Air System	Manufacturer's literature
% Window Evap in Baseline	Participant Surveys
% of Central Evap in Baseline	Participant Surveys

% of Window AC in Baseline	Participant Surveys
% of Central AC in Baseline	Participant Surveys

4.2.1 Evaporative Cooling - Review of Deemed Savings Estimates

ADM reviewed the deemed savings estimates for measures rebated through the program in 2009. A key assumption for measures in this program was the Equivalent Full Load Hours (EFLH) of operation. In 2009, the RECP used EFLH of 1,057 per year, which after running simulation models of typical Roswell, NM housing stock, ADM determined to be a reasonable estimate of annual residential cooling demand for the Southwestern Public Service Company territory in New Mexico. SPS applied 1,366 EFLH in 2010, which ADM revised down to the 2009 value. In addition, deemed savings were revised this year, as the stock of evaporative coolers installed did not match that used in defining the baseline and post-retrofit systems, consisting of:

- A 1.5-ton window air conditioner as the baseline system; and
- A 1/8 HP evaporative cooler as the post system.

ADM found a range in rebated evaporative coolers from 1/8 – 1 HP, and developed deemed savings estimates based upon equivalent sizing for refrigerated air. These are summarized in Table 4-3 below. 1/8 HP systems represent window units, and have a window air conditioner as the baseline system. 1/3 – 1 HP systems are typically central systems and have a central air conditioner as the baseline system.

Table 4-3 Baseline Refrigerated Air Systems by Evap HP

Evap Cooler Motor Size (HP)	*kWh of Evaporative Cooler*	*Baseline AC Tons*	*kWh of Equivalent AC System*	*kWh Savings*
1/8	123	1	1,267	1,144
1/3	325	1.75[8]	1,706	1,381
½	493	2	1,950	1,457
¾	739	2.5	2,437	1,698
1	986	3	2,924	1,939

ADM applied these values in determining kWh savings per unit for the evaporative cooling program.

4.2.2 Evaporative Cooling - Verification of Installed Measures

Verification of the cooling systems installed was done in two steps;

- Review of the tracking data presented; and

[8] Weighted tonnage between 1.5 and 2-ton units

- Surveys of customers who installed cooling equipment

ADM's first aspect of conducting measurements of program activity was to verify the numbers of efficient coolers installed. Verification work is based on using detailed program tracking data. To begin the verification effort, we reviewed the tracking system data on reported rebated units to determine that all reported units were eligible for the program.

To meet 90/10 requirements, a sample of 68 would have been necessary. However, since these surveys were needed to collect data for gross savings estimations for two equipment classes, Central and Window evaporative cooling, and as such ADM oversampled in order to achieve required confidence precision by equipment class. The resulting survey sample sizes were:

- 49 Window Evaporative Coolers; and
- 34 Centrally Ducted Evaporative Coolers

Of these survey respondents, on-site verifications were conducted with a subset of 15 participants to serve as a validity check on the survey responses. All onsite inspections matched the tracking data and survey respondents.

4.2.3 Evaporative Cooling - Net Savings Estimates

Evaluation of net savings from the RECP requires determination of free-ridership through participant surveying. ADM modifies the general methodology described in Section 0 for the RECP as the goal of the program is to rebate purchase of less expensive equipment than baseline. Typically, free-ridership is separated into four component parts: financial ability, prior planning, importance of the rebate in decision making, and the likelihood of installing similar equipment without a rebate. Given that evaporative coolers are less expensive to purchase than refrigerated air systems, financial ability is not applicable. Thus, this component is replaced by whether the participant had a pre-existing evaporative cooler. The four components were addressed with questions detailed in the subsections to follow.

4.2.3.1 Financial Ability

For Part 1, customers were asked:

Question 3: What type of cooling system did you have before this unit?

If the customer indicates that they had a refrigerated air system prior to this purchase, then they are assigned 0% free-ridership, as the program induced them to switch from refrigerated air to evaporative cooling. If they had a pre-existing evaporative cooler, then the other aspects of free-ridership are then examined in order to determine if the program forestalled the participant switching from evaporative to refrigerated air cooling.

4.2.3.2 Prior Planning

Following this, customers are asked as to any plans they had to install the high evaporative cooler. This is addressed in the following questions:

> Question 4: Did you have specific plans to install the efficient heat pump <u>before</u> you talked with anyone about the Residential Evaporative Cooling Rebate Program?
>
> Question 6: When did you become aware of the rebate SPS offered for purchasing evaporative coolers?

To this question, respondents are asked to indicate if they learned of the available rebate before, at the same time, or after deciding to purchase the evaporative cooler. If the respondent indicates that they became aware of the rebate only after having decided to purchase the evaporative cooler, or that they had specific plans to purchase an evaporative cooler prior to learning of the program, then they are scored a partial free-rider on this component.

4.2.3.3 Importance of Rebate in Decision Making

Once customers learn of the rebate, it is possible that this knowledge will sway their decision-making process to install an evaporative cooler instead of a refrigerated air system. To address this, we examined responses to the following three questions:

> Question 2: Why did you decide to purchase an evaporative cooler?
>
> Question 5: What factors motivated you to install the evaporative cooler through this program in 2010?
>
> Question 10: How important was SPS's rebate in your decision to purchase the evaporative cooler?

Questions 2 and 5 do not prompt answers. If the respondent indicates unprompted that the rebate was a motivating factor for their installation of high efficiency air-source heat pump then they are not considered a partial free-rider in this component of net-to-gross analysis. Additionally, the respondent is scored in the same manner of on Question 9 they indicate that the rebate was "Very Important".

4.2.3.4 Likelihood of Installing Similar Equipment without Rebate

Finally, customers are asked whether they would have installed the evaporative cooler if the rebate were not available. This is addressed with three questions:

> Question 14: If you had not been able to receive the rebate through the Residential Evaporative Cooling Rebate Program, how likely is it that you would have installed the same equipment anyway?
>
> Question 15: If you had not been able to receive the rebate through the Residential Evaporative Cooling Rebate Program, would you have purchased a central air conditioning unit instead?
>
> Question 16: If you had not been able to receive the rebate through the Residential Evaporative Cooling Rebate, would you have purchased a window air conditioning unit instead?

If the respondent answered "Yes" to Question 11, then it can be safely asserted that they would not have purchased the same equipment without the program. Additionally, if the respondent indicates that they "Definitely would have installed" high efficiency heat pump equipment without the rebate, then they can be considered to be a partial free-rider in this aspect of net-to-gross analysis.

4.3 Residential Home Energy Services

The M&V approach for the Residential Home Energy Services Program is aimed at the following:

- Providing estimates of per-household energy savings via billing data regression analysis;
- Verifying measures installed as a result of the project; and
- Providing estimates of net-to-gross savings and free-ridership.

Table 4-4 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-4 Data Sources for Gross Impact Parameters – Residential Home Energy Services

Parameter	***Source***
Home Specifications	Tracking data & onsite verification
2010 HDH & CDH Values	NOCA databases
Typical Year HDH & CDH Values	TMY weather databases
Participant Energy Consumption	SPS billing data
% Homes With Electric Water Heating	Program participant surveys

4.3.1 Review of Deemed Savings Estimates

ADM reviewed the deemed savings estimates for measures rebated through the program in 2009. The deemed savings assumptions were based upon simulation models using weather from the Texas panhandle region, incorporating various home-specific characteristics, including:

- Heating/cooling type;
- Baseline & post retrofit duct leakage;
- Home square footage & number of stories; and
- Baseline & post retrofit Air Changes per Hour (ACH).

In the 2009 evaluation, ADM conducted a review of deemed estimates via simulation modeling of typical homes using Roswell, NM weather data. In 2010, ADM applied billing data analysis in developing regression models to estimate weather-normalized savings. The model specification is as follows:

$$kWh = \beta_0 + \beta_1 HDD + B_2\, CDD + \beta_3 Post + \beta_4 Post * HDD + \beta_5 Post * CDD + \beta_6 Electric\ Heat * CDD + \beta_7 Electr$$

Where,

kWh = Monthly kWh usage

HDD = Monthly Heating Degree Days

CDD = Monthly Cooling Degree Days

Electric Heat*CDD = Monthly Cooling Degree Days interacted with a dummy variable for Electric Heating

Electric Heat*HDD = Monthly Heating Degree Days interacted with a dummy variable for Electric Heating

Post = Dummy indicator for post-retrofit observations

Post*HDD = Interactive term between Post and Heating Degree Days

Post*CDD = Interactive term between Post and Cooling Degree Days

Electric Heat*CDD*Post = Interactive Term between Post and Electric Heat*CDD

Electric Heat*HDD*Post = Interactive Term between Post and Electric Heat*HDD

ε = Error Term

4.3.2 Verification of Installed Measures

Verification of the weatherization measures installed was done in two steps;

- Review of the tracking data presented; and
- Surveys of customers who installed rebated equipment.

ADM reviewed tracking data for anomalous entries and to ensure that savings were calculated according to the methodologies outlined in SPS tech assumptions. Having validated the tracking data, we verified installation of rebated measures through telephone surveys with program participants.

The sample size for verification surveys is calculated to meet 90% confidence and 10% precision (90/10). The sample size to meet 90/10 requirements is calculated based on the coefficient of variation of savings for program participants, which is assumed at .5 based on our previous experience with residential weatherization rebate programs.

With 10% required precision (RP), this calls for a sample of 68. In order to provide greater accuracy in savings across varying measure types, ADM oversampled on surveying, completing a total of:

- 160 surveys for weatherization measures (Duct Efficiency, Infiltration Control, Ceiling Insulation); and
- 40 surveys for Low-Flow Showerheads (24 of whom also received weatherization improvements)

4.4 Home Lighting & Recycling

The M&V approach for the Low-Income Program is aimed at the following:

- Verifying the numbers of CFLs purchased as a result of the project;
- Determining the percentage of purchased CFLs that are actually installed; and
- Estimating the extent to which installed CFLs are used.

Table 4-5 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-5 Sources for Gross Impact Parameters – Home Lighting & Recycling Program

Parameter	***Source***
CFL Quantities & Specifications	Program tracking data
Location of Installation	Telephone follow-up surveys with lighting purchasers

Hours of Use Per Day	California Residential Lighting Metering Study (KEMA, 2009)
CFL Installation Rate	Telephone follow-up surveys with lighting purchasers
Baseline Wattage	Manufacturer's specifications for lumen equivalence by CFL size & configuration

4.4.1 HL&R Review of Deemed Savings Estimates

ADM reviewed the deemed savings estimates used in SPS tech assumptions for the 2010 HL&R Program. One participating retailer in the HL&R Program tracked participants by having them fill out a coupon detailing their CFL purchase and providing contact information, and from this, ADM drew a sample of 120 respondents to survey. Surveys were conducted in early January, 2011, providing a wide time-frame for program participants (whom were tracked by this retailer until June 2010) to install CFLs, and giving a fair assessment of to what extent CFLs were installed. The survey provided other useful data, including:

- Rooms in which pre-existing CFLs were installed;
- Rooms in which newly purchased CFLs were installed;
- Customer feedback on the program;
- Insight into customer decision-making in purchasing CFLs; and
- Changes in customer behavior after having learned of the program.

4.4.2 HL&R Verification of Installation

ADM used the sample of 120 participant surveys to provide a statistically valid verification sample of lighting purchases. In the survey efforts, respondents verified purchase of CFLs during the 2010 program year prior to the surveyor inquiring as to the decision-making process and in what rooms CFLs were installed.

4.4.3 HL&R - Net Savings Estimates

Evaluation of net savings from the HL&R Program requires determination of free-ridership through participant surveying. ADM applies the general methodology described in Section 0, in separating free-ridership into four component parts: financial ability, prior planning, importance of the rebate in decision making, and the likelihood of installing similar equipment without a rebate. The four components were addressed with questions detailed in the subsections to follow.

4.4.3.1 Financial Ability

For Part 1, customers were asked:

> Question 10: Would you have been able to purchase the CFLs if the rebates offered through the program were not available?

If the customer answered No to this, then they are assigned 0% free-ridership, as without the financial ability to purchase CFLs, other factors in the decision making process are not relevant. Having financial ability does not inherently make one a free-rider, however, as they could still have been program-induced.

4.4.3.2 Prior Planning

Following this, customers are asked as to any plans they had to purchase any CFLs, or if they had planned on purchasing fewer CFLs than they had intended to purchase after having learned of the rebate. This is addressed in the following questions:

> Question 7: When did you learn of the SPS discount on CFLs?

> Question 13: After learning of the available discount, did you purchase more CFLs than you otherwise would have? If so, how many more?

If the respondent indicates in Question 7 that they learned of the rebate "After having already decided to purchase CFLs", and answer "No" to Question 13, then the respondent is considered to have been planning to purchase the same quantity of CFLs with or without the rebate and is thus a partial free-rider.

4.4.3.3 Importance of Rebate in Decision Making

Once customers learn of the rebate, it is possible that this knowledge will sway their decision making process to install incandescent vs. CFL lamps. To address this, we examined responses to the following two questions:

> Question 9: Prior to learning of the program, how many CFLs did you have in your home?

> Question 12: How important was the discount in your decision to buy the high efficiency air-source heat pump?

If the respondent indicates that the discount on CFLs provided by SPS was "Very Important", then they are considered to have been motivated by the discount and are not a free-rider on this component. Additionally, if the customer had no pre-existing CFLs in their home prior to this purchase, then they are considered to be likely to have been motivated by the SPS discount.

4.4.3.4 Likelihood of Installing Similar Equipment without Rebate

Finally, customers are asked whether they would have purchased CFLs if the rebate were not available. This is addressed with a series of questions:

> Question 11: If the CFLs were not discounted through the SPS program, how likely is it that you would purchase CFLs anyway?
>
> Question 16: After learning of SPS' discount, have you since purchased any CFLs that were not rebated through the program?
>
> Question 17: Would you purchase CFL if they cost $2 per bulb?
>
> Question 18: Would you purchase as many CFLs as you did that day if they cost $2 per bulb?

If the respondent indicates in Question 11 that they "definitely would have purchased" CFLs without a rebate, then they are considered to be a free-rider on this component. If they indicate that they "probably would have purchased" CFLs, their responses to Questions 16-18 are then examined. If the respondent states that they have purchased non-rebated CFLs after having learned of the SPS discount, and that CFLs costing $2 per bulb would not change their purchase behavior, then these responses are used in concert with their answer to Question 11 in determining that they are a free-rider on this component.

4.5 Residential Low Income Program

The M&V approach for the Low-Income Program is aimed at the following:

- Validating savings estimates for residential weatherization measures;
- Verifying counts of CFLs and Low Flow Showerheads directly installed;
- Verifying counts of CFLs distributed through non-profit agencies that are then installed; and
- Providing estimates of net-to-gross savings and free-ridership; and
- Estimating cost effectiveness of the LIP in 2010.

Table 4-6 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-6 Data Sources for Gross Impact Parameters – Residential Low Income Program

Parameter	***Source***
Home Specifications	Tracking data & onsite verification
2010 HDH & CDH Values	NOCA databases
Typical Year HDH & CDH Values	TMY weather databases
Participant Energy Consumption	SPS billing data

% Homes With Electric Water Heating	Program participant surveys
# CFLs Distributed	Interviews with CFL distributing agencies
CFL Installation Rate	Interviews with CFL giveaway recipients in EPE territory
CFL& Incandescent Wattage	Manufacturer's Specifications

4.5.1 Review of Deemed Savings Estimates

ADM reviewed the deemed savings estimates for measures installed through the LIP in 2010. ADM's deemed review is broken down between the following four measure categories:

- Residential Weatherization;
- Direct Install CFLs;
- Direct Install Low Flow Shower Heads; and
- Distributed CFLs

4.5.1.1 Deemed Savings Review - Weatherization

The deemed savings assumptions were based upon simulation models using weather from the Texas panhandle region, incorporating various home-specific characteristics, including:

- Heating/cooling type;
- Baseline & post retrofit duct leakage;
- Home square footage & number of stories; and
- Baseline & post retrofit Air Changes Per Hour (ACH).

The weatherization measures installed through the Low Income Program are similar to those installed through the HES Program. As such, ADM applied the regression model developed for the HES program to the LIP participants in determining ex post kWh and kW savings. Additionally, ADM validated installation of weatherization improvements via surveying of program participants. ADM surveyed 60 program participants that received weatherization improvements, encompassing:

- Duct Efficiency Improvements; and
- Infiltration Control.

4.5.1.2 Deemed Savings Review – Direct Install CFLs

The 2010 LIP provided Direct Install CFLS to 57 participating residences. ADM's effort in validating savings estimates for these CFLs were based upon:

- Verifying receipt of CFLs via telephone surveying;
- Determining the room of installed of received CFLs;
- Validating baseline wattage assumptions for installed CFLs.

ADM conducted verification surveys with participants that received CFLs through the LIP. Of the 57 CFL recipients, ADM surveyed 17; this does not provide 90/10 results at the measure level for Direct Install CFLs, but the overall volume of surveying provides 90/10 at the program level for the LIP. The sample size suffices to validate savings for this component of the program. Final savings for this component were calculated as:

Annual kWh = ($Watts_{base}$ – $Watts_{post}$) x #Units x Hours/Yr x %Installed

Where,

#Units = Quantity of CFLs listed in tracking data

$Watts_{base}$ = Wattage of equivalent sized incandescent lamp

$Watts_{post}$ = Wattage of installed CFL

Hours/Yr = Annual hours of operation, as determined through participant surveying

%Installed = % of CFLs verified as installed through participant surveying

4.5.1.3 Deemed Savings Review – Direct Install Low-Flow Showerheads

In 2010, the LIP began a pilot program providing direct installation of low-flow showerheads for participating customers with electric water heating. Savings estimates for low-flow showerheads are determined based upon an assumed reduction from 2.5 GPM to 1.5 GPM, which ADM determined to be reasonable for this measure. ADM's effort in validating of saving estimates for these showerheads were based upon:

- Verifying receipt of the showerhead via telephone surveying;
- Verifying that the home has electric water heating; and
- Validating deemed savings assumptions for the measure in homes with electric water heating.

The program only installed 11 showerheads as part of the pilot, and as such there was not a significant pool of participants to draw from in sampling. ADM surveyed three of the 11 participants that received showerheads through the LIP. ADM then reviewed assumptions applied in deemed savings estimates for low-flow showerheads in determining per-unit savings. Final savings for this measure were calculated as:

Annual kWh = #Units x kWh/Unit x %Elec x %Installed

Where,

#Units = Quantity of showerheads listed in tracking data

kWh/Unit = Validated deemed savings estimate for low-flwo showerheads with electric water heating

%Elec = % of homes receiving low-flow showerheads that have electric water heating

%Installed = % of low-flow showerheads verified as installed through telephone surveying

4.5.1.4 Deemed Savings Review – Distributed CFLs

The LIP provides packages of CFLs to low income customers through local non-profit organizations, reaching out to low income customers pre-screened through these community networks. This allows for rapid dissemination of a high volume of CFLs at relatively low cost, but typically displays a lower verified installation rate than CFLs distributed via Direct Installation channels. To validate savings from this component, ADM's efforts focused on:

- Verifying that participating non-profits have distributed all CFLs listed in tracking data;
- Determining the installation rate of distributed CFLs;
- Determining the room of installed of received CFLs;
- Validating baseline wattage assumptions for installed CFLs.

SPS' program tracking data lists a quantity of CFLs given to participating non-profit agencies for distribution to low income customers. ADM surveyed these participating agencies and received a report of quantities distributed. Ex ante savings estimates are based upon the quantity of CFLs distributed, without accounting for the percent received by customers and then installed. As such, the quantity distributed is applied in reducing program savings.

The installation rate and room of installation for distributed CFLs could not be determined for the SPS territory as the recipients of distributed CFLs were not tracked. As such, the installation rate and room of installation are based upon ADM's surveys of recipients of CFLs in the El Paso Electric Company's CFL Distribution program, as both programs operate in a similar manner and serve similar customer bases. In those surveys, ADM determined the following:

- 78% Installation Rate; and
- 891 Hours/yr.

From this, annual kWh savings were calculated as:

Annual kWh Savings = $(\text{Watts}_{base} - \text{Watts}_{post})$ #Units x %Distributed x %Installed x Hrs/Yr

Where,

Watts_{base} = Wattage of equivalent sized incandescent lamp

Watts_{post} = Wattage of distributed CFL

#Units = Quantity of CFLs listed in tracking data

%Distributed = % of issued CFLs distributed to customers by participating non-profits, as determined through surveying of distributing agencies

%Installed = % of CFLs verified as installed, using a proxy rate from participant surveying from the EPE Low Income CFL Distribution Program

Hours/Yr = Annual hours of operation, as determined through participant surveying from the EPE Low Income CFL Distribution Program

4.5.2 Verification of Installed Measures

Low income programs operate on limited budgets, and in the interest of providing a cost-effective evaluation, ADM's verification efforts were limited to telephone verification with participating non-profit agencies and end use customers. ADM's verification efforts consisted of:

- 60 surveys of were conducted with weatherization participants
- Of these, 17 had also received CFLs
- 3 of these 60 had received low-flow showerheads
- 7 surveys were conducted with non-profit agencies that distributed CFLs

4.6 RESIDENTIAL REFRIGERATOR RECYCLING

The M&V approach for the Refrigerator Recycling Program is aimed at measuring the following:

- Numbers of refrigerators collected and recycled;
- Average annual kWh savings per collected appliance;
- Average kW reduction per collected appliance.
- Providing estimates of net-to-gross savings and free-ridership; and
- Estimating cost effectiveness of the RRP program in 2010

Table 4-7 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-7 Data Sources for Gross Impact Parameters – Residential Refrigerator Recycling Program

Parameter	Source
Number of Units Recycled	Program Tracking Data
Unit Energy Consumption	Regression model developed in prior studies, using unit size, age, and configuration
Location of Installation	Participant Surveys – This value is

	used to determine peak kW reduction, based upon the share of units used in conditioned vs. unconditioned space.
Remaining Useful Life (RUL)	DEER 2008 Guidelines: Refrigerator Recycling: 5 Years

4.6.1 Unit Energy Consumption

The implementer for SPS Refrigerator Recycling Program estimated ex ante savings for recycled units by taking the at-manufacture estimate of annual kWh usage for a recycled unit and degrading by methodologies outlined in the Lawrence Berkley National Laboratory Residential Energy Databook. ADM determined that a more precise methodology is that outlined by The Cadmus Group in a 2009 study on refrigerator degradation for the California Public Utilities Commission.[9] For its study, Cadmus used data on refrigerator energy use obtained through two in situ monitoring efforts:

- A dual monitoring study that ADM conducted in support of the evaluation of the (California) 2004-2005 Statewide Residential Appliance Recycling Program[10]; and
- Additional in situ monitoring that Cadmus conducted as part of its study.

The product of these efforts was a database that contained energy use obtained through both DOE testing and in situ monitoring for a sample of 321 units, 184 of which were from the 2004-2005 evaluation and 137 from the 2006-2008 evaluation. Cadmus used the data from this dual monitoring sample to develop regression models that relate in situ energy use to energy use as determined from the DOE test procedure and modification factors based on weather and household size. These modification factors are summarized in Table 4-8.

Table 4-8. In Situ Monitoring Adjustments to DOE Testing Values

Primary	***Household Size***	***Climate Zone***	***n***	***% In Situ Delta***[11]
Yes	1-2	Cool	29	-30.8%
		Warm	18	-19.2%
	3+	Cool	50	-16.0%
		Warm	32	-6.4%
No	1-2	Cool	86	-21.3%
		Warm	42	-15.8%
	3+	Cool	59	-6.8%
		Warm	31	1.3%

9 The Cadmus Group, Inc. "Residential Retrofit High Impact Measure Evaluation Report", prepared for the California Public Utilities Commission. December 7, 2009

10 ADM Associates. Evaluation Study of the 2004-05 Statewide Residential Appliance Recycling Program: Measurement 2004-2005 Programs #1114, #1157, #1232 and #1348. April 2008.

11 A negative in situ delta represents an in situ UEC that is lower than the DOE UEC

For this M&V study, the SPS New Mexico territory is treated as a Warm Climate. Because distribution of household sizes is not known for the population of customers participating in the RRP, the distribution observed in the Cadmus study was used. As this program focuses on second refrigerator recycling, the figures used in the calculations to follow are drawn from Table 4-8 where Primary = "No". There were 86 households with 1-2 people and 59 with 3+. Weighting the "% In Situ Delta" by these values, we get an adjustment factor of:

$$[(42/73) \times -15.8\%] + [(31/73) \times 1.3\%] = -8.54\%$$

Additionally, annual kWh use is estimated via a regression model based upon the unit size, configuration (side-by-side vs. top-bottom), and defrost type (manual vs. frost free). The variable coefficients are detailed in Table 4-9 below.

Table 4-9 Refrigerator Recycling Regression Model Coefficients

Variable	Coefficient
Intercept	491.83
Side-by-Side Configuration Dummy	98.96
Size (Cubic Feet)	35.3
Age	25.25
Side-by-Side * Age (interactive factor)	19.98

The outputted results from this regression were then reduced by 8.54% in order to account for the climate correction for secondary refrigerators.

4.6.2 Location of Installation

ADM surveyed 55 program participants in order to obtain the location in which the refrigerator was typically used, in order to determine what share of refrigerators was used in conditioned versus unconditioned space. The ambient temperature during peak periods affects the efficiency and duty cycle of a refrigerator compressor, and as such this share is used in determining peak kW reduction from refrigerator recycling. Demand Reduction (kW) is calculated by weighting the annual kWh use based upon the delta T (ambient temperature minus refrigerator temperature). This weight is then increased by the magnitude of the marginal decline in unit efficiency associated with peak-period temperatures, with an average hourly COP calculated based upon the methodology outlined in a NREL 2008 report[12]. Resultantly, ADM calculated kW factors of .000127 and .000247 for conditioned and unconditioned space, respectively. Our survey results indicated that 53% of the recycled refrigerators were used in conditioned space, with 47% used in unconditioned space. Weighting the kW factors by these proportions, the weighted average kW factor is .000183.

[12] NREL, "Technical Support Document: Development of the Advanced Energy Design Guide for Grocery Stores", September, 2008

4.6.3 Remaining Useful Life

ADM is applying CA DEER 2008 values for the RUL of recycled refrigerators, set at 5 years.

4.6.4 Net Savings Estimation

Net savings from the RRP are calculated using estimates of free-ridership. Free-ridership for refrigerator recycling differs from typical residential rebate programs in that financial ability is not a criterion; everyone can afford to take a refrigerator out of service. ADM surveyed 60 program participants to estimate free-ridership, with free-ridership determined by:

1. Whether the respondent would have kept the unit in use without the RRP; and
2. What would have been done with the unit if the respondent would have sold or donated their refrigerator to the secondary market.

Using the guideline from other residential programs of evaluating on the basis of financial ability, prior planning, importance of the rebate in decision-making, and behavior absent the rebate, the method for determining free-ridership for the 2010 RRP was as detailed in the subsections to follow.

4.6.4.1 Financial Ability

Refrigerator recycling differs from rebates for purchase of high efficiency equipment as no customer investment is required. As such, all participants have financial ability to participate, i.e., cost is not a barrier to recycling of the secondary refrigerator.

4.6.4.2 Prior Planning

Following this, customers are asked as to any plans they had to recycle their refrigerators. This is addressed in the following question:

> Question 8: Did you have specific plans to recycle the refrigerator prior to learning of the SPS Refrigerator Recycling Program?

If the respondent answers "Yes" to the above question, then the respondent is considered to have been planning to recycle their refrigerator and is thus a partial-free rider. Additionally, the respondent is asked:

> Question 6: When did you learn about the SPS Refrigerator Recycling program and the available rebate?

To this question, respondents are asked to indicate if they learned of the available rebate before, at the same time, or after deciding to purchase high efficiency cooling equipment. If the respondent indicates that they became aware of the rebate only after having decided to recycle their refrigerator then they are scored a partial free-rider on this component in the same manner as if they had answered "Yes" to Question 8.

4.6.4.3 Importance of Rebate in Decision Making

Once customers learn of the rebate, it is possible that this knowledge will sway their decision making process to recycle their refrigerator. To address this, we examined responses to the following two questions:

> Question 7: What factors motivated you to recycle your refrigerator through the program in 2010?
>
> Question 13: How important was the rebate in your decision to recycle the refrigerator?

Question 6 does not prompt answers. If the respondent indicates unprompted that the rebate was a motivating factor for the recycling of their refrigerator then they are not considered a partial free-rider in this component of net-to-gross analysis. Additionally, the respondent is scored in the same manner of on Question 13 they indicate that the rebate was “Very Important”.

4.6.4.4 Likelihood of Recycling Refrigerator without Rebate

Finally, customers are asked whether they would have recycled their refrigerators if the rebate were not available. This is addressed with two questions:

> Question 12: If SPS had not offered a rebate for recycling the refrigerator, how likely would you have been to recycle the refrigerator anyway?

If the respondent answered “Definitely would not have recycled” to Question 12, then it can be safely asserted that they would have not recycled their refrigerator without the rebate program. Additionally, if the respondent indicates that they “Definitely would have recycled” their refrigerator without the rebate, then they can be considered to be a partial free-rider in this aspect of net-to-gross analysis. Additionally, respondents are asked as to their behavior in prior cases of appliance disposal. They are first asked:

> Question 10: Have you ever needed to replace a major appliance before?

If they answer “Yes”, they are then asked:

> Question 11: When replacing a major appliance, what do you typically do with the old unit? (Prompt only if necessary)

If the respondent indicates unprompted that they recycled appliances in the past, this answer is then examined in concert with their answer to Question 12. If the respondent indicated that they “Probably would have recycled” absent the rebate in addition to indicating that they had recycled appliances in the past, they are then scored as a free-rider in this component in the same manner as if they indicated that they “Definitely would have recycled” absent the rebate in Question 12.

4.7 SCHOOL EDUCATION KITS

The M&V approach for the School Education Kits (SEK) Program is aimed at measuring the following:

- Numbers kits distributed;
- % of kit components installed;
- % of participating homes with electric water heating;
- Estimating cost effectiveness of the SEK program in 2010

Table 4-10 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 4-10 Data Sources for Gross Impact Parameters – School Education Kit Program

Parameter	Source
Number of Kits Distributed	Program Tracking Data
Installation Rate	Survey cards provided by program implementer
Electric Water Heating Rate	Survey cards provided by program implementer.
Effective Useful Life	Values from CA DEER 2008

4.7.1 Review of Deemed Savings Estimates

ADM reviewed the deemed savings estimates for measures distributed through the SEKP in 2010. ADM's deemed review is broken down between the following three measure categories:

- 13W & 18W CFLs;
- Low-Flow Showerheads; and
- Faucet Aerators.

4.7.1.1 Deemed Saving Review - CFLs

The program distributes (1) 13W and (1) 18W CFL in each kit. Savings from these CFLs are calculated as:

Annual kWh Savings (CFLs) = (60 – 13)W x # Kits x 13WInstall% x Hours/yr + (75-18)W x #Kits x 18WInstall% x Hours/yr

Where,

13WInstall% = Installation Rate for the 13W CFL, as determined through survey cards from the program implementer

18WINstall% = Installation Rate for the 18W CFL, as determined through survey cards from the program implementer

Hours/yr = 1,204, based upon 3.3 hours/day of runtime

Kits = Total Kits Distributed

4.7.1.2 Deemed Savings Review – Faucet Aerators & Low Flow Showerheads

In the 2009 evaluation, ADM validated deemed values of 398 kWh for low-flow showerheads and 79 kWh for faucet aerators installed in homes with electric water heating. ADM is carrying these values over to the current year. With this, the parameters that need to be collected to evaluate savings from these measures are:

- Installation Rate; and
- Electric Water Heating Rate

These values are determined through survey cards from the program implementer. ADM takes data from these surveys and applies it to final savings calculations as follows:

Annual kWh Savings (Showerhead) = 398 kWh x #Kits x Showerhead Install% x Electric Water Heating %

Annual kWh Savings (Aerator) = 79 kWh x #Kits x Aerator Install% x Electric Water Heating %

4.7.2 Net Savings Estimates

The SEK provides kits with equipment that otherwise would not be installed by low income customers in SPS territory. As such, ADM applies a NTGR of 100%

4.8 RESIDENTIAL ELECTRIC WATER HEATING REBATES

This program is not being evaluated in 2010 as there was no participation.

4.9 BUSINESS LIGHTING EFFICIENCY

Evaluation of the Business Lighting Efficiency Program (BLEP) requires the following:

- Stratified random sampling, selecting large saving sites with certainty;
- Review of deemed savings parameters; and
- Onsite verification inspection, with metering in facilities where lighting runtime is uncertain;

Parameters required for evaluation of the BLEP are presented in Table 4-11 below.

Table 4-11 Data Sources for Gross Impact Parameters – Business Lighting Efficiency Program

Parameter	Source
Project Details	Program Tracking Data
Fixture Wattage Review	Manufacturer's Literature
Hours of Operation	Comparison of deemed values with CA DEER values, on-site metering for projects with uncertainty
HVAC Interactive Factors	Simulations of archetypical buildings using Roswell NM TMY weather data
Peak Coincident Factor	Review of deemed values, assignment of new values based upon facility operating hours should deemed values not provide accurate estimates
Effective Useful Life	Comparison against CA DEER values
Net-to-Gross Ratio (NTGR)	Participant Surveying

4.9.1 Business Lighting Efficiency Gross Savings Estimates

The 2010 BLEP encompassed lighting retrofits, occupancy sensors retrofits, and installation of high efficiency lighting as part of new construction projects. The subsections below present the savings calculation methodology for each of these measure types.

4.9.1.1 Gross Savings Methodology for High Efficiency Lighting Retrofits

The 2010 BLEP provided rebates for 9 participating facilities. To calculate annual savings from lighting retrofits, ADM applies the following equation:

$$Annual\ kWh\ Savings = (kW_{base} - kW_{post}) * Hours * HCEF$$

Parameters for this equation are defined in Table 4-12 below.

Table 4-12 Parameters for kWh Savings Calculation of Lighting Retrofit Measures

Parameter	Definition
kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000W/kW
Hours	Annual Hours of Operation
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon n SPS-defined peak of 3:00 – 6:00 PM during the hottest summer weekdays. To provide the peak savings estimate for lighting, the facility's average runtime during the period of 3:00 – 6:00 PM on all summer weekdays was applied, in order to better reflect typical operation during the occurrence of a system peak. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for this equation are defined in Table 4-13 below.

Table 4-13 *Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures*

Parameter	Definition
kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000W/kW
PCF	Peak Coincident Factor: % Time During Peak Period in Which Lighting is Operating
HCDF	Heating/Cooling Demand Interactive Factor

4.9.1.2 Gross Savings Methodology for High Efficiency Lighting in New Construction Applications

The 2010 BLEP provided rebates to three participating facilities for energy efficient lighting in new construction applications. These three facilities accounted for 97% of program-level savings. Calculations of savings for lighting in new construction applications differs from retrofits in that the baseline is denominated in W/ft^2 for the space type. This is to capture the reduction in Lighting Power Density (LPD) generated by the project. Annual savings from an LPD reduction are calculated as:

$$Annual\ kWh\ Savings = \left(\frac{kW}{ft^2}_{base} - \frac{kW}{ft^2}_{post}\right) * Hours * HCEF * ft^2$$

Parameters for this equation are defined in Table 4-14 below.

Table 4-14 Parameters for kWh Savings Calculation of Lighting New Construction Measures

Parameter	Definition
kW/ft^2_{base}	Baseline LPD as Set by Building Code or Industry Standard
kW/ft^2_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000W/kW / Sq. Ft.
Hours	Annual Hours of Operation
HCEF	Heating/Cooling Energy Interactive Factor
Ft^2	Square Footage of the Facility

In a manner similar to lighting retrofits, ADM then calculates peak savings for the measure. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = \left(\frac{kW}{ft^2}_{base} - \frac{kW}{ft^2}_{post}\right) * PCF * HCDF * ft^2$$

The parameters for this equation are defined in *Table 4-15* below.

Table 4-15 Parameters for Peak Demand (kW) Savings Calculation of Lighting New Construction Measures

Parameter	Definition
kW/ft^2_{base}	Baseline LPD as Set by Building Code or Industry Standard
kW/ft^2_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000W/kW / Sq. Ft.
PCF	Peak Coincident Factor: % Time During Peak Period in Which Lighting is Operating
HCDF	Heating/Cooling Demand Interactive Factor
Ft^2	Square Footage of the Facility

4.9.1.3 Gross Savings Methodology for Lighting Controls in Retrofit & New Construction Applications

The methodology to be detailed encompasses ADM's gross savings methodology for all lighting control measures, including:

- Occupancy Sensors;
- Photocell Controls; and

- Daylighting Controls;

The methodology for this measure does not differ between retrofit and new construction applications as in a new construction application, the measure is considered as a retrofit to the installed lighting. Annual kWh savings from lighting controls are calculated as follows:

$$Annual\ kWh\ Savings = (Hours_{base} - Hours_{post}) * kW_{post} * HCEF$$

This captures savings attributable to a reduction in operating hours as a result of the lighting controls. In instances where controls are installed alongside a lighting retrofit, savings from occupancy sensors are calculated using the installed kW of the energy efficient lighting, in order to account for disynnergies (i.e., a simultaneous lighting retrofit and lighting control installation saves less than each of the two measures would have individually). ADM then calculated peak savings for lighting controls as:

$$Peak\ kW\ Savings = (PCF_{base} - PCF_{post}) * kW_{post} * HCDF$$

Savings from lighting controls are attributable to a reduction in the facility's Peak Coincident Factor, that is, after installation of lighting controls, the facility lighting operates for fewer hours within the 3:00 – 6:00 PM range.

4.9.2 Business Lighting Efficiency Net Savings Estimates

In evaluating the 2010 BLEP, ADM was tasked with providing net savings estimates. The net savings attributable to a program may differ from gross savings because of free-ridership. Free ridership impacts are the energy savings impact attributable to the installation of energy efficiency measures by participants who would have installed energy efficient lighting or lighting controls without the SPS rebate.

We used information collected through surveys of program participants to develop estimates of free-ridership. In these surveys, customers were questioned regarding their knowledge of energy efficiency, their reasons for participating, and the measure implementation decisions they would have made had they not participated in an IOU's program.

Our approach to estimating free-ridership using self-reported survey data has the following main features:

- We ask respondents two related sets of questions: (1) How much of the savings or measures would have been installed without the program, and (2) what was the likelihood that measures of the same or better efficiency would have been installed without the program. Using a combination of questions, we can derive the base value by filling in missing data with a hierarchy of responses.

- We use a variety of survey methods to help confirm the validity or consistency of responses provided to questions about free ridership. Asking related questions about the importance of incentives, prior plans to install, increases in efficiency and timing of investment allows examination of the consistency of self-reports on free ridership.

The factors are then combined to assign individuals a probability of free-ridership. The assignments are split into terciles, with respondents labeled as having a 0%, 33%, 67%, or 100% chance of free-ridership. The categories of free-ridership are detailed in the subsections to follow.

4.9.2.1 Financial Ability

For Part 1, customers were asked:

> Question 13: Would you have been able to install the measure without the financial incentive from SPS?

If the customer answered No to this, then they are assigned 0% free-ridership, as without the financial ability to purchase high efficiency lighting equipment, other factors in the decision making process cannot contribute to the decision making absent the available rebate. This value essentially serves as a free-ridership "gateway". Respondents that lacked financial ability are definitely not free-riders, but being financially able to install a measure is not sufficient to label as a free-rider.

4.9.2.2 Prior Planning

Following this, customers are asked as to any plans they had to install high efficiency lighting equipment. This is addressed in the following questions:

> Question 36: When did you learn of the lighting efficiency program?

> Question 15: Did you have plans to install the equipment before participating in the program?

If the respondent indicates that they did have prior plans, or that they had not learned of the program until after having selected the equipment, then they can be considered a partial-free rider on this component.

4.9.2.1 Importance of Rebate in Decision Making

Once customers learn of the rebate, it is possible that this knowledge will sway their decision making process to install standard vs. high efficiency lighting equipment. To address this, we examined responses to the following two questions:

> Question 5: How important was SPSs' rebate in your decision to buy high efficiency lighting equipment?
>
> Question 14: Before participating in the lighting efficiency program, had you installed any equipment similar to [Equipment/Measure] at your facility?

Question directly addresses the importance of the rebate, by having the respondent weigh its importance in the decision-making process for the project. Question 14 also addresses how important the rebate was to the decision making process as if the respondent had installed the same measure elsewhere at the facility then the rebate was likely not required to induce them to install the rebated project

4.9.2.1 Likelihood of Installing Similar Equipment without Rebate

Finally, customers are asked whether they would have installed high efficiency lighting equipment if the rebate were not available. This is addressed with four questions:

> Question 19: If the financial incentive from the lighting efficiency program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?
>
> Question 20: How did availability of information and financial incentives through the lighting efficiency program affect the quantity (or number of units) of [Equipment/Measure] that you purchased and installed? Did you purchase and install more [Equipment/Measure] than you otherwise would have without the program?
>
> Question 21: How did availability of information and financial incentives through the lighting efficiency program affect the level of efficiency you chose for [Equipment/Measure] that you purchased and installed? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
>
> Question 22: How did availability of information and financial incentives through the lighting efficiency program affect the timing of your purchase and installation of [Equipment/Measure]? Did you purchase and install more [Equipment/Measure] earlier than you otherwise would have without the program?

If the respondent indicates on Question 19 that they "Probably would have installed" or "Definitely would have installed" the same equipment without the rebate, their answers to the three questions to follow are examined. Questions 20-22 address whether the project was modified due to available rebates from the program. If the respondent indicates that they did not modify the project, then they are likely a free-rider on this component. If they had modified the project, then that is an indicator that the program did affect their decision making, even if this runs counter to their response in Question 19.

4.9.2.1 Assignment of Free-Ridership and Partial Free-Ridership Scores

Based upon the answers to these four categories of questions, the respondents are placed in Free-Ridership Terciles, with scores of 0%, 33%, 67%, and 100% Free-Ridership. The scoring is based upon all possible interactions between the four questions. Part 1 of free-ridership, Financial Ability, essentially serves as a gateway; if it does not equal "Yes" then other aspects of free-ridership are irrelevant. Table 4-16 below presents the associated free-ridership score for each permutation of answers in the four free-ridership components/.

Table 4-16 Free-Ridership Scoring

Financial Ability	Prior Planning	Rebate Was Important	Likely to Install w/o Rebate	Aggregated Category	Free-Ridership Score
Y	N	N	Y	YNNY	.67
Y	N	N	N	YNNN	.33
Y	N	Y	Y	YNYY	.33
Y	N	Y	N	YNYN	0
Y	Y	N	Y	YYNY	1
Y	Y	N	N	YYNN	.67
Y	Y	Y	Y	YYYY	.67
Y	Y	Y	N	YYYN	.33
N	N	N	Y	NNNY	0
N	N	N	N	NNNN	0
N	N	Y	Y	NNYY	0
N	N	Y	N	NNYN	0
N	Y	N	Y	NYNY	0
N	Y	N	N	NYNN	0
N	Y	Y	Y	NYYY	0
N	Y	Y	N	NYYN	0

4.10 BUSINESS COOLING EFFICIENCY

Evaluation of the Business Cooling Efficiency Program (BCEP) requires the following:

- Stratified random sampling, selecting large saving sites with certainty;
- Review of deemed savings parameters;
- Onsite verification inspections;

- DOE-2 Simulation of large, complicated retrofits and use of Equivalent Full Load Hours (EFLH) values for smaller projects.

Parameters required for evaluation of the BCEP are presented in Table 4-17 below.

Table 4-17 Data Sources for Gross Impact Parameters – Business Cooling Efficiency Program

Parameter	Source
Project Details	Program Tracking Data
Facility Billing Data (For Calibration of Large Retrofit Simulation Models)	SPS
Equipment Specifications (Size, Efficiency, etc.)	Manufacturer's Literature
Equivalent Full-Load Hours (EFLH)	SPS Deemed values, reviewed by ADM through simulation of archetypical facilities with Roswell NM TMY Weather Data
Effective Useful Life	Comparison against CA DEER values
Net-to-Gross Ratio (NTGR)	Participant Surveying

4.10.1 Business Cooling Efficiency Gross Savings Estimates

As stated above, gross savings estimates for facilities participating in the 2010 BCEP are evaluated by one of two methodologies:

- Calibrated DOE-2 simulation, for large retrofits; and
- Equivalent Full Load Hour calculations for smaller retrofits.

4.10.1.1 DOE-2 Simulation Modeling

In evaluating the 2010 BCEP, ADM performed DOE-2 simulation modeling of one participating facility, using eQuest software. This facility implemented a large chiller retrofit and accounted for 52% of program savings.

Before making the analytical runs for each sample site with HVAC measures, we prepare a Model Calibration Run. This is a base case simulation to ensure that the energy use estimates from the simulations have been reconciled against actual data on the building's energy use. This run is based on the information collected in an on-site visit pertaining to types of equipment, their efficiencies and capacities, and their operating profiles. Current operating schedules are used for this simulation, as are local weather data covering the study period. The Model

Calibration Run is made using actual weather data for a time period corresponding to the available billing data for the site.

The goal of the model calibration effort is to have the results of the DOE-2 simulation come within approximately 10% of the patterns and magnitude of the energy use observed in the billing data history. In some cases, it may not be possible to achieve this calibration goal because of idiosyncrasies of particular facilities (e.g., multiple buildings, discontinuous occupancy patterns, etc.).

Once the analysis model has been calibrated for a particular facility, there are three steps in our procedure for calculating estimates of energy savings for HVAC measures installed or to be installed at the facility.

- First, we perform an analysis of energy use at a facility under the assumption that the energy efficiency measures are not installed.
- Second, we analyze energy use at the facility with all conditions the same but with the energy efficiency measures now installed.
- Third, we compare the results of the analyses from the preceding steps to determine the energy savings attributable to the energy efficiency measure.

Following this, ADM determines peak kW savings by examining the reduction observed in the summer peak provided in the Typical Meteorological Year (TMY) dataset. The time picked is set to match the conditions under which SPS observes its typical system peaks.

4.10.1.2 EFLH Calculations

For simpler cooling measures, including Package Terminal Heat Pumps (PTHPs) and Roof Top Units (RTUs), ADM applies deemed EFLH values along with specifications of installed capacity and efficiency in evaluating savings. The general form through which kWh savings are calculated in this manner is:

Parameters for this equation are defined in Table 4-18 below.

Table 4-18 Parameters for kWh Savings Calculation of HVAC Retrofits

Parameter	***Definition***
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
EFLH	Equivalent Full Load Hours (Encompassing both heating and

	cooling hours in cases of heat pumps)

EFLH values are provided in SPS' technical assumptions for business cooling measures. ADM tests these values via DOE-2 simulation modeling of archetypical building types using Roswell NM TMY weather data, and revises EFLH by facility type where appropriate. Following this, ADM calculates peak kW savings by the following equation:

EER is used in peak demand calculations as it reflects unit efficiency during peak weather conditions.

4.10.2 Business Cooling Efficiency Net Savings Estimates

Net savings for the BCEP are estimated in the same manner as detailed in Section 4.9.2 for the Business Lighting Efficiency Program.

4.11 BUSINESS CUSTOM EFFICIENCY

The Business Custom Efficiency Program provides incentives for measures that fall outside the scope of other SPS programs. Measures rebated through the Custom Efficiency Program in 2010 include:

- Pump-Off Controllers for Oil Well Applications; and
- Window Glazing

Gross savings analyses for these measures are inherently project-specific, and as such the subsections to follow will detail how savings for each measure type were calculated.

4.11.1 Gross Savings for Pump-Off Controllers

The 2010 BMEP provided two rebates to two customers for the installation of SAMS Pump-Off Controllers on oil well pumps. The two rebates covered a span of seven pump-off controller installations in which all of the wells were considered retrofit with a time clock baseline.

In order to calculate the annual energy savings attributed to the installation of the pump-off controllers, ADM relied on a sample of pre and post power monitoring to obtain typical operating profiles. When pre and post monitoring were available, annual savings estimates were determined by extrapolating pre and post monitoring periods to a typical year profiles. Annual energy savings were calculated by subtracting the as-built annual profile from the baseline annual profile.

At a small percentage of the oil well locations, pre-power monitoring was unavailable due to the pump-off controllers already being installed. In these instances ADM used pre-monitoring data from metered wells, normalized to the following well characteristics:

- Nipple depth;
- Motor Horsepower; and
- Motor Efficiency.

This allowed ADM to extrapolate the baseline profile of the well at hand. Annual energy savings were calculated by subtracting the as-built annual profile from the baseline annual profile.

4.11.2 Gross Savings for Window Glazing

The 2010 BMEP provided one rebate to a customer for the installation of high performance window glazing. In order to determine the annual savings, ADM performed an engineering review of the calculation methods used by the implementer. The implementer used heat transfer analysis in conjunction with extrapolated solar heat gain factors provided by ASHRAE, which are based upon the location's latitude. Temperature bin calculations were used to determine the reduction in heat conduction while the solar heat gain factors where used to calculate the reduction in radiation heat gain. The method used by the implementer was very concrete in their assumptions and closely mirrored those normally used by ADM for window glazing savings estimates.

4.11.3 Business Custom Efficiency Net Savings Estimates

Net savings for the Business Custom Efficiency Program are estimated in the same manner as detailed in Section 4.9.2 for the Business Lighting Efficiency Program.

4.12 BUSINESS MOTOR & DRIVE EFFICIENCY

Evaluation of the Business Motor & Drive Efficiency Program (BMEP) requires the following:

- Stratified random sampling, selecting large saving sites with certainty;
- Review of deemed savings parameters; and
- Onsite verification inspections;

Parameters required for evaluating savings from the BMEP are detailed in Table 4-19 below.

Table 4-19 Data Sources for Gross Impact Parameters – Business Motor & Drive Efficiency Program

Parameter	**Source**
Project Details	Program Tracking Data
Load Factor	SPS deemed values & one-time readings for simple applications, power metering for larger, complicated applications.
Equipment Specifications (Size, Efficiency, etc.)	Manufacturer's Literature
Equivalent Full-Load Hours for HVAC Pumps & Ventilation Fans (EFLH)	SPS Deemed values, reviewed by ADM through simulation of archetypical facilities with Roswell NM TMY Weather Data
Hours of Operation for Industrial Motors & Drives	SPS deemed values for simple applications, end-use metering & facility staff interviews for

	complicated applications
Effective Useful Life	Comparison against CA DEER values
Net-to-Gross Ratio (NTGR)	Participant Surveying

4.12.1 Business Motor & Drive Efficiency Gross Savings Estimates

The 2010 BMEP provided rebates to participating facilities for projects including:

- NEMA Premium Efficiency Motors;
- Variable Frequency Drives (VFDs) for Air Handler Units (AHUs) in HVAC Applications; and
- VFDs in industrial pumping applications.

4.12.1.1 Gross Savings for NEMA Premium Efficiency Motors

The 2010 BMEP provided eight rebates to five customers for installation of NEMA Premium Efficiency Motors. Three of these motors were new construction applications and the remaining five motors were replacements. Savings from NEMA Premium Efficiency Motors are calculated as:

$$Annual\ kWh\ Savings = HP \times LF \times .746\ {}^{kW}/_{HP} * \left(\frac{1}{Eff_{std}} - \frac{1}{Eff_{prem}}\right) * Hrs$$

Parameters for this equation are detailed in Table 4-20 below.

Table 4-20 Parameters for kWh Savings Calculation of Premium Efficiency Motor Retrofits

Parameter	Definition
HP	Motor Horsepower
LF	Load Factor
Eff_{std}	Efficiency Rating of a Standard Efficiency Motor of the Specified HP
Eff_{prem}	Efficiency Rating of a Premium Efficiency Motor of the Specified HP
Hrs	Hours of Operation Per Year

Following this, peak demand (kW) reduction is calculated. Peak Coincident Factors for NEMA Premium Efficiency Motors are taken from SPS technical assumptions, which ADM determined to be reasonable estimates of PCF. Demand savings are calculated as:

$$Peak\ kW\ Savings = HP \times LF \times .746\ {}^{kW}/_{HP} * \left(\frac{1}{Eff_{std}} - \frac{1}{Eff_{prem}}\right) * PCF$$

4.12.1.2 Gross Savings for HVAC VFDs

The 2010 BMEP had one participating facility file two separate rebate applications for VFDs on air handler fans. The two rebates encompassed a total of 18 VFDs. Savings from VFDs are calculated as:

$$Annual\ kWh\ Savings = HP \times LF \times .746\ {}^{kW}/_{HP} * \left(\frac{1}{Eff_{std}}\right) * Hrs * \%_{Savings}$$

Parameters for this equation are detailed in Table 4-21 below.

Table 4-21 Parameters for kWh Savings Calculation of Premium Efficiency Motor Retrofits

Parameter	Definition
HP	Motor Horsepower
LF	Load Factor
Eff_{std}	Efficiency Rating of a Standard Efficiency Motor of the Specified HP
Hrs	Hours of Operation Per Year
$\%_{savings}$	Average Savings Achieved by the VFD

Following this, peak demand (kW) reduction is calculated. Peak Coincident Factors for VFDs are taken from SPS technical assumptions, which ADM determined to be reasonable estimates of PCF. Demand savings are calculated as:

$$Peak\ kW\ Savings = HP \times LF \times .746\ {}^{kW}/_{HP} * \left(\frac{1}{Eff_{std}} - \right) * \%_{savings} * PCF$$

4.12.1.3 Gross Savings for VFDs in Industrial Applications

The 2010 BMEP had one participating customer file three separate rebate applications for VFDs on oil well pumps. All three VFD installations occurred on a more efficient type of oil well pump referred to as a Rotaflex, compared to a conventional beam style pump In order to calculate the savings due to the VFD, ADM used post installation monitoring data obtain from monitoring equipment installed on the well. The baseline consumption used monitoring data from a SAMs equipped beam pump with the annual consumption reduced by 20%, due to manufacturers claimed savings for a Rotaflex versus a standard beam pump. ADM normalized the baseline monitoring data from the beam pump to the seating nipple depth, horsepower and motor efficiency. This was then extrapolated to that of the installed Rotaflex well to ensure physical characteristics were taken into consideration. Annual energy savings were calculated by subtracting the as-built annual profile from the baseline annual profile.

However, due to the manner in which the VFDs were configured to operate on the Rotaflex pumps caused a very low or negative realization rate. In the baseline configuration of being controlled by a pump-off controller the well is shut down when the pumping efficiency is not in an optimum state. The addition of the VFD causes the VFD to significantly ramp down in these periods but not stop to pump. Due to the pump continuing to run during this period causes an increase in annual energy consumption thus a negative savings.

4.12.1 Business Motor & Drive Efficiency Net Savings Estimates

Net savings for the Business Motor & Drive Efficiency Program are estimated in the same manner as detailed in Section 4.9.2 for the Business Lighting Efficiency Program.

4.13 SMALL BUSINESS LIGHTING

The Small Business Lighting Program (SBLP) provides rebates to customers for energy efficient lighting & controls measures, similar to the manner that the standard Business Lighting Efficiency Program provides them. The program differs in having SPS trade allies providing outreach to recruit businesses to the program, as small business customers are traditionally unlikely to participate in standard rebate programs. The 2010 SBLP had 51 participants file 71 rebate applications. Gross and net savings for the SBLP are evaluated in the same manner as detailed for the Business Lighting Efficiency Program in Section 4.9.

4.14 COST EFFECTIVENESS TESTING

In evaluating the 2010 SPS DSM Portfolio, ADM performed cost-effectiveness testing at the program and portfolio levels. ADM estimates cost-effectiveness using the Total Resource Cost (TRC) test, incorporating benefits and costs attributable to both SPS and program participants. The TRC test is defined as:

$$TRC = \frac{\text{Electic Cost Decrease} + \text{Capacity Credit} + \text{NonElectric Cost Decrease}}{\text{Net Customer Investment} + \text{Utility Administrative Costs}}$$

The parameters for this equation are defined in Table 4-22 below.

Table 4-22 Parameters for TRC Testing

Parameter	Definition
UEPCD	Utility Electric Cost Decrease: The Net Present Value (NPV) of avoided production costs. Estimated by taking NPV of net kWh savings multiplied by $/kWh production costs over the life of the measure.
UGCC	Utility Generation Capacity Credit: The NPV of avoided capacity expansion costs. Estimated by taking NPV of net demand reduction multiplied by $/kW capacity expansion costs over the life of the measure.
NEACD	Non-Electric Acquisition Cost Decrease: NPV of gas savings created incidentally by electric DSM programs (from measures such as weatherization, low-flow showerheads, etc.). Estimated by taking NPV of net Therms savings multiplied by $/Therm of gas production/distribution by gas utilities serving the SPS territory.
NCI	Net Customer Investment: Net incremental costs accrued by program participants. Estimated by taking total measure-level incremental costs and multiplying by Net-to-

	Gross Ratio, as costs paid by free-riders would have occurred absent the program. For give-away programs, the incremental cost of equipment paid by the utility is substituted for this value as participant costs are $0 in such programs.
UAC	Utility Administrative Costs: Costs accrued by SPS for running the program. Costs include internal administration costs, marketing, and third-party implementation costs. Rebates are not considered a cost as they represent transfer payments from SPS to program participants.

In evaluating benefits, low income programs are assigned a 20% increase to account for added economics benefits provided to the low income sector. In 2010, this affects SPS' Low Income Program.

4.14.1 Program Administrator Cost Test

The PAC is defined as:

$$PAC = \frac{\text{Electric Cost Decrease} + \text{Capacity Credit} + \text{NonElectric Cost Decrease}}{\text{Utility Equipment Expenditures} + \text{Utility Administrative Costs}}$$

Most terms in this equation are defined and calculated in the same manner as the components of the TRC test. Where the PAC test differs, however, is in costs applied. The TRC test treats rebates as a transfer payment; it is simultaneously a cost to the utility and a benefit to the participant, and as such its impact ton TRC is neutral. The PAC is focused on the costs the sponsoring utility incurs in running a program, and as such rebate payments are included in the cost side of the equation. Net Customer Investment (NCI) is not factored in, as this cost is external to the utility. In giveaway programs, such as the Low Income CFL & Refrigerator Program, Utility Equipment Expenditures (UEE) will be equal in value to NCI, as the "rebate" (100% of the measure incremental cost) is paid in full by the utility, and thus the NCI is paid by SPS.

5. Impact Results by Program

This chapter provides a summary of the evaluation results for each program and recommendations by ADM for the 2010 program year.

5.1 RESIDENTIAL AIR SOURCE HEAT PUMPS

To evaluate savings from the 2010 RASHP rebate program, ADM

- Validated deemed savings methodologies; and
- Conducted verification surveys.

Savings for the heat pumps are calculated using the ENERGY STAR heat pump calculator. ADM revised the calculator to use an equivalent full load hours value of 1,057, in line with the residential cooling demand figure used by SPS in other cooling programs.

5.1.1 Air Source Heat Pumps Gross Savings Estimates

Savings from Air-Source Heat Pumps are highly dependent upon unit tonnage. In forecast assumptions, SPS assumes average unit tonnage of 3.5. Figure 5-1 below presents the distribution of program participants in 2010 by tonnage. Average tonnage of participating units was 3.53, with a median tonnage of 4. As such, the distribution is positively skewed, so overall per-unit savings are closer to expected values due to the composition of units rebates, despite a reduction in EFLH for cooling.

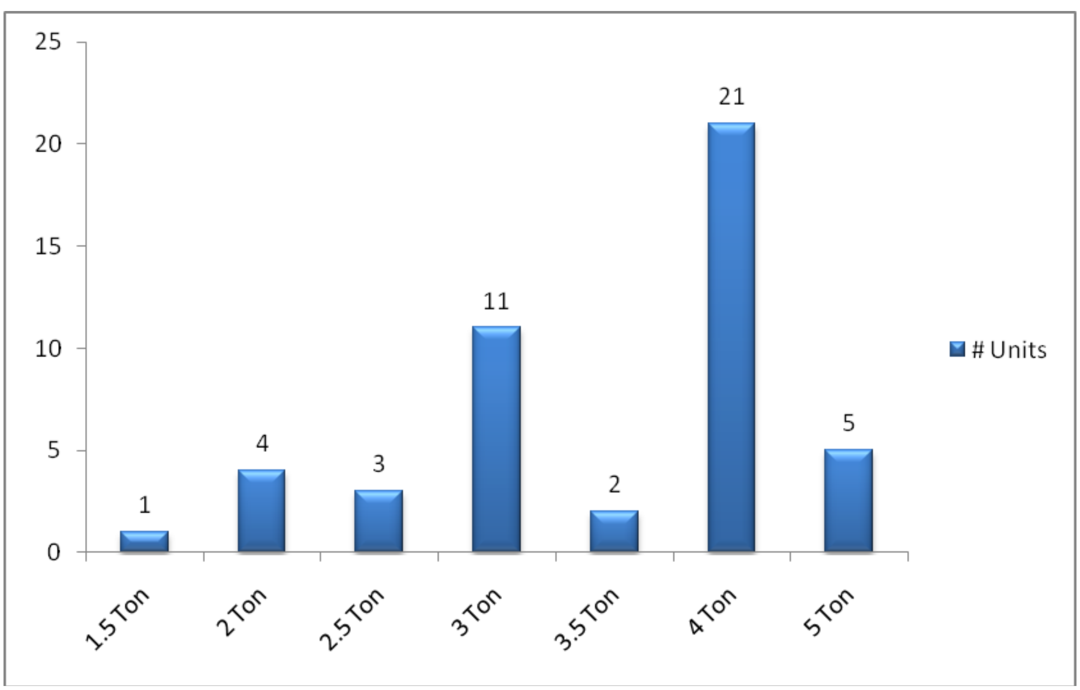

Figure 5-1 2010 Air-Source Heat Pump Tonnage Distribution

ADM verified installation of heat pumps through telephone surveys with program participants. The required sample for 90/10 precision would have been 27 surveys. This was not reachable, however, due to the small participation population. ADM was able to complete 15 surveys, which provides precision of +/- 18%. The resulting gross realization from ADM's evaluation is presented in Table 5-1 below.

Table 5-1 Residential Air Source Heat Pumps Gross Realization Summary

Measurement	Expected Gross Savings	Realized Gross Savings	Gross Realization Rate
Energy (kWh)	89,914	80,657	90%
Demand (kW)	20.7	20.7	100%

5.1.2 Air-Source Heat Pumps Net-to-Gross Evaluation

To obtain net savings for the 2010 RASHP, ADM surveyed program participants to develop estimates of free-ridership. As detailed in Section 4.1.3, developing free-ridership estimates for the RASHP is dependent upon survey questions addressing financial ability, prior planning, importance of the rebate in decision making, and likelihood of installing similar equipment absent the program. Table 5-2 through Table 5-5 below summarizes the Reponses to questions addressing free-ridership for the 2010 RAHSP.

Table 5-2 RASHP Financial Ability Results

Component	Question	Yes	No
Financial Ability	Question 13: Would you have been able to purchase the high efficiency heat pump if the rebates offered through the program were not available?	87%	13%

Table 5-3 RASHP Prior Planning Results

Component	Question	Yes	No	Before	Same Time	After
Prior Planning	Question 4: Did you have specific plans to install the efficient heat pump before you talked with anyone about the Residential Air Source Heat Pump Rebate Program?	60%	40%	-	-	-
	Question 14: If SPS had not paid a portion of the equipment cost, would you have purchased the same equipment within one year of when it was installed?	87%	13%	-	-	-
	Question 6: When did you become aware of the rebate SPS offered for purchasing higher efficiency heat pumps?	-	-	13%	20%	67%

Table 5-4 RASHP Importance of Rebate Results

Component	Question	Indicated Rebate	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 5: What factors motivated you to install the high efficiency air-source heat pump through this program in 2010?	27%	-	-	-	-
	Question 9: How important was SPS's rebate in your decision to buy the high efficiency air-source heat pump?	-	7%	33%	20%	40%

Table 5-5 RASHP Behavior Absent Program Results

Component	Question	Changed Equipment	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 11: Did you have to change the quantity of equipment or the efficiency level of equipment you installed in order to qualify for the program's available rebate?	13%	-	-	-	-
	Question 12: If you had not been able to receive the rebate through the Residential Air-Source Heat Pump Rebate Program, how likely is it that you would have installed the same equipment anyway?	-	66%	20%	7%	7%

The resulting NTGR for this program was 53%. The volume of surveys was not sufficient to obtain 90/10 precision, due to the limited population of participants. However, the Net-to-Gross ratio determined for this program was different to such a magnitude that even with +/- 18% precision, the results allow for the rejection of the null hypothesis of 100% NTGR used by SPS in ex ante estimates.

Tracking data was significantly improved in the 2010 program year when compared to 2009, as it included complete unit data, allowing for ADM to easily recreate savings calculations. Additionally, the program was showing increased uptake in 2010. However, due to failing TRC testing, the RASHP program was cancelled in February 2010. The participation listed was from those two months. Following the cancellation, rebates for Air-Source Heat Pumps were provided as part of the Home Energy Services program, though there was no uptake of this measure through the HES Program in 2010.

5.2 RESIDENTIAL EVAPORATIVE COOLING REBATES

To evaluate savings from the 2010 RECP rebate program, ADM

- Validated deemed savings methodologies;
- Conducted on-site verifications; and
- Conducted verification surveys.

Savings attributable to evaporative cooling are calculated using the methodology detailed in Section 4.2.3. The results of these efforts are presented in the subsections to follow. The resulting gross realization from ADM's evaluation is presented in Table 5-6 below.

Table 5-6 Residential Evaporative Cooling Gross Realization Summary

Measurement	Expected Gross Savings	Realized Gross Savings	Gross Realization Rate
Annual Energy (kWh)	723,800	431,164	60%
Demand (kW)	489	378	78%
Lifetime Energy (kWh)	7,238,000	44,311,638	60%

Additionally, ADM estimated free-ridership and the NTGR for the RECP. ADM's aggregate estimate of NTGR was 69%, split between 62% for window and 79% for central evaporative coolers. Net savings are presented in Table 5-7 below.

Table 5-7 Residential Evaporative Cooling Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	424,280	297,317	68%
Demand (kW)	294	262	89%
Lifetime Energy (kWh)	4,342,800	2,973,170	68%

5.2.1 Evaporative Cooling Gross Savings Estimates

Savings from evaporative coolers are dependent upon unit size and configuration (window vs. central cooling). ADM developed a gross savings methodology for evaporative coolers based upon motor size and the equivalent AC size. Annual consumption of a baseline AC system was calculated as:

$$AC\ kWh = Tons * \frac{12}{SEER} * EFLH$$

Where,

Tons = Unit Tonnage

SEER = 13 for central air conditioners, 10 for window air conditioners

EFLH = Equivalent Full Load Hours, 1,056

Peak kW for air conditioners was calculated as:

$$AC\ Demand\ (kW) = Tons * \frac{12}{EER} * PCF$$

Where,

Tons = Unit Tonnage

EER = 11 for central air conditioners, 9.8 for window air conditioners

PCF = Peak Coincident Factor of equipment, .93

Following this, ADM calculated energy and demand for the equivalent sized evaporative coolers. Annual energy use of an evaporative cooler was calculated as:

$$Evap\ kWh = Motor\ HP * LF * .746\ {}^{kW}/_{HP} * {}^{EFLH}/_{Motor\ Efficiency}$$

Where,

Motor HP = Motor Horsepower of evaporative cooler

LF = Load Factor, 100%

.746 kW/HP = Conversion from HP to kW

EFLH = Equivalent Full Load Hours, 1,056

Motor Efficiency = .8

Following this, peak kW for evaporative coolers was calculated as:

$$Evap\ Demand\ (kW) = Motor\ HP * LF * .746\ {}^{kW}/_{HP} * {}^{PCF}/_{Efficiency}$$

Where,

Motor HP = Motor Horsepower of evaporative cooler

LF = Load Factor, 100%

.746 kW/HP = Conversion from HP to kW

PCF = Peak Coincident Factor of equipment, .93

Motor Efficiency = .8

The results of this are presented in Table 5-8 below.

Table 5-8 Evaporative Cooler Revised Baseline by Unit Size

Evap Cooler Motor Size (HP)	Baseline AC Tons	kWh of Evaporative Cooler	kWh of Equivalent AC System	kWh Savings	kW of Evaporative Cooler	kW of Equivalent AC System	kW Savings
1/8	1	123	1,267	1,144	.11	1.12	1.01
1/3	1.75[13]	325	1,706	1,381	.29	1.50	1.22
½	2	493	1,950	1,457	.43	1.72	1.28
¾	2.5	739	2,437	1,698	.65	2.15	1.50
1	3	986	2,924	1,939	.87	2.58	1.71

As a result, the savings were determined in large part to the distribution of size of rebated evaporative coolers. Figure 5-2 below summarizes the distribution by unit HP.

[13] Weighted tonnage between 1.5 and 2-ton units

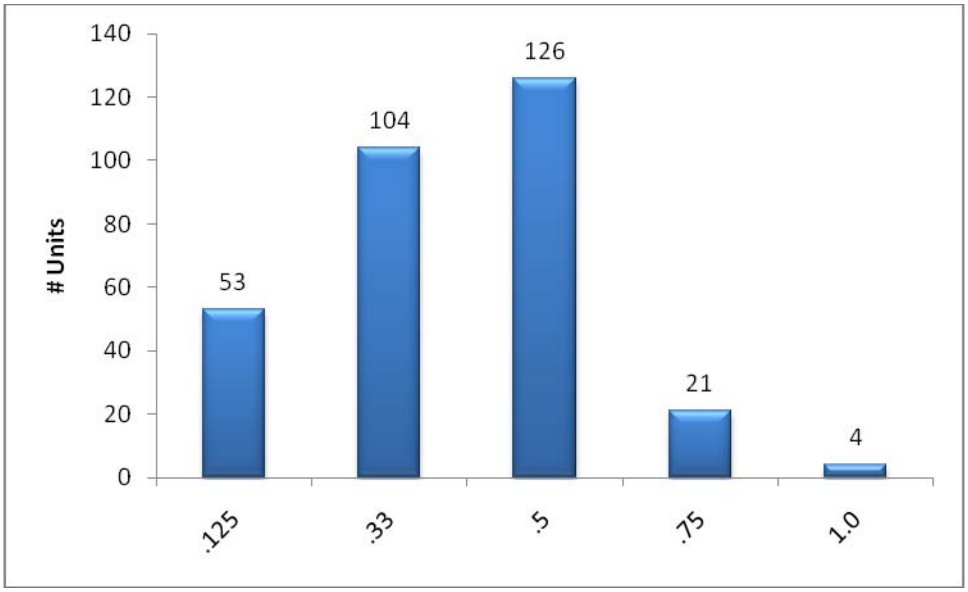

Figure 5-2 Residential Evaporative Cooling HP Distribution

Average HP was .40, significantly higher than the .125 value applied by SPS in deemed forecast assumptions.

To verify installation, ADM conducted 15 onsite verification inspections each of central and window evaporative coolers. Additionally, a total of 83 participant surveys were conducted, verifying installation and collecting data used in net-to-gross evaluation.

5.2.2 Evaporative Cooling Net-to-Gross Evaluation

To obtain net savings for the 2010 RECP, ADM surveyed program participants to develop estimates of free-ridership. As detailed in Section 4.2.3, developing free-ridership estimates for the RECP is dependent upon survey questions addressing what system was pre-existing, prior planning, importance of the rebate in decision making, and likelihood of installing similar equipment absent the program.
Table *5-9* through
Table *5-12* below summarize the responses to questions addressing free-ridership for the 2010 RECP for window evaporative coolers.

Table 5-9 RECP Window Unit Pre-Existing System Results

Component	Question	Window Evap	Window AC	None
Pre-Existing System	Question 3: What type of cooling system did you have before this unit?	59%	22%	19%

Table 5-10 RECP Window Unit Prior Planning Results

Component	Question	Yes	No	Before	Same Time	After
Prior Planning	Question 4: Did you have specific plans to install the evaporative cooler before you talked with anyone about the Residential Evaporative Cooling Rebate Program?	56%	44%	-	-	-
	Question 6: When did you become aware of the rebate SPS offered for purchasing evaporative coolers?	-	-	16%	64%	20%

Table 5-11 RECP Window Unit Importance of Rebate Results

Component	Question	Indicated Rebate	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 2: Why did you decide to purchase an evap cooler?	4%	-	-	-	-
	Question 5: What factors motivated you to install the evaporative cooler through this program in 2010?	47%	-	-	-	-
	Question 9: How important was SPS's rebate in your decision to purchase the evaporative cooler?	-	57%	24%	13%	6%

Table 5-12 RECP Window Unit Behavior Absent Program Results

Component	Question	Would Purchase AC	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 11: If you had not been able to receive the rebate through the Residential Evaporative Cooling Rebate Program, how likely is it that you would have installed the same equipment anyway?	-	53%	29%	12%	6%
	Question 13: If you had not been able to receive the rebate through the Evaporative Cooling Rebate Program, would you have purchased a window air conditioner instead?	43%	-	-	-	-

As a result of this analysis, ADM determined a NTGR of 62% for window evaporative coolers. ADM conducted a separate survey for central evaporative coolers, with the results presented in Table 5-13 through Table 5-16 below.

Table 5-13 RECP Central Unit Pre-Existing System Results

Component	Question	Window Evap	Central Evap	Window AC	Central AC	None
Pre-Existing System	Question 3: What type of cooling system did you have before this unit?	9%	58%	3%	12%	18%

Table 5-14 RECP Central Unit Prior Planning Results

Component	Question	Yes	No	Before	Same Time	After
Prior Planning	Question 4: Did you have specific plans to install the evaporative cooler before you talked with anyone about the Residential Evaporative Cooling Rebate Program?	56%	44%	-	-	-
	Question 6: When did you become aware of the rebate SPS offered for purchasing evaporative coolers?	-	-	38%	47%	15%

Table 5-15 RECP Central Unit Importance of Rebate Results

Component	Question	Indicated Rebate	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 2: Why did you decide to purchase an evap cooler?	3%	-	-	-	-
	Question 5: What factors motivated you to install the evaporative cooler through this program in 2010?	50%	-	-	-	-
	Question 10: How important was SPS's rebate in your decision to purchase the evaporative cooler?	-	56%	17%	17%	10%

Table 5-16 RECP Central Unit Behavior Absent Program Results

Component	Question	Would Purchase AC	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 14: If you had not been able to receive the rebate through the Residential Evaporative Cooling Rebate Program, how likely is it that you would have installed the same equipment anyway?	-	44%	29%	18%	9%
	Question 15: If you had not been able to receive the rebate through the Evaporative Cooling Rebate Program, would you have purchased a central air conditioner instead?	44%	-	-	-	-

	Question 16: If you had not been able to receive the rebate through the Evaporative Cooling Rebate Program, would you have purchased a window air conditioner instead?	16%	-	-	-	-

With this, the NTGR for centrally ducted units was estimated at 79%. Given the mix of window and central evaporative coolers rebated through the program, the overall NTGR was estimated at 70%. This value was applied in discounting program kW, kWh, and lifetime kWh savings.

5.3 RESIDENTIAL HOME ENERGY SERVICES

To evaluate savings from the HESP, ADM used 2009 participant data along with pre- and post-retrofit billing data to develop a regression model to be used to forecast savings from 2010 participants that received duct sealing or infiltration control improvements. Program-level realization by measure category is summarized in Table 5-17 below.

Table 5-17 Home Energy Services Gross Realization Summary

Measure	Peak Demand Reduction (kW)		Annual Energy Savings (kWh)		EUL	Lifetime Energy Savings (kWh)		Realization Rate
	Ex Ante	Ex Post	Ex Ante	Ex Post		Ex Ante	Ex Post	
Duct Sealing & Infiltration Control	4,831	3,604	14,660,439	10,936,550	10	146,604,387	109,365,500	75%
Low-Flow Showerheads	0	0	70,844	70,844	10	708,440	708,440	100%
Ceiling Insulation	4.2	1.1	11,205	5,403	20	224,100	108,060	48%
Total	4,835	3,605	14,742,488	11,012,797	-	147,681,927	110,182,000	75%

5.3.1 Home Energy Services Gross Savings Estimates

ADM evaluated gross savings estimates for each measure type installed through the 2010 HESP. Measures installed in 2010 included:

- Duct sealing;
- Infiltration control;
- Ceiling insulation; and
- Low-flow showerheads.

5.3.1.1 Gross Savings Estimates – Duct Sealing & Infiltration Control

Gross savings estimates for duct sealing and infiltration control measures were evaluated via regression modeling of 2009 program participants. ADM used a census of 2009 participants and modeled monthly kWh from SPS billing data along with local weather data, and then applied this model to the 2010 participants. Discerning at what precise data each participant was retrofitted was problematic, and as such ADM used 2008 data as a pre-retrofit baseline and 2010 data for the post-retrofit condition. ADM developed three models, representing homes that received duct sealing only, infiltration control only, or both measures. The parameters and there values are detailed in Table 5-18 below.

Table 5-18 Weatherization Regression Model Coefficients

Group	R-Square	N	Parameter	Estimate	Standard Error	T-Value	PR >T
Duct Sealing & Infiltration Control	.59	17,630	Cooling Degree Days (CDD)	2.13	.11	18.89	.001
			Heating Degree Days (HDD)	.38	.07	5.17	.001
			Electric Heat*CDD	-.02	.12	-.18	.861
			Electric Heat*HDD	1.21	.08	15.06	.001
			Post	-326.19	42.21	-7.73	.001
			CDD*Post	.46	.12	3.78	.001
			HDD*Post	.36	.08	4.55	.001
			Electric Heat*CDD*Post	-.08	.08	-.99	.324
			Electric Heat*HDD*Post	-.17	.05	-3.24	.001
Duct Sealing Only	.61	4,055	Cooling Degree Days (CDD)	1.96	.26	7.62	.001
			Heating Degree Days (HDD)	.30	.17	1.82	.068
			Electric Heat*CDD	.07	.28	.25	.803
			Electric Heat*HDD	1.67	.18	9.16	.001
			Post	-390.08	93.33	-4.18	.001
			CDD*Post	.80	.27	2.96	.003
			HDD*Post	.45	.18	2.50	.012
			Electric Heat*CDD*Post	-.33	-.18	-1.84	.066
			Electric Heat*HDD*Post	-.17	.12	-1.45	.148
Infiltration Control Only	.57	4,782	Cooling Degree Days (CDD)	1.93	.19	10.16	.001
			Heating Degree Days (HDD)	.44	.12	3.56	.001
			Electric Heat*CDD	.09	.22	.40	.688
			Electric Heat*HDD	.86	.14	6.14	.001
			Post	-345.28	75.77	-4.56	.001
			CDD*Post	.48	.21	2.24	.025
			HDD*Post	.34	.14	2.42	.016
			Electric Heat*CDD*Post	.02	.14	.12	.907
			Electric Heat*HDD*Post	-.13	.09	-1.46	.143

5.3.1.2 Gross Savings Estimates – Low Flow Showerheads

ADM reviewed and validated deemed savings estimates for low flow showerheads in the 2009 program year for SPS. A deemed value of 398 kWh is applied to installed showerheads.

5.3.1.3 Gross Savings Estimates – Ceiling Insulation

To calculate gross savings estimates from ceiling insulation, ADM developed calculators based upon SPS billing data, separating out average heating and cooling electric loads from fixed "base-load" (lighting, plug loads, etc.), via comparison of heating and cooling months to shoulder months, in which heating and cooling loads are minimal. From this, ADM then calculates savings based upon:

- Pre-existing R-value;
- Installed R-value;
- Heating type (gas, electric, heat pump); and
- Square footage.

The resulting analysis provided 48% realization. ADM concludes that this is likely due to ex ante estimates failing to account for the R-value of the roof itself when determining savings.

5.3.2 Home Energy Services Net Savings Estimates

The HESP provided training and certification to contractors to perform duct sealing and infiltration control services. Prior to the training of SPS trade allies, these services were not available within SPS service territory. To evaluate free-ridership, ADM thus took the approach of interviewing the participating contractors, in order to address whether:

- They had experience in providing these services prior to joining the program; and
- They had plans to obtain certification for these services prior to participation.

ADM interviewed four participating contractors in the HESP, and based upon these interviews, ADM has concluded that participating contractors would not have obtained the necessary certifications for duct sealing and infiltration control work absent the program. With that, ADM is applying the ex ante NTGR of 93%. This is applied in discounting program kWh, kW, and lifetime kWh savings. The resulting net savings are presented in Table 5-19 below.

Table 5-19 Home Energy Services Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	13,710,514	10,241,901	75%
Demand (kW)	4,497	3,352	75%
Lifetime Energy (kWh)	137,209,342	102,469,260	75%

5.4 HOME LIGHTING & RECYCLING

ADM estimated savings from the HL&R Program by surveying a sample of program participants to determine installation rate, hours of use (via data collection on the room of installation), and net-to-gross ratio. ADM exceeded the sample size needed for 90/10 precision in surveying 120 respondents, as the marginal cost of an increased survey effort was relatively low and provided a significant pool of data to provide gross and net savings estimates. Table 5-20 below presents gross realization for the 2010 Home Lighting & Recycling Program.

Table 5-20 Home Lighting & Recycling Gross Realization Summary

Measurement	Expected Gross Savings	Realized Gross Savings	Gross Realization Rate
Annual Energy (kWh)	11,574,628	9,810,607	85%
Demand (kW)	1,195	1,120	94%
Lifetime Energy (kWh)	87,967,173	68,674,248	78%

Additionally, ADM estimated free-ridership for the HL&R Program via participant surveying, obtaining a value of 80% for the NTGR. This value was applied in discounting program savings, and the net savings results are presented in

Table 5-21 Home Lighting & Recycling Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	9,606,941	7,848,485	82%
Demand (kW)	992	896	90%
Lifetime Energy (kWh)	87,967,173	73,012,753	75%

The results of ADM's evaluation effort are detailed in the subsections to follow.

5.4.1 Database Review

The 2010 HL&R program distributed CFLs in two channels:

- Retail buydowns; and
- Direct distribution.

The program distributed a total of 149,851 CFLs via retail buydowns and 88,298 through direct distribution. ADM first examined the tracking database for systemic entry errors for each channel, i.e., duplicate entries and/or erroneous entries (such as data entered into improper columns). We found many instances of the tracking data assigning incorrect wattages or quantities to different CFL SKU numbers in the retail channel. We researched each individual SKU type sold through the program and provided the results of our research to SPS, and the database was updated and corrected accordingly. Figure 5-3 below presents a summary of CFLs sold and distributed through the 2010 HL&R Program.

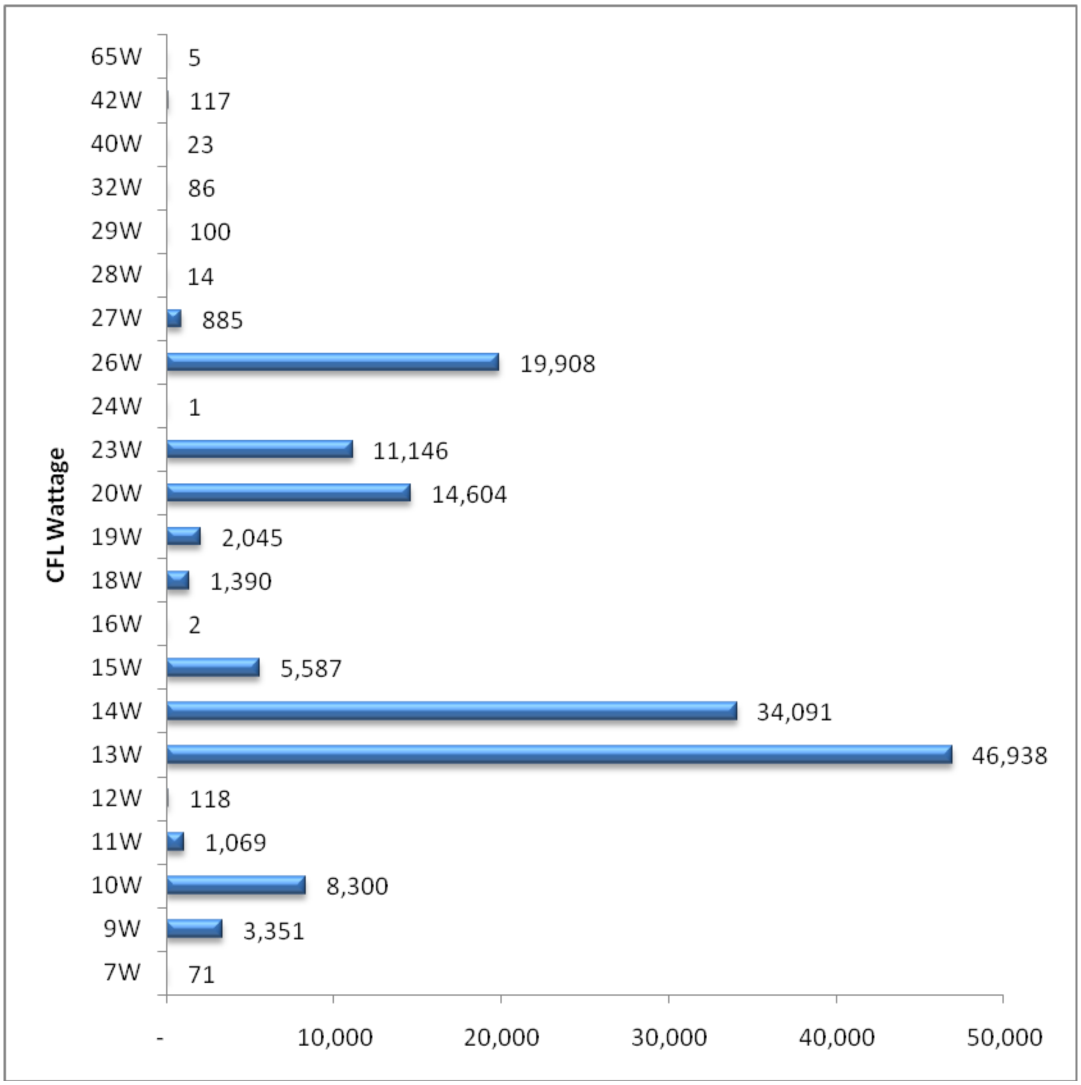

Figure 5-3 Home Lighting & Recycling Summary of Distribution by Wattage

5.4.2 Home Lighting & Recycling Gross Savings Estimates

Gross savings estimates for residential CFLs require the following parameters:

- Baseline wattage;
- Installation rate; and
- Hours of use

5.4.2.1 Baseline Wattage

Baseline wattage is dependent upon CFL wattage and configuration, i.e., spiral, flood, globe, or candelabra. ADM researched each SKU number listed in the program tracking data to find the appropriate baseline for the model. These results are presented in Table 5-22 below.

Table 5-22 CFL Baseline Wattage Table

CFL Wattage	CFL Configuration	Ex Ante Baseline Wattage	Ex Post Baseline Wattage
7	Spiral	40	25
7	Candelabra	40	40
9	Spiral	40	40
9	A-Lamp	40	40
9	Globe	40	40
10	Spiral	40	40
11	Globe	40	40
11	Candelabra	40	40
11	Flood	40	50
12	Globe	40	60
13	Spiral	60	60
13	Candelabra	60	60
14	Spiral	60	60
14	A-Lamp	60	60
14	Flood	60	65
15	Globe	60	60
15	Spiral	60	60
15	Flood	60	65
16	Flood	60	65
18	Spiral	75	75
18	Flood	75	90
19	Spiral	75	75
20	Spiral	75	75
23	Spiral	75	75
23	Spiral	75	100[14]
23	Flood	75	90
24	Spiral	100	100
26	Spiral	100	100

[14] Higher lumen output CFLs

26	Flood	100	120
27	Spiral	100	100
28	Spiral	100	100
29	Spiral	100	100
32	Spiral	150	150
40	Spiral	150	150
42	Spiral	150	150
65	Spiral Grow-Light	150	300

5.4.2.2 Installation Rate

Installation rate of CFLs is determined via surveying of lighting purchasers, asking how many have been installed and how many are intended to be installed in the coming month. These values were summed and then divided by total CFLs purchased in determining the overall program installation rate. From this, ADM determines two installation rates:

- Installation rate for retail CFLs;
- Installation rate for distributed CFLs.

ADM determined an installation rate of 85% for distributed CFLs. For retail CFLs, ADM is applying an installation rate of 96% in accordance with prior evaluations of retail lighting programs, in that long-term (within the first year), the bulk of purchased CFLs are installed..

5.4.2.3 Hours of Use

SPS determines hours of use for residential CFLs by examining:

- Number of lamps available by room type;
- Hours of use by room type; and
- Number of lamps purchased per customer

The assumption was that CFLs would enter highest-us areas first. This assumption does not always hold, however, as in many cases customers may install in lower-use areas first. This can occur for a variety of reasons, but two common reasons are:

- Lack of eligible fixtures in higher-use rooms; and
- Incandescent lighting burning out in low-use rooms.

It is common for residential customers to wait until burnout to replace lighting, and it is not always the high-use areas which burn out first. ADM determined an appropriate hours of use estimate based upon the room of installation as indicated by survey respondents.

In a 2009 study of California by KEMA[15], CFL use was monitored in statistically significant samples by room type, with the resulting average daily hours of operation by room type summarized in Table 5-23 below.

Table 5-23 Daily Hours of Operation by Room Type – KEMA Study

Room Type	CFL Hours Per Day
Kitchen	3.5
Living Room	3.3
Outdoor	3.1
Family Room	2.5
Garage	2.5
Bedroom	1.6
Bathroom	1.5
Hall/Entry	1.5
Laundry Room	1.2

The hours of use by room type that SPS applied in their deemed savings estimates was based upon a DOE study conducted by Navigant[16]. The KEMA study is the more recent study and is based upon a significant amount of residential monitored lighting runtime data. However, there are room types from the Navigant study that are not covered in the KEMA study. ADM has applied hours of use from the KEMA study where available and those from Navigant for room types that the KEMA study did not cover. These hours are displayed in

Table *5-24* below.

Table 5-24 Daily Hours of Operation by Room Type – Navigant Study

Room Type	CFL Hours Per Day
Utility Room	2.4
Dining Room	2.3
Office	1.9
Closet	1.4
Other	1.2

The results from these two studies provide an up-to-date depiction of hours of use by room type for a wide array of residential end-uses. ADM surveyed program participants to address how many CFLs were in their home prior to participating and the room of installation, and then addressing the location of installation of purchased CFLs. From our surveying, ADM found an average of 4.44 pre-existing CFLs per household. Figure 5-4 below presents the room of installation of pre-existing CFLs, organized in descending order of room share. Figure 5-5 then presents the room of installation of CFLs installed in 2010.

[15] KEMA, “CFL Metering Study”, prepared for the California Public Utilities Commission, 2009

[16] US DOE, US Lighting Market Characterization, Navigant Consulting, 2002

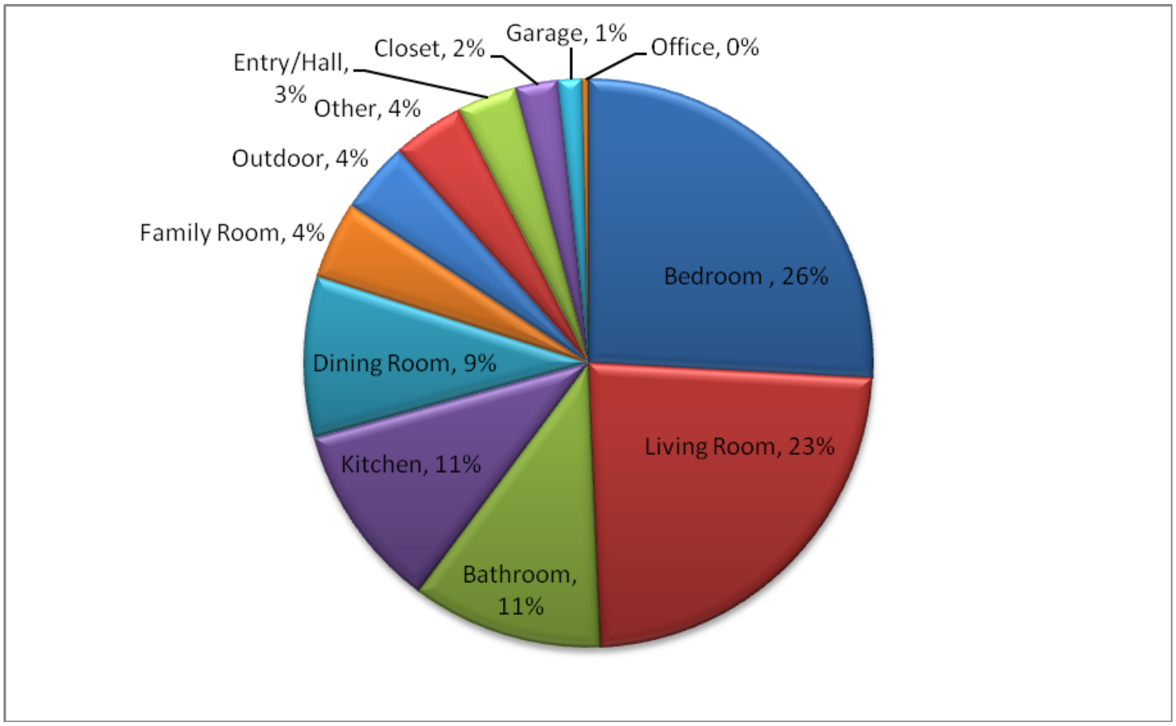

Figure 5-4 Room of Installation of Pre-Existing CFLs

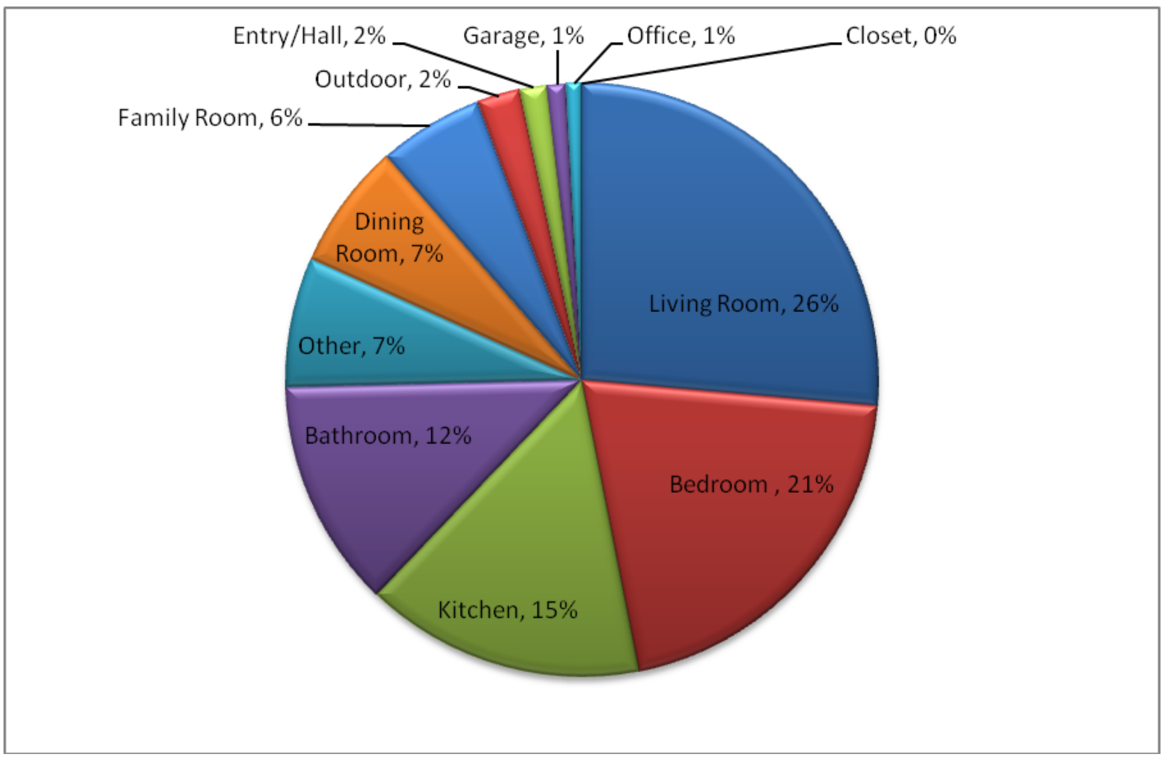

Figure 5-5 Room of Installation of 2010 Installed CFLs

ADM used the share of installations by room type from 2010 along with the values for hours of use by room type from the KEMA and Navigant studies to develop an average hours of use estimate for CFLs distributed through the 2010 HL&R program. Table 5-25 below presents a summary of hours of use values by room type and the share that they constitute of the 2010 CFL distribution.

Table 5-25 Hours of Use Summary

Room Type	***Hours of Use***	***% of 2010 CFLs***
Kitchen	3.5	15%
Living Room	3.3	26%
Outdoor	3.1	2%
Family Room	2.5	6%
Garage	2.5	1%
Utility Room	2.4	0%
Dining Room	2.3	7%
Office	1.9	1%
Bedroom	1.6	21%
Bathroom	1.5	12%
Hall/Entry	1.5	2%
Laundry Room	1.2	0%
Closet	1.4	0%
Other	1.2	7%

From this, a weighted average hours of use value of 2.44 per day was estimated, for 890 hours annually.

5.4.2.4 Peak Demand Reduction

Peak demand reduction is dependent upon the peak coincident factor (PCF), which is defined as the percent of available peak hours in which lighting is operating. SPS' peak period is set on summer weekdays between 3:00 and 6:00 PM. From this, SPS assumed a PCF of 8% based upon the KEMA CFL Metering Study. This figure is overly conservative, however. In reviewing the results of this study, ADM found that the PCF defined for this period is 8.33%, which ADM has applied in the analysis.

5.4.3 Home Lighting & Recycling Net-to-Gross Evaluation

To obtain net savings for the 2010 HL&R Program, ADM surveyed program participants to develop estimates of free-ridership. As detailed in Section 4.4, developing free-ridership estimates for the HL&R Program is dependent upon survey questions addressing financial ability, prior planning, importance of the rebate in decision making, and likelihood of installing similar equipment absent the program. Table 5-26 through Table 5-29 below summarize the Reponses to questions addressing free-ridership for the 2010 RAHSP.

Table 5-26 HL&R Program Financial Ability Results

Component	Question	Yes	No	DK
Financial Ability	Question 10: Would you have been able to purchase the CFLs if the discount offered through the program was not available?	73%	21%	6%

Table 5-27 HL&R Program Prior Planning Results

Component	Question	Yes	No	Before	Same Time	After
Prior Planning	Question 7: When did you learn of the SPS discount for CFLs?	-	-	42%	50%	8%
	Question 13: After learning of the available discount, did you purchase more CFLs than you otherwise would have?	58%	42%	-	-	-

Table 5-28 HL&R Program Importance of Rebate Results

Component	Question	Pre-Existing CFLs	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 9: Prior to learning of the program, how many CFLs did you have in your home?	63%	-	-	-	-
	Question 12: How important was the discount in your decision to purchase CFLs that day?	-	7%	33%	20%	40%

Table 5-29 HL&R Program Behavior Absent Program Results

Component	Question	Yes	No	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 11: If the CFLS were not discounted through the SPS program, how likely is it that you would have purchased CFLs anyway?	-	-	23%	50%	36%	10%
	Question 16: After learning of SPS' discount, have you since purchased CFLs that weren't rebated through the program?	25%	75%	-	-	-	-
	Question 17: Would you purchase CFLs if they cost $2 per bulb?	78%	22%	-	-	-	-
	Question 18: Would you purchase as many CFLs as you did that day if they cost $2 per bulb?	38%	62%	-	-	-	-

The resulting NTGR for this program was 80%, lower than the value of 83% used by SPS. It is consistent with the value of 81% determined by ADM in the 2009 evaluation. This value was applied in discounting annual kWh, lifetime kWh, and peak demand savings for the 2010 HL&R Program.

5.5 RESIDENTIAL LOW INCOME PROGRAM

The Low Income Program provided CFLs, showerheads, and weatherization services to income qualified customers. Table 5-30 presents gross realization by measure category.

Table 5-30 Low Income Program Realization Summary

Measure	Peak Demand Reduction (kW)		Annual Energy Savings (kWh)		EUL	Lifetime Energy Savings (kWh)		Realization Rate
	Ex Ante	Ex Post	Ex Ante	Ex Post		Ex Ante	Ex Post	
Duct Sealing & Infiltration Control	215	243	441,378	498,033	10	4,413,775	4,980,330	113%
Low-Flow Showerheads	0	0	4,378	4,378	10	43,780	43,780	100%
Direct Install CFLs	3.8	4.0	44,198	34,647	7	309,386	242,526	78%
Distributed CFLs	3.4	2.6	28,600	23,039	7	250,250	161,270	81%
Total	222	249	518,554	560,096		5,017,191	5,427,906	108%

The methodology for assessing the impact is detailed in the subsections to follow.

5.5.1 Gross Savings Estimates –Weatherization Measures

To evaluate savings from weatherization measures, ADM applied the model developed for Home Energy Services (detailed in Section 5.3.1.1). This was then scaled to the degree of duct sealing and infiltration control implemented through the Low Income Program.

5.5.2 Gross Savings Estimates - Low Income Direct Install CFLs

SPS assumed 1,210 hours of operation in their kWh savings estimates for direct-install CFLs. ADM revised this value to 840 hours per year, based upon the large number of CFLs installed per participant (an average of 10 per home). ADM extrapolated runtime from SPS look-up tables to the number of CFLs installed in determining the average value of 10 CFLs.

5.5.3 Gross Savings Estimates – Distributed CFLs

Gross savings estimates for distributed CFLs are as described in Section 4.5.1.4. ADM applied results from EPE's CFL distribution survey in determining estimates of:

- 78% Installation Rate;
- 891 Hours/Year.

ADM determined the quantities distributed via surveying of participating agencies involved in distribution of CFLs.

5.5.4 Low Income Net Savings Estimates

ADM is applying the ex ante NTGR of 100%, as the Low Income Program targets participants that could not have otherwise afforded the energy efficiency improvements.

5.6 SECOND REFRIGERATOR RECYCLING PROGRAM

ADM estimated savings from the RRP by surveying a sample of program participants and by using available data on the removed refrigerators to calculate unit-specific savings, using a regression methodology developed by Cadmus in 2009. With 209 refrigerators recycled in 2010, the required sample for 90/10 precision was 52 surveys. ADM completed 60 surveys, verifying recycling and addressing net-to-gross issues. ADM then examined the tracking data and calculated unit-specific savings. Table 5-31 below presents gross realization for the 2010 Refrigerator Recycling Program.

Table 5-31 Residential Refrigerator Recycling Gross Realization Summary

Measurement	Expected Gross Savings	Realized Gross Savings	Gross Realization Rate
Annual Energy (kWh)	210,426	316,670	150%
Demand (kW)	43.7	58.1	133%
Lifetime Energy (kWh)	1,683,411	1,275,612	76%

ADM verified that average age for units recycled through the 2010 RRP was 17 years. This resulted in higher annual savings but lower lifetime savings as the Remaining Useful Life (RUL) of recycled units was less than forecasted. Figure 5-6 below presents the age distribution of units recycled through the 2010 RRP.

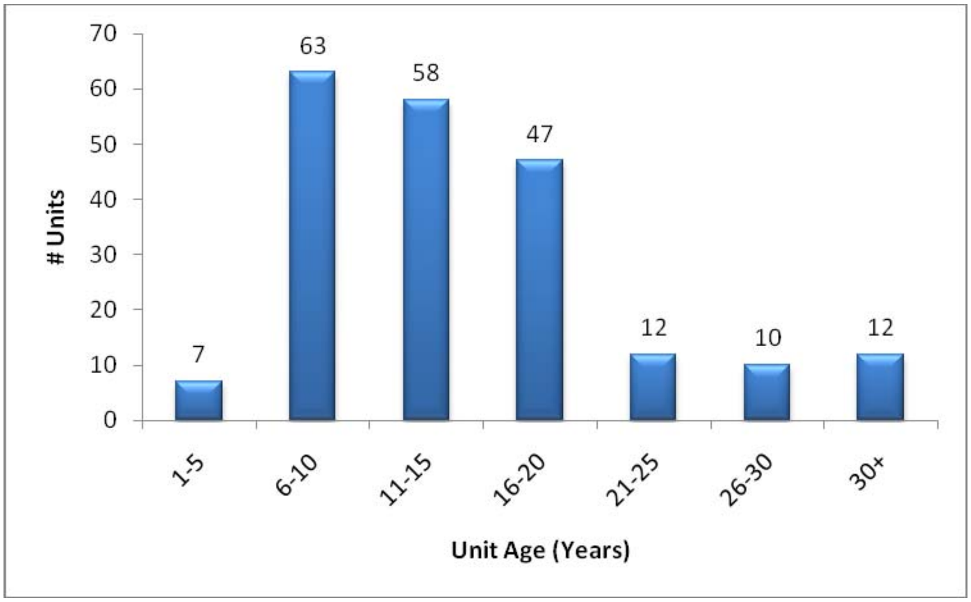

Figure 5-6 Age Distribution of Refrigerators in SPS 2010 RRP

Additionally, ADM determined free-ridership for the 2010 RRP through participant surveying, providing a NTGR of 56%. This was applied in discounting program savings. The resulting net savings are presented in

Table 5-32 Residential Refrigerator Recycling Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	195,697	202,669	104%
Demand (kW)	40.6	37.2	92%
Lifetime Energy (kWh)	1,425,970	750,751	53%

5.6.1 Refrigerator Recycling Gross Savings Estimates

Using the regression methodology outlined in Section 4.6.1, ADM calculated per-unit kWh savings based upon unit size, age, defrost type, and configuration. This resulted in higher than forecasted annual kWh savings. The distribution of savings of recycled units is presented in the figure below.

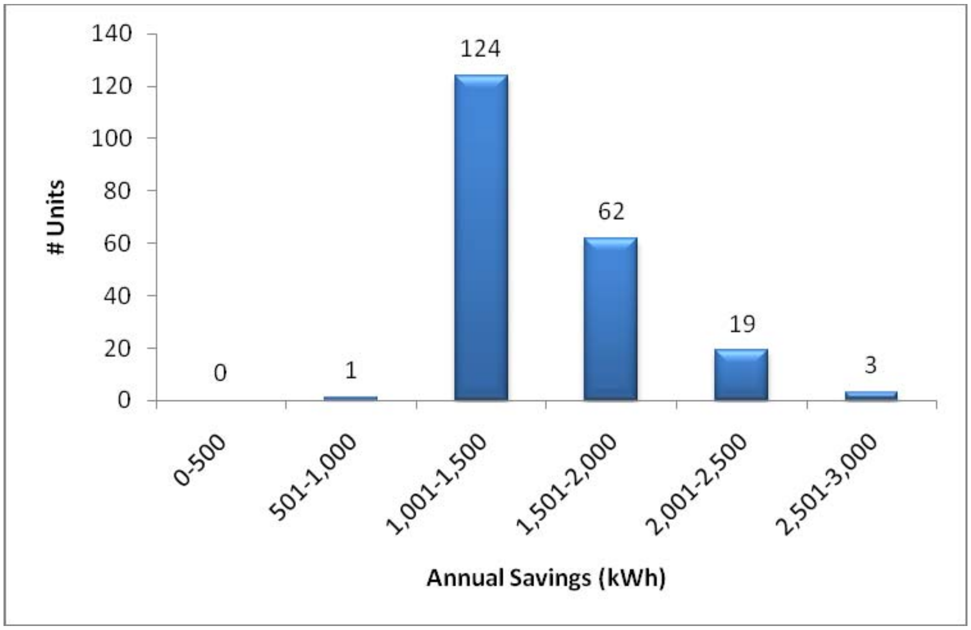

Figure 5-7 Savings Distribution of Refrigerators in SPS 2010 RRP

Demand Reduction (kW) is calculated by weighting the annual kWh use based upon the delta T (ambient temperature minus refrigerator temperature). This weight is then increased by the magnitude of the marginal decline in unit efficiency associated with peak-period temperatures, with an average hourly COP calculated based upon the methodology outlined in a NREL 2008 report[17]. Resultantly, ADM calculated kW factors of .000127 and .000247 for conditioned and unconditioned space, respectively. Our survey results indicated that 53% of the recycled refrigerators were used in conditioned space, with 47% used in unconditioned space. Weighting the kW factors by these proportions, the weighted average kW factor is .000183. Multiplying this by the ex post kWh savings estimate provides gross peak demand reduction of 24.1 kW.

5.6.2 Refrigerator Recycling Net Savings Estimates

ADM evaluated net by estimating free-ridership for the 2010 RRP, using the methodology outlined in Section 4.6.4. To obtain net savings for the 2010 RRP, ADM surveyed program participants to develop estimates of free-ridership. As detailed in Section 4.6.4, developing free-ridership estimates for the RRP is dependent upon survey questions addressing financial ability, prior planning, importance of the rebate in decision making, and likelihood of recycling or disposing the refrigerator absent the program. Table 5-33 through

Table 5-35 below summarize the responses to questions addressing free-ridership for the 2010 RRP.

[17] NREL, "Technical Support Document: Development of the Advanced Energy Design Guide for Grocery Stores", September, 2008

Table 5-33 RRP Prior Planning Results

Component	Question	Yes	No	Before	Same Time	After
Prior Planning	Question 8: Did you have specific plans to dispose of the refrigerator prior to learning of the SPS Refrigerator Recycling Program?	25%	75%	-	-	-
	Question 6: When did you learn about the SPS Refrigerator Recycling program and the available rebate to remove your old refrigerator?	-	-	52%	13%	28%

Table 5-34 RRP Importance of Rebate Results

Component	Question	Indicated Rebate	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 7: What factors motivated you to recycle your refrigerator through this program in 2010?	8%	-	-	-	-
	Question 13: How important was SPS's rebate in your decision to recycle the refrigerator?	-	32%	42%	12%	12%

Table 5-35 RRP Behavior Absent Program Results

Component	Question	Replaced Before	Disposes W/O Rebate	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 10: Have you ever needed to replace a major appliance before?	73%	-	-	-	-	-
	Question 11: When replacing a major appliance, what do you typically do with the old unit (Prompt only if necessary)?	-	45%	-	-	-	-
	Question 12: If SPS had not offered a rebate for recycling the refrigerator, how likely would you have been to dispose the refrigerator anyway?	-	-	30%	37%	20%	5%

5.7 SCHOOL EDUCATION KITS

To evaluate savings from the 2010 Residential School Education Kit Program (SEK), ADM

- Validated deemed savings methodologies; and

- Verified survey data provided by the program implementer.

ADM was provided survey cards from the program implementer with personal information redacted. ADM could not conduct surveys with program participants due to privacy concerns associated with this program, and as a result verification constituted validation of the summary results presented in the implementation report against the survey card data.

5.7.1 School Education Kits Gross Savings Estimates

Verified electric impacts were 692,041 kWh saved annually, which represents a realization rate of 107%; 4,230,447 kWh saved over the life of the measures; and coincident peak demand reduction of 20.9 kW. As detailed in Section 4.7, gross savings estimates for the SEK Program are dependent upon:

- Installation rates for provided measures; and
- Share of participants with electric water heating.

ADM obtained these parameters from the implementer's collected survey data. The resulting gross impacts are presented in Table 5-36.

Table 5-36 School Education Kits Energy Impact Summary

Measure	Peak Demand Reduction (kW)		Annual Energy Savings (kWh)		Effective Useful Life (EUL), Years	Lifetime Energy Savings (kWh)		Realization Rate
	Ex Ante	Ex Post	Ex Ante	Ex Post		Ex Ante	Ex Post	
CFLs	18	21	277,446	247,091	7	1,942,122	1,729,637	89%
Showerheads	-	-	309,644	372,425	10	3,096,440	3,724,250	120%
Faucet Aerators	-	-	58,650	72,525	5	293,248	362,626	124%
Total	18	21	645,740	692,041	-	5,331,810	5,816,513	107%

Additionally, the SEK program provides Therms savings through the low-flow showerhead and faucet aerator measures, as a certain number are installed in homes with gas water heating. SPS does not claim Therms savings for the program, but ADM has provided estimates of Therms savings from the SEK program as these savings factor into program cost-effectiveness. Therms savings for the SEK program are presented in
Table *5-37* below.

Table 5-37 School Education Kits Gas Impact Summary

Measure	Expected Annual Savings (Therms)	Realized Annual Savings (Therms)	Effective Useful Life (EUL), Years	Expected Lifetime Savings (Therms)	Realized Lifetime Savings (Therms)
CFLs	-	0	7	-	0
Showerheads	-	11,749	10	-	117,490
Kitchen Aerators	-	1,771	5	-	8,853
Total	-	13,520	-	-	126,343

5.7.2 Analysis of Net Savings

The SEK Program provides energy efficient products that otherwise would not have been installed. As a result, ADM has determined the SPS assumption of 100% NTGR to be reasonable for this program, and net savings equal the gross savings values presented in Table 5-36 and
Table *5-37*.

5.8 BUSINESS LIGHTING EFFICIENCY

Evaluation of savings from the Small Business Lighting Program (SBLP) was based upon on-site verification of installed measures, review of deemed savings assumptions for lighting runtime, and application of site-specific hours of operation as determined through facility interviews, examination of lighting schedules, and on-site metering of lighting runtime.

5.8.1 Business Lighting Efficiency Gross Savings Estimates

ADM conducted on-site verification inspections at 4 participating facilities, covering 98% of program expected savings. Table 5-38 below presents the site-level realization for the 2010 BLEP.

Table 5-38 Business Lighting Efficiency Site-Level Gross Realization

Site ID	Stratum	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization
1-7E6NK	2	617,482	993,386	241.2	184.1	161%	81%
1-7W69E	2	294,245	323,361	66.7	86.7	110%	130%
1-7X88P	2	153,601	64,747	34.8	36.82	42%	106%
1-76IPUH, 1-6YXNS	1	3,546	6,445	.81	.88	182%	108%
Total:		1,068,874	1,387,939	343.5	308.5	130%	90%

1-7X88P has low realization due to the deemed hours in SPS tech assumptions improperly addressing different space types in hotel/motel applications. SPS tech assumptions apply a value of 2,607 to all hotel/motel lighting. ADM has revised this to apply CA DEER values to guestroom and common area lighting, with runtime of 1,145 and 8,760, respectively. The largest facility in the population, 1-7E6NK, is a large retailer. SPS deemed hours for retail do not separate between large and small retailers, instead aggregating across these facility types. ADM recommends disaggregating retail to allow for small vs. large retail classification, as large retailers display much higher runtime than small retailers, due to longer business hours and the presence of night crews for stocking purposes. ADM also found high realization for LED Exist Signs. SPS tech assumptions state 8,760 runtime for this measure, which ADM concurs with. However, ADM found that on the exit sign applications reviewed, savings calculations applied annual runtime of 4,993 hours. Correcting this resulted in 182% realization for LED Exit Sign measures. The results by stratum are then extrapolated to the respective stratum. The resulting realization by stratum is as displayed in Table 5-39 below.

Table 5-39 BLEP Program-Level Gross Realization

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization
2	3	1,065,328	1,381,454	328.2	307.6	130%	94%
1	8	29,249	53,161	10.1	10.9	182%	108%
Total:	11	1,094,577	1,434,615	338.3	318.5	131%	94%

5.8.2 Business Lighting Efficiency Net Savings Estimates

Net savings from the BCEP are based upon surveys of program participants to provide estimates of free-ridership. ADM estimated weighted-average free-ridership of 33%, for a net-to-gross ratio (NTGR) of 62%. Table 5-40 through Table 5-43 present the results of questions contributing to free-ridership attribution.

Table 5-40 BLEP Financial Ability Results

Component	Question	Yes	No
Financial Ability	Question 18: Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Small Business Lighting Program?	100%	0%

Table 5-41 BLEP Prior Planning Results

Component	Question	Yes	No	Before	During	After
Prior Planning	Question 15: Did you have plans to install [Equipment/Measure] before participating in the program?	67%	33%	-	-	-
	Question 36: When did you learn of the Small Business Lighting Program?	-	-	33%	50%	17%

Table 5-42 BLEP Importance of Rebate Results

Component	Question	Yes	No	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 14: Before participating in the Small Business Lighting Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?	67%	33%	-	-	-	-
	Question 5: How important are SPS rebates in your decision making regarding energy efficiency improvements?	-		83%	0%	17%	0%

Table 5-43 BLEP Behavior without Program Results

Component	Question	Modified Project	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 19: If the **financial incentive** from the Business Small Business Lighting Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?	-	33%	33%%	33%	0%
	Question 20: Did you purchase and install more [equipment/measure] than you otherwise would have without the program?	17%	-	-	-	-
	Question 21: Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?	50%	-	-	-	-
	Question 22: Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?	50%	-	-	-	-

These survey responses were used to evaluate site-level free-ridership, which was then extrapolated to the program level by weighting scores by expected kWh savings. The results of this are presented in Table 5-44below.

Table 5-44 BLEP Site-Level Free-Ridership Scoring

Site ID	Free-Ridership	NTGR	Expected kWh Savings	Weight
1-7E6NK	.33	.67	617,482	0.575
1-7W69E	0	1	294,245	0.274
1-7X88P	0	1	153,601	0.143
1-76IPUH, 1-6YXNS	.67	.33	3,546	0.003
1-72S27	0	1	3,034	0.003
1-710TM	0	1	2,501	0.003
	Weighted Average Free-Ridership			19%
	Weighted Average NTGR			81%

These results were then used to discount gross kWh, lifetime kWh, and peak demand savings. The result net savings are displayed in Table 5-45 below.

Table 5-45 Business Lighting Efficiency Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	1,050,794	1,162,038	111%
Demand (kW)	324.0	258.0	80%
Lifetime Energy (kWh)	15,761,909	17,430,575	111%

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5.9 BUSINESS COOLING EFFICIENCY

Evaluation of savings from the Business Cooling Efficiency Program (BCEP) was based upon on-site verification of installed measures, review of deemed savings assumptions for equivalent full load hours (EFLH), and, where appropriate, DOE-2 simulation of large facilities.

5.9.1 Business Cooling Efficiency Gross Savings Estimates

ADM conducted on-site verification inspections at five of nine participating facilities, covering 90% of program expected savings. Table 5-46 below presents the site-level realization and the methodology applied in evaluating savings for the site.

Table 5-46 Business Cooling Efficiency Site-Level Gross Realization

Site ID	Stratum	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization	M&V Method
1-6KT8X	3	232,934	214,116	18.3	59.7	92%	326%	DOE-2
1-7E6OM	3	90,503	89,708	57.4	57.4	99%	100%	EFLH
1-7IJT3	2	40,653	9,064	7.9	5.7	22%	72%	EFLH

1-74FWJ	2	27,090	31,069	36.7	41.9	115%	114%	EFLH
1-7WMIK	1	11,942	22,248	5.4	10.1	186%	185%	EFLH
Total:	-	403,122	366,205	125.8	174.7	91%	139%	-

ADM developed a DOE-2 model for one participating facility, as it accounted for 52% of program-level kWh savings. From this, ADM determined peak kW to be significantly higher than anticipated, as this project, a chiller retrofit at a university, displayed higher occupancy in the 3:00-6:00 PM peak period than assumed in SPS tech assumptions for this facility type. Overall, gross kWh realization was near 100%; only one site displayed poor realization, and this was due to a variety of factors. The facility, a retail facility that retrofitted two 30-ton RTUs, had two errors in its savings calculations. In determining the rebate, the program implementation staff:

- Used 10.5 EER when equipment was rated at 10.13 EER; and
- Used 4,594 EFLH, instead of the 1,681 EFLH value listed in SPS tech assumptions for this facility type.

The resulting realization by stratum is as displayed in Table 5-47 below.

Table 5-47 BCEP Program-Level Gross Realization

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization
3	2	323,437	303,824	75.7	117.1	94%	155%
2	3	98,065	58,023	71.6	76.2	59%	106%
1	4	27,639	51,492	14.3	26.5	186%	185%
Total:	9	449,141	413,339	161.7	219.8	92%	136%

5.9.2 Business Cooling Efficiency Net Savings Estimates

Net savings from the BCEP are based upon surveys of program participants to provide estimates of free-ridership. ADM estimated weighted-average free-ridership of 13%, for a net-to-gross ratio (NTGR) of 87%. Table 5-48 through
Table *5-51* present the results of questions contributing to free-ridership attribution.

Table 5-48 BCEP Financial Ability Results

Component	Question	Yes	No
Financial Ability	Question 18: Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Business Cooling Efficiency Program?	100%	0%

Table 5-49 BCEP Prior Planning Results

Component	Question	Yes	No	Before	During	After
Prior Planning	Question 15: Did you have plans to install [Equipment/Measure] before participating in the program?	57%	43%	-	-	-
	Question 36: When did you learn of the Business Cooling Efficiency Program?	-	-	43%	43%	14%

Table 5-50 BCEP Importance of Rebate Results

Component	Question	Yes	No	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 14: Before participating in the Business Cooling Efficiency Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?	14%	86%	-	-	-	-
	Question 5: How important are SPS rebates in your decision making regarding energy efficiency improvements?	-		86%	0%	14%	0%

Table 5-51 BCEP Behavior without Program Results

Component	Question	Modified Project	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 19: If the **financial incentive** from the Business Cooling Efficiency Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?	-	72%	28%	0%	0%
	Question 20: Did you purchase and install more [equipment/measure] than you otherwise would have without the program?	0%	-	-	-	-
	Question 21: Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?	0%	-	-	-	-
	Question 22: Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?	14%	-	-	-	-

These survey responses were used to evaluate site-level free-ridership, which was then extrapolated to the program level by weighting scores by expected kWh savings. The results of this are presented in Table 5-52 below.

Table 5-52 BCEP Site-Level Free-Ridership Scoring

Site ID	Free-Ridership	NTGR	Expected kWh Savings	Weight
1-6KT8X	0	1	232,934	.58
1-7E6OM	.33	.67	90,503	.23
1-74V0S	.33	.67	30,322	.08
1-74FWJ	.33	.67	27,090	.07
1-7WMIK	0	1	11,942	.03
1-7I032	.33	.67	6,340	.02
1-7I0LA	.67	.33	1,871	.01
Weighted Average Free-Ridership				13%
Weighted Average NTGR				87%

These results were then used to discount gross kWh, lifetime kWh, and peak demand savings. The result net savings are displayed in Table 5-53 below.

Table 5-53 Business Cooling Efficiency Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	422,193	359,605	85%
Demand (kW)	152.0	191.2	126%
Lifetime Energy (kWh)	8,443,360	7,192,091	85%

5.10 BUSINESS CUSTOM EFFICIENCY

Evaluation of savings from the Business Custom Efficiency Program (BCEP) was based upon a review of a census of project applications and pre- and post-retrofit metering of projects that have either:

- High volume of energy savings; or
- High degree of uncertainty.

5.10.1 Business Custom Efficiency Gross Savings Estimates

ADM conducted on-site verification inspections at five of nine participating facilities, covering 90% of program expected savings. Table 5-54 below presents the site-level realization and the methodology applied in evaluating savings for the site.

Table 5-54 Business Custom Efficiency Site-Level Gross Realization

Site ID	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization	M&V Method
1-6TNHE	59,420	59,420	6.8	6.8	100%	100%	Metering
1-74KEL	103,549	103,549	11.9	11.9	100%	100%	Metering
1-6UUW6	2,907	2,907	5.3	5.3	100%	100%	Documentation Review
Total:	165,876	165,876	24.0	24.0	100%	100%	-

ADM conducted pre- and post-retrofit metering for two of the three custom applications in 2010. These facilities were oil wells that had installed pump-off controllers, replacing time-clock controllers. ADM developed pre- and post-retrofit usage profiles from the metered data in evaluating savings. Savings from these measures were highly uncertain, and ADM found markedly higher savings than anticipated by SPS. The remaining application was for a window glazing retrofit at a hotel. ADM reviewed the calculations by SPS engineering staff and determined them to be reasonable estimates.

5.10.2 Business Custom Efficiency Net Savings Estimates

Net savings from the BCEP are based upon surveys of program participants to provide estimates of free-ridership. ADM estimated weighted-average free-ridership of 33%, for a net-to-gross ratio (NTGR) of 67%. These survey responses were used to evaluate site-level free-ridership, which was then extrapolated to the program level by weighting scores by expected kWh savings. These results were then used to discount gross kWh, lifetime kWh, and peak demand savings. The result net savings are displayed in Table 5-55 below.

Table 5-55 Business Custom Efficiency Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	144,312	111,137	77%
Demand (kW)	21	16	77%
Lifetime Energy (kWh)	2,886,242	2,222,738	77%

5.11 LARGE CUSTOMER SELF-DIRECT

There were no participants in the 2010 Large Customer Self-Direct Program.

5.12 BUSINESS MOTOR & DRIVE EFFICIENCY

Evaluation of savings from the Business Motor Efficiency Program (BMEP) was based upon on-site verification of installed measures, review of deemed savings assumptions for equivalent full load hours (EFLH), and, where appropriate, on-site metering of rebated equipment.

5.12.1 Business Motor Efficiency Gross Savings Estimates

ADM conducted on-site verification inspections at four of seven participating facilities, covering 11 of 14 total applications and 95% of program expected savings. Table 5-56 below presents the site-level realization and the methodology applied in evaluating savings for the site.

Table 5-56 Business Motor Efficiency Site-Level Gross Realization

Site ID	Stratum	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization	M&V Method
1-7UV2L	3	114,658	126,572	24.6	27.2	110%	111%	EFLH
1-7APHV	3	83,840	18,418	11.5	2.6	22%	23%	Metering
1-74GHJ	3	78,422	18,120	11.5	2.6	23%	23%	Metering
1-7K5FT	3	63,074	- 60,908	9.2	-7.2	-97%	-78%	Metering
1-7B285	2	38,825	-63,760	6.2	-7.4	-164%	-119%	Metering
1-7241K	2	17,118	16,912	2.6	2.6	99%	100%	EFLH
1-7T1RH	2	16,872	16,872	3.6	3.6	100%	100%	EFLH
1-7B2AO, 1-7QGIV, 1-7QGHZ	1	4,125	4,344	.7	.5	105%	71%	EFLH
1-7T4B0	1	1,648	1,648	.3	.3	100%	100%	EFLH
Total:	-	418,582	78,218	70.2	24.8	19%	35%	-

ADM conducted on-site metering for rebated projects where VFDs were installed in oil-well applications. ADM found very low savings (and in some cases, negative savings) from the VFDs as these wells also had pump-off controllers in place. The result of this was that the VFDs in some cases increased energy use, because instead of the pump-off controller shutting down the pump, it would run at a low speed. This reduces equipment wear, but typically increases energy use. The resulting realization by stratum is as displayed in Table 5-47 below.

Table 5-57 BMEP Program-Level Gross Realization

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization
3	4	339,994	102,202	58.9	25.2	30%	43%
2	4	89,690	-13,113	14.9	1.3	-15%	9%
1	4	14,204	14,743	2.7	2.3	104%	85%
Total:	12	443,888	103,832	74.5	28.8	23%	39%

5.12.2 Business Motor Efficiency Net Savings Estimates

Net savings from the BMEP are based upon two factors:

- Surveys of program participants to provide estimates of free-ridership; and
- Calculation of observed spillover savings at oil-pumping facilities

ADM estimated weighted-average free-ridership of 20%. Table 5-58 through Table 5-61 present the results of questions contributing to free-ridership attribution.

Table 5-58 BMEP Financial Ability Results

Component	Question	Yes	No
Financial Ability	Question 18: Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Business Motor Efficiency Program?	60%	40%

Table 5-59 BMEP Prior Planning Results

Component	Question	Yes	No	Before	During	After
Prior Planning	Question 15: Did you have plans to install [Equipment/Measure] before participating in the program?	100%	0%	-	-	-
	Question 36: When did you learn of the Business Motor Efficiency Program?	-	-	0%	80%	20%

Table 5-60 BMEP Importance of Rebate Results

Component	Question	Yes	No	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 14: Before participating in the Business Motor Efficiency Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?	20%	80%	-	-	-	-
	Question 5: How important are SPS rebates in your decision making regarding energy efficiency improvements?	-		100%	0%	0%	0%

Table 5-61 BMEP Behavior without Program Results

Component	Question	Modified Project	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 19: If the **financial incentive** from the Business Motor Efficiency Program had not been	-	20%	0%	40%	40%

	available, how likely is it that you would have installed [Equipment/Measure] anyway?					
	Question 20: Did you purchase and install more [equipment/measure] than you otherwise would have without the program?	20%	-	-	-	-
	Question 21: Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?	20%	-	-	-	-
	Question 22: Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?	60%	-	-	-	-

These survey responses were used to evaluate site-level free-ridership, which was then extrapolated to the program level by weighting scores by expected kWh savings. The results of this are presented in Table 5-62 below.

Table 5-62 BMEP Site-Level Free-Ridership Scoring

Site ID	Free-Ridership	NTGR	Expected kWh Savings	Weight
1-7APHV, 1-74GHJ, 1-7B285, 1-7B2AO, 1-7QGIV, 1-7QGHZ	.33	1	205,212	.56
1-7UV2L	0	1	114,658	.34
1-7241K	.33	.67	17,118	.05
1-7T1RH	0	1	16,872	.05
1-7T4B0	.33	.67	1,648	.001
Weighted Average Free-Ridership				20%
Weighted Average NTGR				80%

These results were then used to discount gross kWh, lifetime kWh, and peak demand savings. Following this, ADM evaluated spillover savings observed at visited sites. The oil well facilities that displayed poor gross realization for their VFD retrofits had implemented energy-saving measures as a part of these projects. The participants, when developing a new well, would implement energy efficient pumps and pump-off controllers, then retrofit this equipment with a VFD. ADM evaluated savings from these premium efficiency pumps and pump-off controllers, providing spillover savings of:

- 441,052 annual kWh;
- 49.6 peak kW; and

- 8,821,040 lifetime kWh;

After deducting free-ridership, spillover savings were then added to tally final program net savings. The result net savings are displayed in Table 5-63 below.

Table 5-63 Business Motor Efficiency Net Realization Summary

Measurement	Expected Net Savings	Realized Savings, Subtracting Free-Ridership	Spillover Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	386,183	83,065	441,052	524,117	136%
Demand (kW)	64.8	23.0	49.7	72.7	112%
Lifetime Energy (kWh)	7,723,651	1,661,305	8,821,040	10,482,345	136%

5.13 SMALL BUSINESS LIGHTING

Evaluation of savings from the Small Business Lighting Program (SBLP) was based upon on-site verification of installed measures, review of deemed savings assumptions for lighting runtime, and application of site-specific hours of operation as determined through facility interviews, examination of lighting schedules, and on-site metering of lighting runtime.

5.13.1 Small Business Lighting Gross Savings Estimates

ADM conducted on-site verification inspections at 16 participating facilities, covering 58% of program expected savings. Table 5-64 below presents the site-level realization for the 2010 SBLP.

Table 5-64 Small Business Lighting Site-Level Gross Realization

Site ID	Stratum	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization
1-750XC	4	168,739	136,721	61.9	46.1	81%	74%
1-74HQ3	4	114,293	63,553	48.1	13.6	56%	28%
1-750YZ	4	113,388	134,326	57.3	43.4	118%	76%
1-7VUM6	4	112,080	83,375	47.1	18.5	74%	39%
1-6UOFA	4	87,156	66,945	36.7	14.8	77%	40%
1-7A5FZ	4	84,832	64,004	35.7	14.2	75%	40%
1-74FUU	3	43,057	34,773	18.1	7.4	81%	41%
1-7515G	3	32,382	36,544	16.4	10.5	113%	64%
1-7A5H9	3	30,909	23,321	13.0	5.2	75%	40%
1-7MUCQ	3	22,809	22,360	9.6	2.7	98%	28%
1-7FEEY	2	13,108	10,772	3.6	3.3	82%	93%
1-734KE	2	11,099	7,105	2.5	1.4	64%	56%
1-7756J	2	8,980	12,092	3.3	5.2	135%	158%
1-7TDHU	1	8,960	15,288	4.6	4.9	171%	107%

1-7MQAR	1	6,625	6,399	1.8	1.3	97%	73%
1-7C0NU	1	5,672	4,680	2.1	2.0	83%	98%
Total:		864,089	4,680	361.8	194.5	84%	54%

The participant pool for the SBLP can be organized in two categories:

1. Small business participants; and
2. School district participants.

Realization was significantly lower for participating schools than for small businesses. ADM found that both the lighting runtime and the peak coincident factors applied to school facilities grossly overstated savings. This was exacerbated by elementary, middle school, and high school facilities receiving the same deemed values; occupancy increases significantly for middle and high schools and as such ADM concludes they should have separate deemed values. The resulting realization by stratum is as displayed in Table 5-65 below.

Table 5-65 SBLP Program-Level Gross Realization

Stratum	# Sites	Expected kWh Savings	Realized kWh Savings	Expected kW Savings	Realized kW Savings	Gross kWh Realization	Gross kW Realization
4	6	680,488	548,924	286.8	150.6	81%	53%
3	9	320,019	289,892	133.1	60.2	91%	45%
2	23	331,331	299,203	122.4	129.2	90%	106%
1	33	148,276	183,920	34.6	33.6	124%	97%
Total:	71	1,480,114	1,321,940	576.7	373.6	89%	65%

5.13.2 Small Business Lighting Net Savings Estimates

Net savings from the BCEP are based upon surveys of program participants to provide estimates of free-ridership. ADM estimated weighted-average free-ridership of 33%, for a net-to-gross ratio (NTGR) of 62%.

Table *5-66* through Table 5-69 present the results of questions contributing to free-ridership attribution.

Table 5-66 SBLP Financial Ability Results

Component	Question	Yes	No
Financial Ability	Question 18: Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Small Business Lighting Program?	63%	37%

Table 5-67 SBLP Prior Planning Results

Component	Question	Yes	No	Before	During	After
Prior Planning	Question 15: Did you have plans to install [Equipment/Measure] before participating in the program?	43%	57%	-	-	-

	Question 36: When did you learn of the Small Business Lighting Program?	-	-	43%	57%	-

Table 5-68 SBLP Importance of Rebate Results

Component	Question	Yes	No	Very	Somewhat	Slightly	Not At All
Importance of Rebate	Question 14: Before participating in the Small Business Lighting Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?	23%	77%	-	-	-	-
	Question 5: How important are SPS rebates in your decision making regarding energy efficiency improvements?	-		74%	13%	13%	0%

Table 5-69 SBLP Behavior without Program Results

Component	Question	Modified Project	Definitely	Probably	Probably Not	Definitely Not
Behavior Absent Program	Question 19: If the **financial incentive** from the Business Small Business Lighting Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?	-	72%	28%	0%	0%
	Question 20: Did you purchase and install more [equipment/measure] than you otherwise would have without the program?	23%	-	-	-	-
	Question 21: Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?	30%	-	-	-	-
	Question 22: Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?	70%	-	-	-	-

These survey responses were used to evaluate site-level free-ridership, which was then extrapolated to the program level by weighting scores by expected kWh savings. The results of this are presented in Table 5-70 below. In this table, the site weight is its weight within its category, either school or business.

Table 5-70 SBLP Site-Level Free-Ridership Scoring

Site ID	Facility Type	Free-Ridership	NTGR	Expected kWh Savings	Weight
1-750XC	Business	0	1	168,739	0.320
7-750YZ	Business	0	1	113,388	0.215
1-7515G	Business	0	1	32,382	0.061
1-7T83P	Business	0	1	25,265	0.048
1-7MUCQ	Business	0	1	22,809	0.043
1-7C0OM	Business	0	1	17,616	0.033
1-774UV	Business	0	1	17,481	0.033
1-7VHDO	Business	0.33	0.67	15,897	0.030
1-7VHDE	Business	0.33	0.67	15,462	0.029
1-710E8	Business	0	1	12,880	0.024
1-734KE	Business	0	1	11,099	0.021
7-7ILGK	Business	0.67	0.33	10,817	0.021
1-734J2	Business	0	1	10,551	0.020
1-7VH28	Business	0.33	0.67	10,147	0.019
1-7E50E	Business	0	1	9,303	0.018
1-7756J	Business	0	1	8,980	0.017
1-774TJ	Business	0	1	7,333	0.014
1-71512	Business	0.67	0.33	6,337	0.012
1-7C0NU	Business	0	1	5,672	0.011
1-7SUA8	Business	0.67	0.33	5,178	0.010
1-74HQ3	School	0.33	0.67	114,293	0.244
1-6UOFA	School	0.33	0.67	87,156	0.186
1-7A5FZ	School	0	1	84,832	0.181
1-78M4P	School	0	1	75,392	0.161
1-74FUU	School	0.33	0.67	43,057	0.092
1-7A5F9	School	0	1	30,909	0.066
1-7X70T	School	0.67	0.33	20,753	0.044
1-7VUN8	School	0.67	0.33	5,705	0.012
1-7VUN1	School	0.67	0.33	4,558	0.010
1-7A5DV	School	0.67	0.33	1,669	0.004
	Weighted Average Free-Ridership - Schools				22%
	Weighted Average Free-Ridership - Business				5%
	Weighted Average NTGR - Schools				78%
	Weighted Average NTGR - Business				95%

ADM applied the two separate net-to-gross ratios to non-sampled facilities of the appropriate class. With the weight each class holds in the overall population, the weighted-average NTGR for the 2010 SBLP was 89%. These results were then used to discount gross kWh, lifetime kWh, and peak demand savings. The result net savings are displayed in Table 5-71 below.

Table 5-71 Small Business Lighting Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate

Annual Energy (kWh)	1,480,114	1,174,220	79%
Demand (kW)	596.5	349.0	59%
Lifetime Energy (kWh)	22,201,710	17,613,297	79%

6. PROCESS FINDINGS

This section will present results of ADM's process evaluation of the SPS DSM Portfolio, as well as summarize program recommendations.

6.1 REFRIGERATOR RECYCLING PROGRAM

ADM surveyed 60 program participants in the evaluation effort for the 2010 Refrigerator Recycling Program. These surveys were focused on collecting data for development of impact evaluation parameters, but they were also leveraged to collect data useful for the process evaluation effort. Data collected via participant surveying is used in evaluating:

- Advertising effectiveness and customer awareness of the program;
- Customers' reasons for recycling and the condition of the units;
- Participant appliance disposal practices;
- Customer satisfaction with various program factors; and
- Recommendations for program improvement.

6.1.1 Advertising Effectiveness and Customer Awareness

A significant portion of respondents were aware of the available rebate for recycling refrigerators offered through SPS. Table 6-1 below presents the survey results of customer awareness of the SPS program.

Table 6-1 Customer Awareness of Rebate

Question	***Before Deciding to Recycle***	***At the Same Time as Deciding***	***After Already Having Decided***	***Don't Know***
When did you learn about the recycling program and available rebate?	52%	13%	28%	7%

Roughly half of all respondents knew about the program before deciding to recycle their refrigerators. From these results, it can be inferred that a significant number of program participants had been influenced to some degree by the available program. Inquiring further, ADM looked at the different ways that participants became aware of the program.

Concerning the advertising effectiveness, respondents discovered the program through various means. Overall, SPS reached 48% of ADM's survey respondents directly by bill inserts, brochures, or the SPS website. Bill inserts were SPS' most effective method, reaching 40% of survey respondents. The most effective avenue of media was print media, as newspapers or magazines were indicated by 32% percent of survey respondents. Other related media outlets such as TV or radio advertisements reached only 2% of respondents each. Another 7% of respondents learned about the program through friends or relatives and 3% learned about it through appliance retailers. A summary of these results is presented in Figure 6-1.

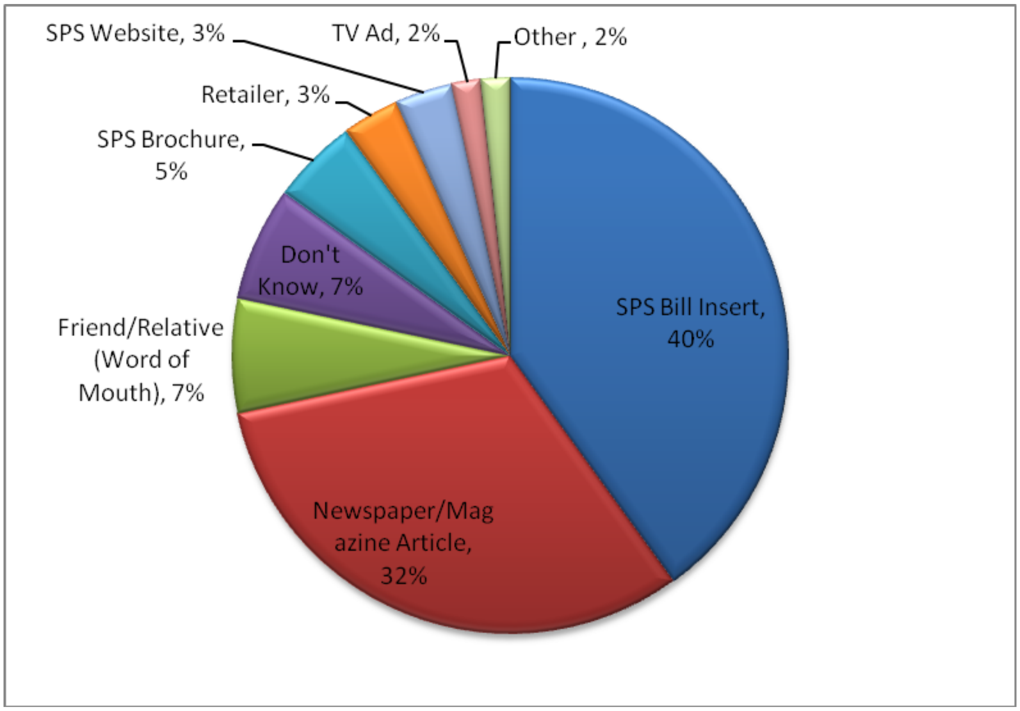

Figure 6-1 Source of Awareness of Refrigerator Recycling Program

6.1.2 Customers Reasons to Recycle and Refrigerators' Condition

Participants in the Refrigerator Recycling Program recycled their refrigerators through the program for various reasons. A total of 23% indicated at least one program benefit as the primary reason for recycling, including the available rebate and the convenience of a free pick-up service. Figure 6-2 summarizes the reasons for participation given by survey respondents. The total percentages in this figure exceed 100% as most respondents indicated multiple reasons.

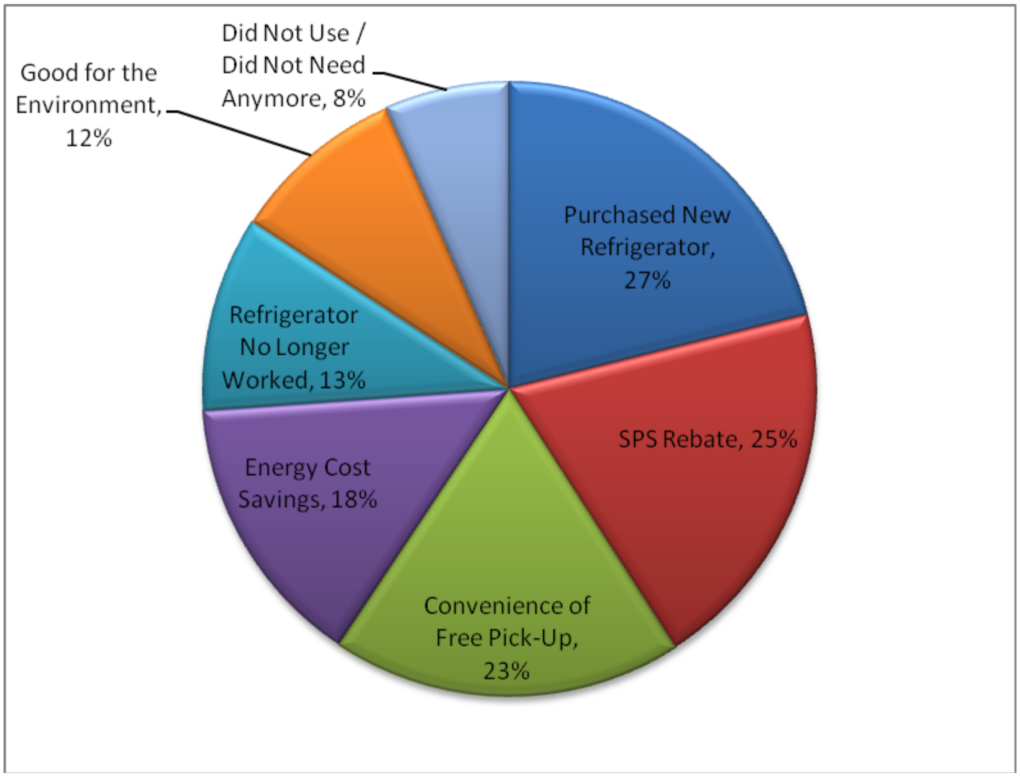

Figure 6-2 Customer Reasons for Recycling

As for the condition of the refrigerators, all respondents indicated that the old refrigerator was in working condition when SPS picked it up. However, 47% of respondents said that they were not using it at all anymore and another 7% said they were using it part of the time. Note, however, that 57% of respondents that had stopped using their old refrigerators did not recall the month in 2010 that they had stopped using them. Those that were using their old refrigerators were still using them between 9 and 12 months of the year.

Related to refrigerator condition, ADM asked survey respondents about the location of the refrigerators in respondents' homes. A summary of these results can be seen in Figure 6-3. 65% refrigerators were located outside of the kitchen. These units are the secondary refrigerators that SPS had intended for the program to target. Combined with the fact that 75% of respondents had no prior specific plans to dispose of the refrigerator before learning about SPS' program, this may part of why the rebate and the convenience of the pickup service played a role in respondents' decision to recycle the refrigerator. In aggregate, 47% of all recycled units were located in unconditioned space, and such units display higher peak load and therefore higher peak demand reduction.

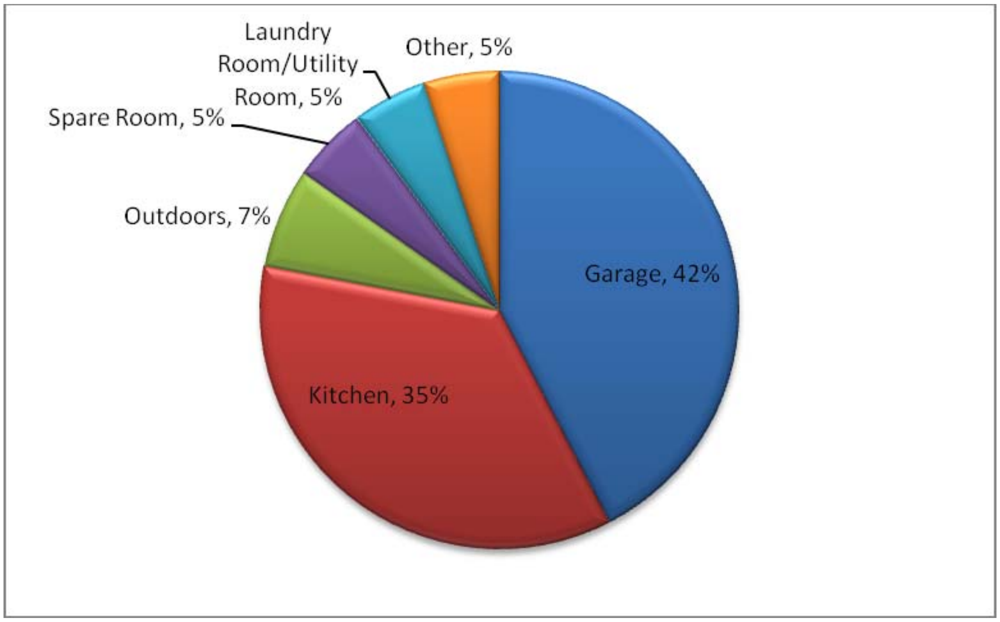

Figure 6-3 Refrigerator Location of Use

6.1.3 Participant Appliance Disposal Practices

Participants in the Refrigerator Recycling Program were asked about their previous experiences with major appliance replacement. This data was used to address whether appliance recycling is an unusual behavior for the customer; if a customer has prior history of disposing of older appliances in a manner that takes them out of service, then they are less likely to have been influenced by the program. These results are presented in Figure 6-4 below.

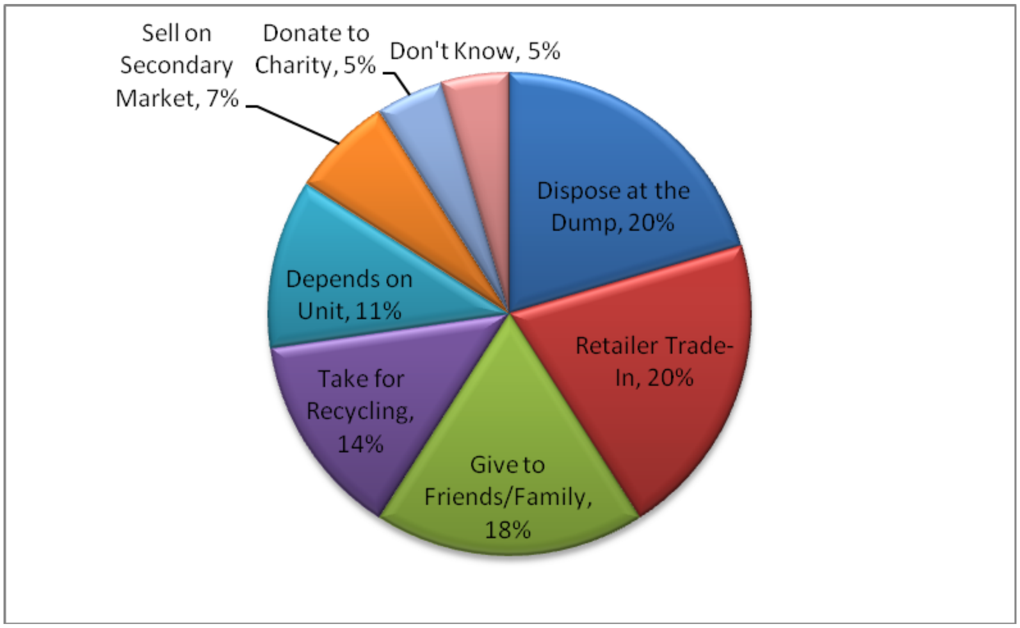

Figure 6-4 Respondent Behavior in Past Appliance Disposal

Of the 60 respondents, 73% indicated that they had replaced a major appliance before participating in the Refrigerator Recycling Program. These 44 respondents were further questioned about their old units. A total of 54% of respondents indicated that they would have disposed of the appliance in some manner, with the methods including disposing at the dump, trading in to the retailer (who then recycles the unit), or taking the unit for recycling. The remaining participants indicated that in the past they had turned the unit over to the secondary market though selling, donation, or gifting to friends/family.

ADM then asked 60 participants about what they would have done with the specific recycled unit absent the program. Figure 6-5 presents customer responses regarding their action with this specific unit absent the program.

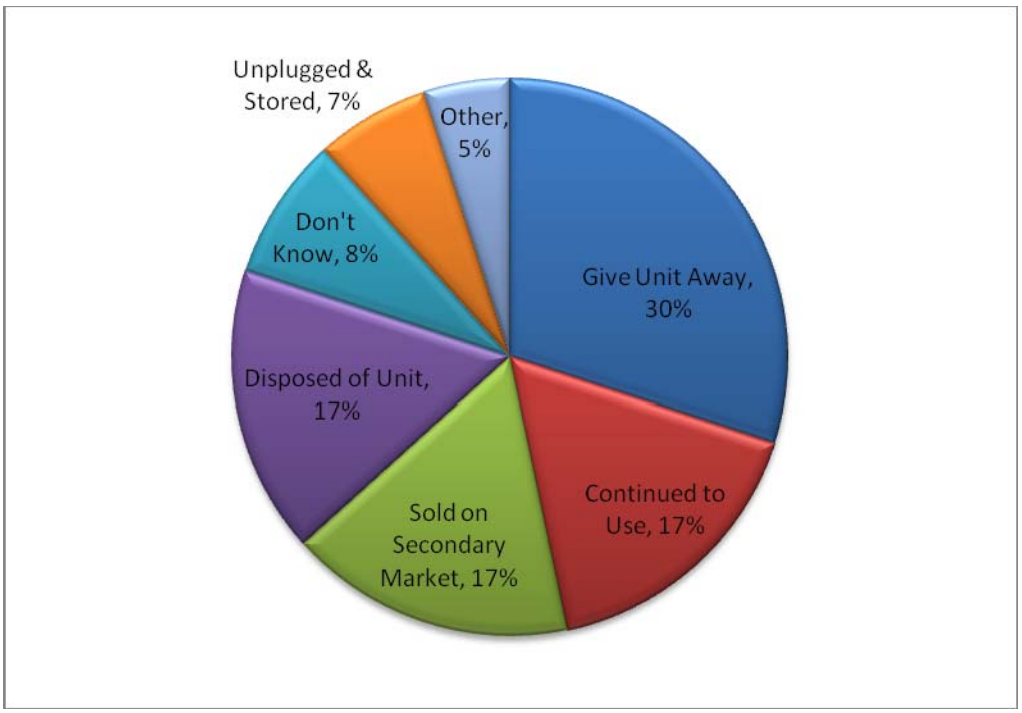

Figure 6-5 Customer Action absent Refrigerator Recycling Program

Responses under "other" included one respondent stating that they would have taken the unit to a recycling center and another that would have turned the refrigerator into a Kegerator. Overall, 65% of respondents would have kept the unit in use, either in their own home or through donating or selling on the secondary market. An additional 7% would have unplugged and stored the unit, keeping open the possibility of future use.

6.1.4 Participant Satisfaction

Participants in the Refrigerator Recycling Program were asked about their satisfaction with the scheduling process for recycling, the work performed by the staff that picked up the refrigerators, the wait time between scheduling and pick-up of the refrigerator, the wait time to receive the rebate, the rebate amount and overall program experience. Customer satisfaction is presented in Table 6-2.

Table 6-2 Refrigerator Recycling Participant Satisfaction

Category	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
The scheduling process for recycling	73%	12%	8%	2%	2%
Work performed by the staff that picked it up	93%	2%	2%	0%	0%
Wait time between scheduling and pick-up	43%	30%	12%	7%	2%
Wait time to receive the rebate	62%	17%	2%	3%	3%
Rebate amount	65%	13%	10%	5%	0%
Overall program experience	75%	15%	7%	0%	0%

When respondents indicated dissatisfaction with any aspect of the program, ADM inquired further about the reasons for the dissatisfaction. Some respondents were dissatisfied or very dissatisfied with the scheduling process for recycling, the wait time between scheduling and pick-up, the wait time to receive the rebate and the rebate amount.

Two respondents indicated that they were dissatisfied with the scheduling process for recycling. Both respondents complained that the time between scheduling and pick-up was too long, and as such, their complaints in this category can be dismissed because they actually belong in a different category. According to the surveys, though, both respondents had also indicated dissatisfaction in the "wait time between scheduling and pickup" category, which is a more appropriate category given their narrative responses.

As for the wait time between scheduling and pick-up, five total respondents indicated dissatisfaction. Three of the dissatisfied customers and the single very dissatisfied customer indicated that the wait was too long between scheduling and pick-up. One claimed it took three months and another said it took weeks. Another respondent indicated that the process took too long because she needed the space that the refrigerator occupied. A different complaint by a respondent was that pickup was rescheduled two or three times.

Four respondents were dissatisfied with the wait time to receive the rebate. One stated that they did not receive the rebate and the other three said it took too long to receive the rebate. One respondent said it took two months and another said it took six weeks.

6.1.5 Suggestions for Program Improvement

At the end of the survey administered by ADM, participants were given an opportunity to offer their suggestions for improvement of the Refrigerator Recycling Program. The most common suggestion by respondents was expediting the scheduling and pick-up process, as this was a source of dissatisfaction for many participants.

Some respondents suggested recycling both working and non-working refrigerators. The rationale presented by this respondent was that the environmental benefits of proper disposal of a refrigerator make recycling worthwhile even if the unit is inoperable. Though there may be some truth to this, it would be beyond the scope of a DSM program. Concerning the rebate, one respondent suggested crediting their electric bill in lieu of receiving a rebate checks. Another respondent indicated that they would like to have received a receipt at the time of pickup. Based upon customer feedback, ADM concludes that the following could be changed in the program implementation:

- Offer the option of receiving a rebate via a bill credit; and
- Offer receipts at the time of pick-up.

ADM would also recommend that the program allow for recycling of stand-alone freezers. These units are always secondary units and they are typically older and more likely to be used in unconditioned space than refrigerators. Recycling of stand-alone freezers has been successful in similar programs run in other territories (including elsewhere in New Mexico) and as such ADM would recommend adding this to the Refrigerator Recycling Program.

6.2 HOME LIGHTING & RECYCLING

ADM surveyed 120 program participants in the evaluation effort for the 2010 Home Lighting & Recycling Program. These surveys were focused on collecting data for development of impact evaluation parameters, but they were also leveraged to collect data useful for the process evaluation effort. Data collected via participant surveying is used in evaluating:

- Customer awareness of the program;
- Customer sentiment to CFLs;
- Customer purchase habits;
- Response to SPS Rebate; and
- Recommendations for program improvement.

6.2.1 Customer Awareness

By and large, customers were aware of the available discount on CFLs offered through SPS. Table 6-3 below presents the survey results of customer awareness of the SPS program.

Table 6-3 Customer Awareness of SPS Rebate

Question	Before Deciding to Purchase	At the Same Time as Deciding	After Already Having Decided	Don't Know
When did you learn of the SPS discount on CFLs?	36%	43%	7%	14%

From this, it can be inferred that a significant number of program participants had been influenced to some degree by the available program. ADM inquired with customers as to how they learned of the program, finding a variety of sources. Figure 6-6 presents the sources from which program participants learned of the SPS HL&R Program. Nearly half of all participants indicated having learned of the program from the retailer, and in narrative follow-up questioning they indicated either learning of it from the in-store display or being informed of it by an employee. A total of 33% of program participants learned of the program from SPS sources prior to having gone to the retailer, with these sources including bill inserts, the SPS website, brochures, and advertisements in newspapers, television, and radio.

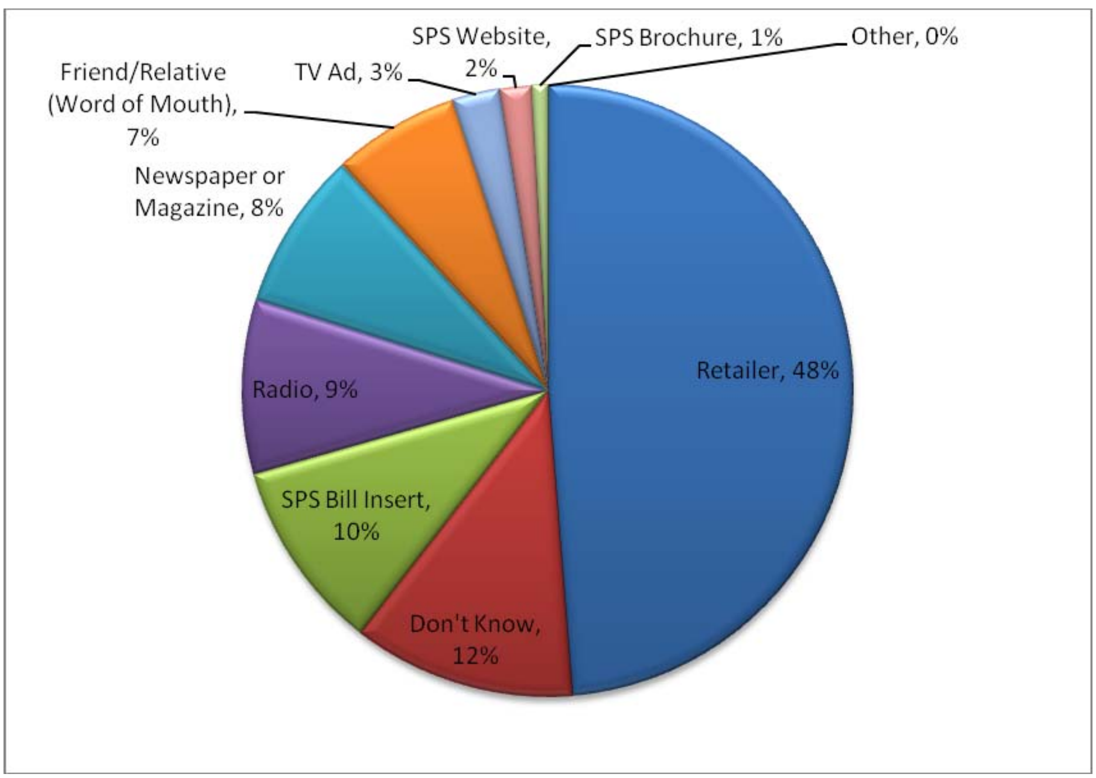

Figure 6-6 Source of Awareness of Home Lighting & Recycling Program

6.2.2 Customer Sentiment to CFLs

ADM addressed several issues related to customer satisfaction with CFLs and the current usage patterns by lighting purchasers. Through participant surveying, ADM found that the average participant had 4.4 pre-existing CFLs in their home. However, installation patterns did not match the pattern assumed by SPS, in which it is assumed that customers would install in high-usage areas first. 56% of pre-existing CFLs were installed in low-use areas (defined as usage less than 2.5 hours per day). 49% of the CFLs installed by respondents in 2010 were installed in low-use areas. This opens the possibility that hours of use could remain stable as saturation increases, as high-use areas are still available for customers to install. As such, the hours of use value observed in 2010 could continue into future program years.

As for customer satisfaction with CFLs, ADM asked customers to rate their satisfaction with the quality of lighting and with the energy savings observed after installation of CFLs. The results of this are summarized in Table 6-4 below.

Table 6-4 Customer Satisfaction with CFLs

Question	Very Satisfied	Somewhat Satisfied	Neutral	Someone Dissatisfied	Very Dissatisfied
How satisfied are you with the quality of lighting from CFLs?	47%	38%	8%	4%	3%
How satisfied re you with the energy savings from CFLs?	29%	20%	49%	1%	1%

What is revealed in this is that customers are by and large satisfied with the lighting but do not observe noticeable energy savings on their bill. Lighting does make up a small portion of residential load and as such the marginal gain from CFLs may not appear significant to them. The reduction observed may not appear greater in magnitude than their typical month-to-month fluctuations and as such half of all respondents were neither satisfied nor dissatisfied with the energy savings from CFLs.

6.2.3 Customer Purchase Habits

Additionally, ADM surveyed respondents regarding their strategy for replacing incandescent lighting in their home. Table 6-5 below presents a summary of customer behavior regarding how they are replacing lighting in their home.

Table 6-5 CFL Replacement Strategies

Question	Actively Replacing	Replacing on Burnout	Applying Both Strategies
What is your replacement strategy for lighting in your home? Are you actively replacing incandescent lighting with CFLs or are you waiting until your incandescent bulbs burn out?	52%	43%	5%

The large volume of customers replacing on burnout corresponds with the location of installation data, in how many CFLs are installed in low-traffic areas. Rooms with low use often have increased switching, which can sharply decrease the EUL of lighting. Additionally, ADM inquired as to what type of lighting the installed CFLs were replacing, summarized in Table 6-6 below.

Table 6-6 Type of Lighting Replaced by CFLs

Question	Incandescent	Burnt-Out CFLs	Mix of Both	Don't Know
What type of lighting did the CFLs replace?	75%	5%	2%	9%

Of the 75% of respondents replacing incandescent lamps, 47% replaced lighting that was still operating, having been motivated by potential energy savings to switch early.

6.2.4 Response to SPS Rebate

In addition to the questions specifically addressing NTGR displayed in Section 5.4.3, ADM delved deeper into the customer decision-making process and how it was affected by the available SPS rebate for CFLs. Customers were asked if the rebate had allowed them to purchase more CFLs than they otherwise would have. 58% of respondents indicated that they purchased more CFLs than they otherwise would have, with these respondents indicating an average increase of 8 CFLs over what they would have purchased absent a rebate. Figure 6-7 displays the distribution of customers by pre-existing and purchased CFL quantity.

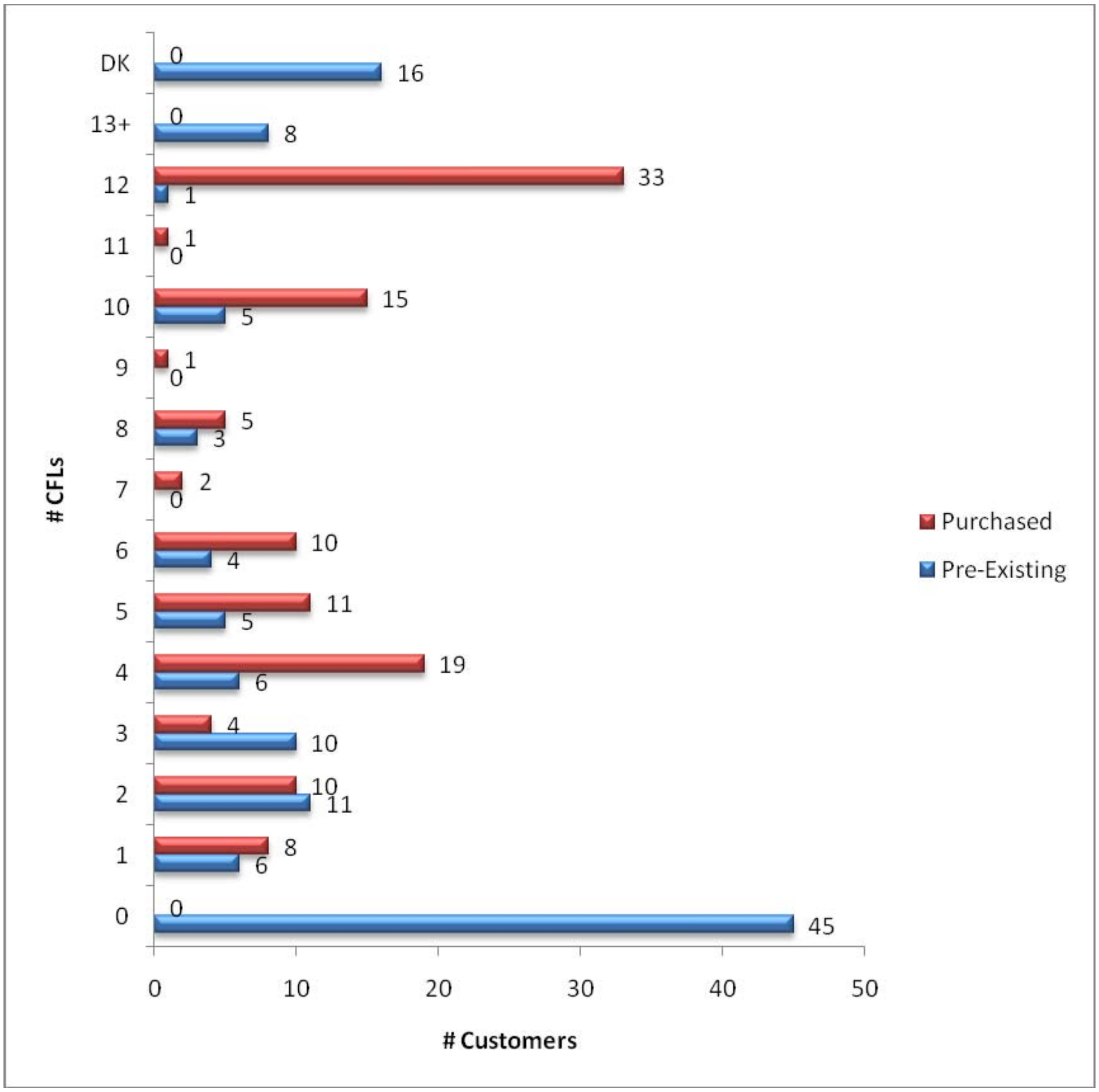

Figure 6-7 Distribution of Pre-Existing & Purchased CFL Quantities

Respondents had an average of 4.44 pre-existing CFLs, and purchased an average of 7.09 CFLs. Based upon the room of installation of pre-existing CFLs, and the room of installation of new CFLs, ADM has determined that an average of 10.3 "High Use" incandescent lamps remain in operation in the homes of program participants. This analysis is summarized in Table 6-7 below.

Table 6-7 Room Saturation Summary

Room Type	Average # Lamps	Pre-Existing CFLs	CFLs Installed	Available Lamps Remaining	Hours of Use
Kitchen	5.11	.75	0.76	3.47	3.5
Living Room	5.97	.83	1.31	3.83	3.3
Outdoor	4.06	.31	0.12	3.63	3.1
Family Room	2.38	.12	0.28	1.98	2.5

Garage	4.23	.44	0.05	3.74	2.5
Utility Room	1.81	.00	0.00	1.81	2.4
Dining Room	1.23	.25	0.34	0.64	2.3
Office	2.05	.01	0.04	2.00	1.9
Bedroom	9.94	.70	1.02	8.22	1.6
Bathroom	6.88	.69	0.62	4.95	1.5
Hall/Entry	5.12	.09	0.08	4.95	1.5
Laundry Room	2.05	.08	0.00	1.97	1.2
Closet	.77	.06	0.00	0.71	1.4
Other	2.05	.11	0.35	1.59	1.2

After having participated in the program and purchased SPS-discounted CFLs, 24% of participants then purchased CFLs that were not rebated through the program. Of these 24%, an average of 6 CFLs had since been purchased that were not rebated. Reasons for purchasing CFLs that were not rebated included the program not covering the specific type desired, and the customer happening to be in a non-participating retailer and not wanting to make a separate trip for the rebate. With the reasons given, the purchase of CFLs not rebated through the program is a likely indicator of free-ridership, as their behavior demonstrates that the rebate was not significant to the decision-making process.

6.2.5 Program Recommendations

Based upon customer responses to questions inquiring where the purchased CFLs were installed, ADM has concluded that customers are not maximizing the savings from CFLs in that they are not installing in the highest-use areas. ADM recommends that SPS add materials to the CFL displays detailing the difference in savings from a CFL installed in a living room or kitchen versus a bedroom or bathroom, as the customer would save twice as much energy and cost per year in doing so. This is often not immediately apparent to customers, who may not realize the magnitude of difference in usage in different space types in their home.

The HL&R program covers a far wider range of CFLs than it used to; specialty CFLs (candelabra, flood, etc.) are now covered to a far greater extent than in prior program years. A common complaint about retail lighting rebate programs is that they only cover the "basic" configuration; in covering the "designer" CFLs, SPS has widened the customer base that the program will capture.

A large number of program participants did not know about the program until after entering the store. These participants likely would have purchased CFLs anyway, given that they had visited the lighting section of a hardware store without prior knowledge of the rebate. SPS could increase outreach with online bill messages, as a significant number of SPS customers learned of the program through paper bill inserts. If customers have switched to paperless billing, they would not receive these inserts; an interrupt message during the online bill pay process could reach customers that do not receive paper bills.

A final issue with the program was the poor quality of tracking data; quantities, wattages, and configurations were often incorrectly listed in the tracking data, necessitating that ADM edit every line item. This was a lengthy process and one that is preventable, and ADM would like to review tracking databases for 2011 as they are developed.

6.3 RESIDENTIAL EVAPORATIVE COOLING REBATE PROGRAM

The Residential Evaporative Cooling Rebate Program (RECRP) offered rebates on either Central or Window Evaporative Coolers. In order to analyze the effectiveness of the program, ADM first surveyed 49 participants that had received a rebate for a Window Evaporative Cooler. In addition, ADM surveyed 34 participants that had received a rebate on a Centrally Ducted Evaporative Cooler. All administered surveys were focused on collecting data for development of impact evaluation parameters, but they were also leveraged to collect data useful for the process evaluation effort. Data collected via participant surveying is used in evaluating:

- Customer awareness of the program;
- Customers' reasons for participating in the program;
- Adequacy of the information provided to participants;
- Customer satisfaction with the program overall; and
- Recommendations for program improvement.

6.3.1 Customer Awareness

Survey respondents that received a rebate for either a Window or Centrally Ducted Evaporative Cooler were asked about the way they first learned of the RECRP. Figure 6-8 summarizes the data for the Centrally Ducted Evaporative Cooling participants and Figure 6-9 summarizes the data for the Window Evaporative Cooling participants. Note that for each graph the percentages can add up to more than 100% because some respondents indicated learning about the program from multiple sources.

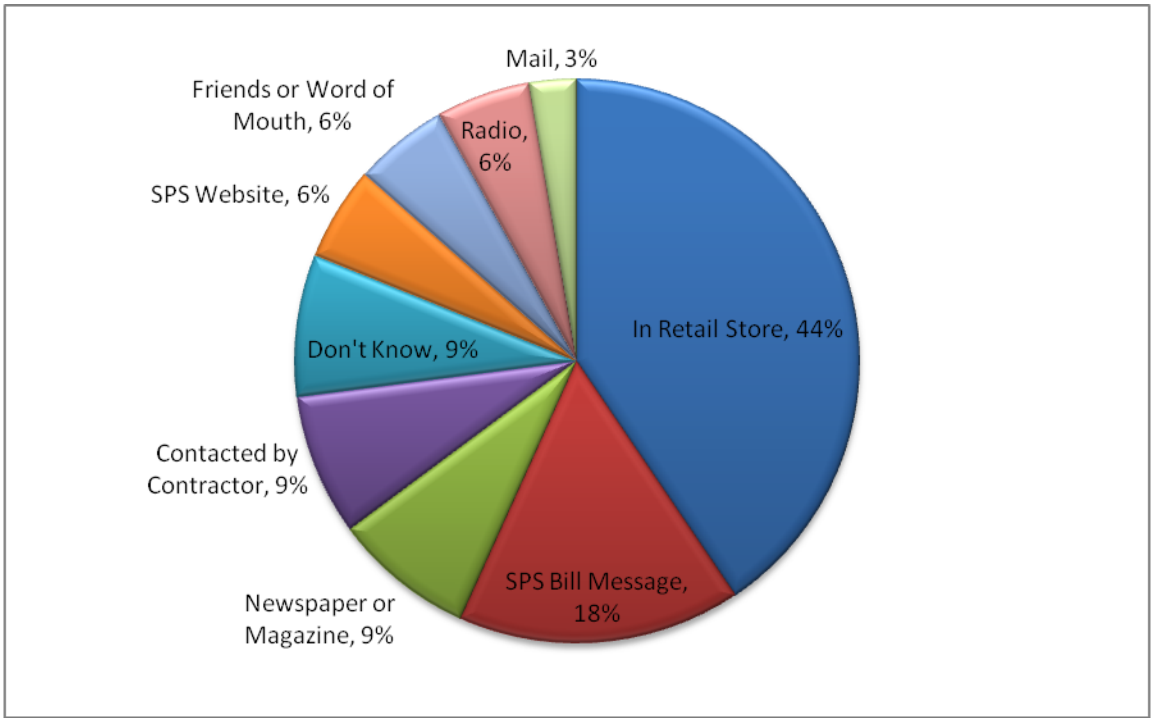

Figure 6-8 Sources of Program Awareness - Centrally Ducted Evap Participants

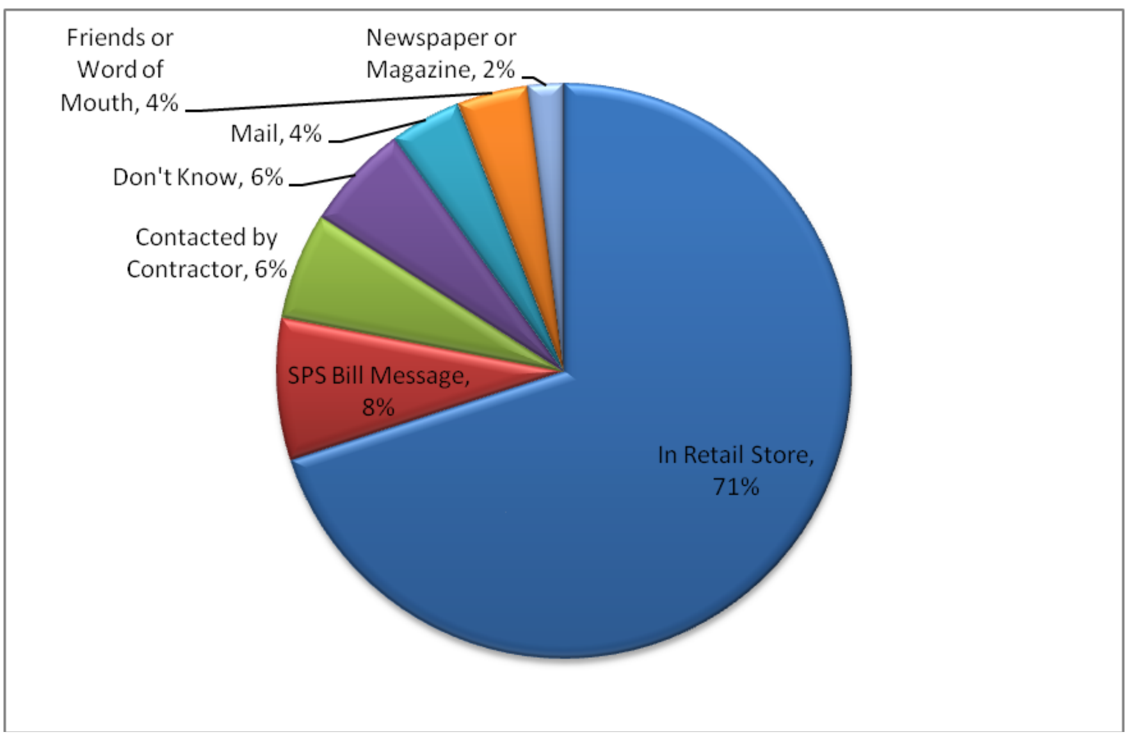

Figure 6-9 Sources of Program Awareness - Window Evap Participants

Across both groups, SPS reached the highest percentage of respondents directly through advertisements in retail stores, SPS bill messages or the SPS website. 63% of respondents those with Window units learned of the rebate at the same time as deciding to buy the equipment, which corresponds with customer responses in which 71% of window evap participants indicated learning of the rebate from their retailer. Similarly, 44% of respondents with Centrally Ducted Evaporative Coolers discovered the rebate at the same time as deciding to buy the equipment. Table 6-8 summarizes results of customer responses regarding the timing of learning of the available rebate relative to their decision to purchase an evaporative cooler Centrally Ducted and Window Evaporative Coolers.

Table 6-8 Time Customers Became Aware of Evaporative Cooler Rebate

Question	***Type of Unit***	***Before deciding to buy***	***After deciding to buy***	***At the same time***	***Don't Know***
When did you become aware of the rebate SPS offered for purchasing evap coolers?	Centrally Ducted	38%	15%	44%	3%
	Window	16%	20%	63%	0%

After retail stores, the highest percentage of respondents discovered RECRP directly through SPS bill messages. SPS bill messages were indicated as a source of information by 18% of respondents with Centrally Ducted Coolers and 8% of respondents with Window Evaporative Coolers.

Media advertisements, including print media and radio ads, were indicated as a source of awareness of the program by far fewer participants; in aggregate, media advertisements were indicated by 15% of centrally ducted participants and 2% of window evap participants.

6.3.2 Reasons for Program Participation

Survey respondents that received either a Centrally Ducted or Window Evaporative Cooler were asked about their reasons for purchasing an Evaporative Cooler. Figure 6-10 provides a summary of the reasons as indicated by respondents with Centrally Ducted Evaporative Coolers. The second figure, Figure 6-11, summarizes the reasons that the Window Evaporative Cooler survey respondents indicated for purchasing an evaporative cooler. Respondents were asked:

Why did you decide to purchase an evap cooler?

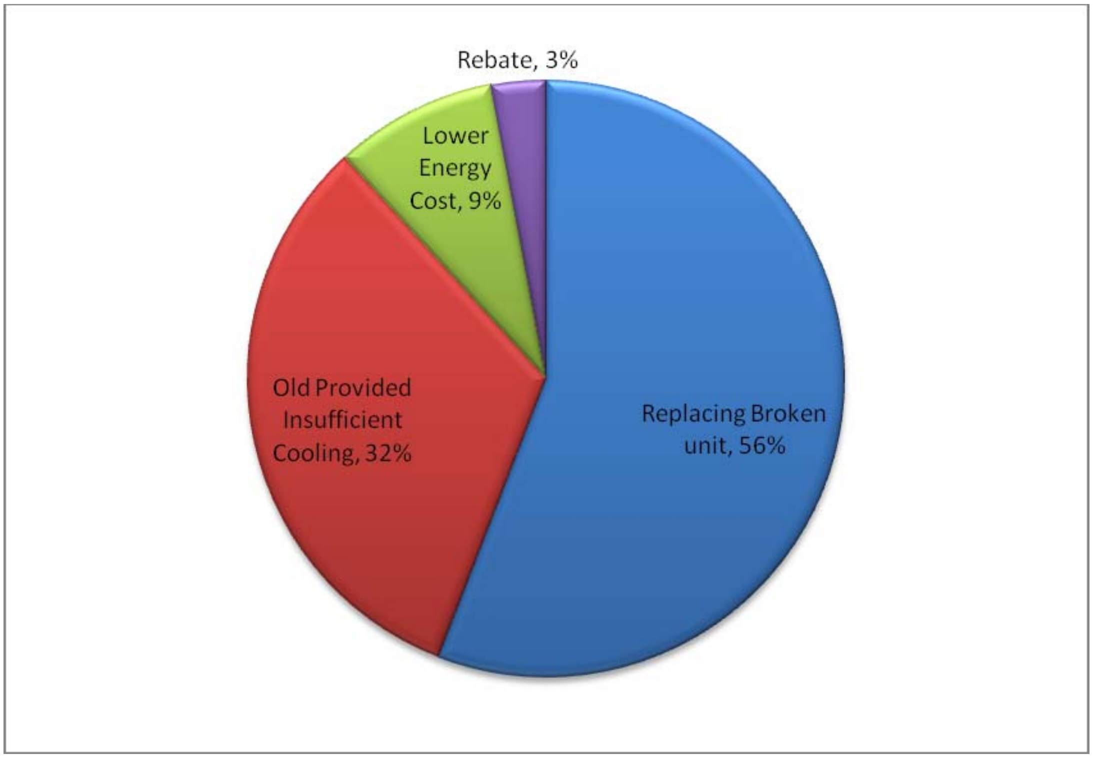

Figure 6-10 Reasons for Purchase – Centrally Ducted Evap

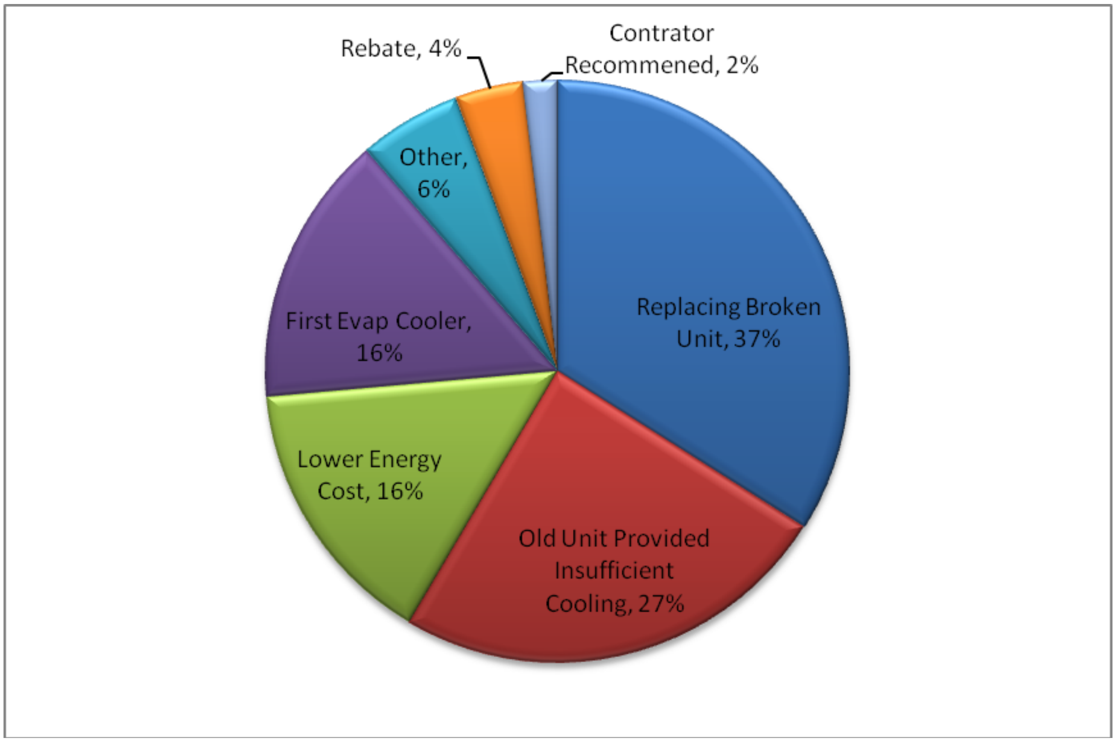

Figure 6-11 Reasons for Purchase – Window Evap

Both surveys yielded similar results with regards to the reasons that respondents chose to buy evaporative coolers. Most respondents purchased evaporative coolers because they were replacing broken evaporative coolers, with 56% of Centrally Ducted respondents and 37% of Window respondents indicating this as the primary reason. Another common reason was that respondents' old cooling unit was no longer providing sufficient cooling for their needs, as shown by the responses of 32% of Centrally Ducted respondents and 27% of Window Evaporative Coolers respondents.

In order to obtain a more thorough picture of the decision making process by program participants, ADM asked a second, similar question:

> What factors motivated you to install the evap cooler through the program in 2010?

Figure 6-12 presents a breakdown of the motivations provided by respondents that installed Centrally Ducted Evaporative Coolers. The second figure, Figure 6-13 presents a breakdown of the motivations provided by respondents that installed Window Evaporative Coolers.

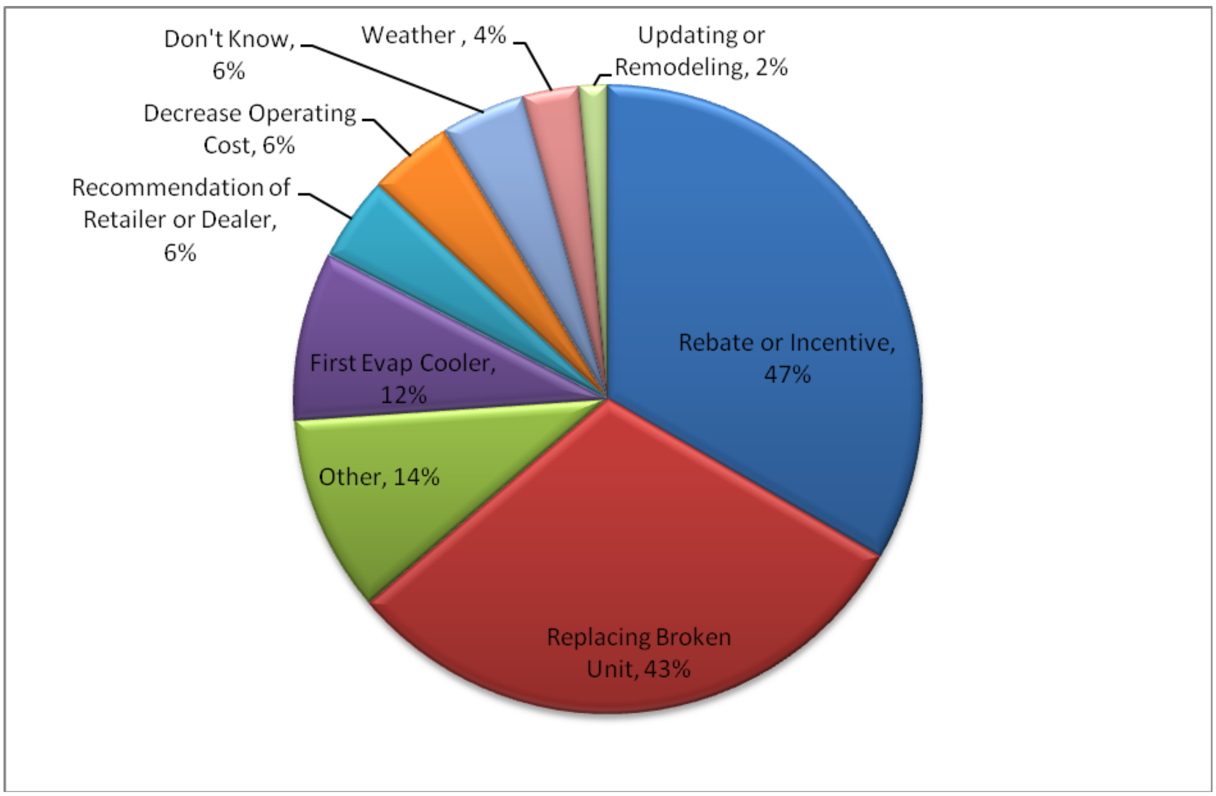

Figure 6-12 Reasons for Program Participation - Centrally Ducted Evaporative Coolers

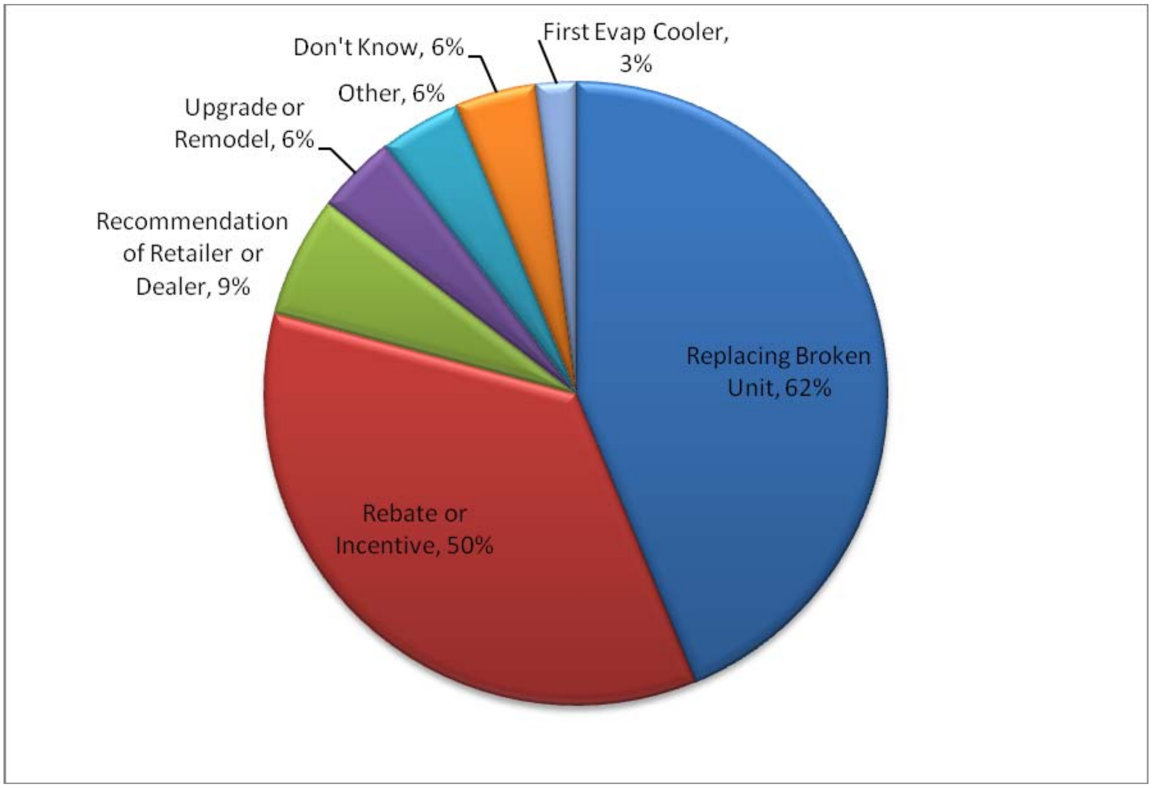

Figure 6-13 Reasons for Program Participation – Window Evaporative Coolers

These results differ somewhat from the results obtained in the first question, which was about purchasing motivations, and not necessarily related to participation in the program. While many respondents still indicated that they needed to replace broken units, another key factor showed up from asking this second question. In addition to the reasons they wanted buy new units, respondents, as a whole, indicated that the rebate factored into their decision to participate in the RECRP. The information in Table 6-9 summarizes the results of inquiring of the importance of the rebate in the decision-making process.

Table 6-9 Importance of the Rebate in Decision-Making Process

Question	Type of Unit	Very Important	Somewhat Important	Only Slightly Important	Not Important At All	Don't Know
How important was SPS's rebate in your decision to buy the evap cooler?	Centrally Ducted	44%	14%	5%	12%	5%
	Window	57%	14%	8%	20%	0%

The effect on cooling costs was another significant factor in respondents' decision to participate. Table 6-10 summarizes the importance of the effect of cooling costs.

Table 6-10 Importance of the Effect on Cooling Costs in Decision-Making Process

Question	Type of Unit	Very Important	Somewhat Important	Only Slightly Important	Not Important At All	Don't Know
How important was the effect on your cooling costs in your decision to buy the evap cooler?	Centrally Ducted	59%	15%	6%	15%	6%
	Window	57%	24%	8%	6%	4%

While a large percentage of respondents indicated that the rebate was important, more respondents indicated that the effect on cooling costs was a significant factor in their decision to buy an evaporative cooler than those asked about the rebate. A total of 74% of Centrally Ducted Evaporative Cooler respondents and 81% of Window Evaporative Cooler respondents found the cooling costs to be important.

6.3.3 Information Provided to Participants Regarding RECRP

Survey respondents were asked a questions regarding the relative significance of various sources of information on evaporative coolers. Table 6-11 summarizes the data gathered from survey respondents regarding the information provided to them from SPS and their contractor.

Table 6-11 Importance of Information to Participants in the RECRP

Question	Type of Unit	Very Important	Somewhat Important	Only Slightly Important	Not Important At All	Don't Know
How important in your decision was information, advice and/or recommendations from **SPS**?	Centrally Ducted	38%	18%	6%	32%	6%
	Window	47%	16%	14%	12%	10%
How important in your decision was information, advice and/or recommendations from your **contractor**?	Centrally Ducted	44%	24%	6%	21%	6%
	Window					

The information provided by contractors was also considered to be important. Since Window Evaporative Coolers often do not require third party assistance with, these respondents were not questioned about the advice from contractors. Of respondents with Centrally Ducted Evaporative

Coolers, 59% hired contractors for installation. The remaining 41% installed the unit themselves. Most respondents that had used a contractor had found them through personal reference, knew the contractor from previous work, or found the contractor through the SPS website or calling SPS. Only 9% of respondents used SPS to find a contractor.

6.3.4 Customer Satisfaction

Survey respondents were asked about their satisfaction with the overall experience of RECRP. Table 6-12shows the customer satisfaction with overall program experience for Centrally Ducted and Window Evaporative Coolers.

Table 6-12 Customer Satisfaction with Overall Program Experience

Cooling Unit Type	Very Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Very Dissatisfied	Would Not Answer
Centrally Ducted	91%	6%	3%	0%	0%
Window	86%	10%	0%	0%	4%

All survey respondents with Window Evaporative Coolers were either somewhat or very satisfied with their overall program experiences, except the 4% of respondents that would not answer. As for respondents with Centrally Ducted Evaporative Coolers, only one respondent was somewhat dissatisfied. This respondent was dissatisfied because he claimed that he had to fill out the paperwork multiple times to receive the rebate.

6.3.5 RECRP Program Recommendations

Based upon customer feedback and open-ended responses, ADM has determined a couple of areas in which the program could potentially be improved. More than one respondent indicated that they would have preferred to pass the rebate off to the installing contractor, but that the form would not allow for this. SPS has this framework in place for the Residential Home Energy Services program as well as for their business efficiency offerings, and a similar system could be established for Evaporative Cooling rebates. Additionally, some customers indicated that they would like for one form to accommodate multiple units. For customers purchasing units for several rental units, this could expedite the application process. SPS could possibly develop a multiple-unit form for such purposes, with a table that participants can fill out with specifications for all rebated units.

6.4 RESIDENTIAL HOME ENERGY SERVICES PROGRAM

The Residential Home Energy Services Program (HESP) offers a range of home efficiency improvements to participants, including:

- Duct Sealing;
- Infiltration Control;
- Ceiling Insulation;
- Central Air Conditioning Replacement;
- CFLs; and
- Low-Flow Showerheads (in homes with electric water heating)

In evaluating the HESP, ADM surveyed a total of 198 participants. The pool of participant surveys included:

- 162 participants who had their home weatherized (duct sealing & infiltration control);
- 12 that received installation of a low-flows showerhead; and
- 24 that received both showerhead installation and weatherization services.

Areas of interest in the survey effort included:

- Customer awareness of the program and discount;
- Respondents' reasons for participating in the program;
- Adequacy of the information provided to participants;
- Contractors' concerns and importance in the program;
- Changes in respondent behavior as a result of the program;
- Participant satisfaction with various program factors;
- Contractor satisfaction with various program factors; and
- Recommendations for program improvement.

6.4.1 Customer Awareness

Survey respondents were asked questions that helped ADM determine their level of program awareness. The 186 respondents that their homes weatherized were first asked about their knowledge of the discount on weatherization services offered by SPS. A total of 74% of respondents indicated awareness of the discount. The 137 participants that had indicated awareness were further questioned about the way that they had learned about the program discount.

Figure 6-14 below summarizes the different ways that survey respondents learned about HESP. Note that the total percentage of responses adds up to more than 100% because some respondents indicated more than one source of information regarding the program. Responses in the “Other” category include radio advertising and real estate agents.

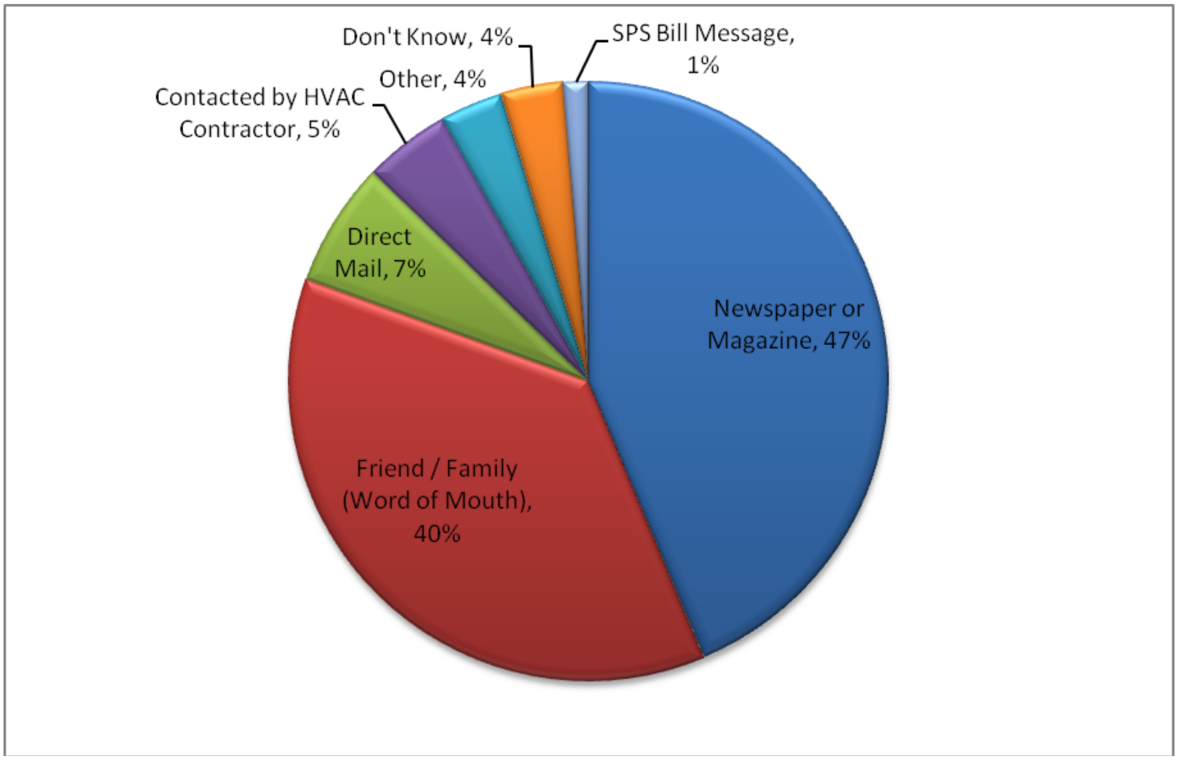

Figure 6-14 Sources of Awareness of HESP

As shown in Figure 6-14, most respondents learned of the program through print media or word of mouth, with these two sources indicated by 87% of respondents. This is corroborated by interviews with participating SPS contractors, who indicate that a large volume of the work they receive through the program stems from personal referrals from prior clients. In a sense, this suggests that the HESP has hit a “critical mass” of awareness, in that current participation induces further participation through personal networks. As such, the success of the program is likely sustainable in coming program years.

SPS reached a very small percentage of survey respondents via direct methods of advertisement such as bill messages or the SPS website. Only 1% of respondents indicated learning about the program through bill messages and no respondents indicated learning about the program through the SPS website. This suggests that SPS’s direct methods of program advertisement for RHESP are not effective in reaching program participants. However, the marketing efforts by SPS trade allies have sufficiently countered this, as participation in the HESP is very high.

6.4.2 Reasons for Participation in RHESP

In order to better understand the effects of RHESP, ADM asked survey respondents about their motivations for weatherizing their homes through the program in 2010. Figure 6-15 shows the breakdown of reasons for respondents' participation in RHESP. Note that the percentages can add up to more than 100% because some respondents indicated more than one reason for participating in RHESP.

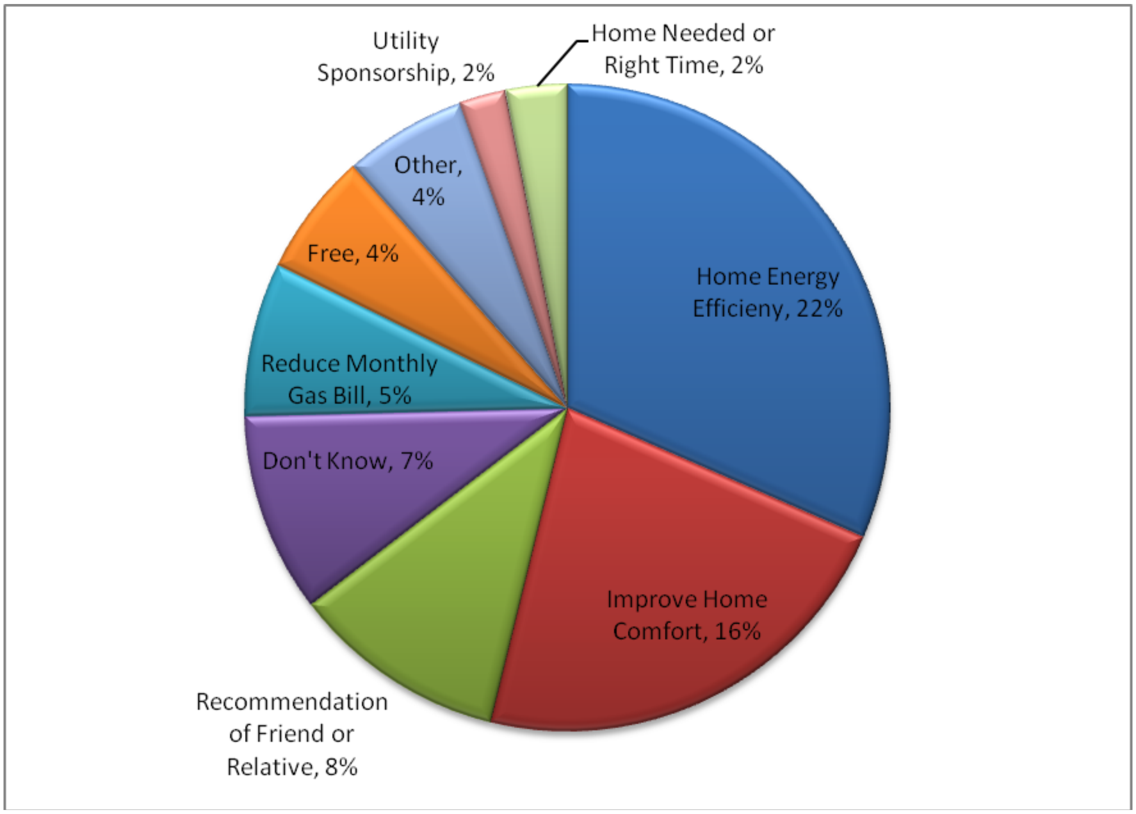

Figure 6-15 Reasons Respondents Participated in RHESP in 2010

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ADM then asked survey respondents specifically about the importance of the discount on weatherization services. Table 6-13 summarizes respondents' views on the importance of the discount for weatherization services.

Table 6-13 Importance of Discount to Respondents

Question	Very Important	Somewhat Important	Only Slightly Important	Not Important At All	Don't Know
How important was SPS's discount for weatherization services in your decision-making?	75%	12%	1%	8%	4%

Analysis of this data shows that respondents consider the discount to be a very important factor in their decisions to participate in RHESP. Specifically, a total of 87% of respondents found the discount to be important, with most of those respondents holding it to be very important. Overall, the data suggests that respondents participated in the program in a large part due to financial considerations, making it an important part of the program.

6.4.3 Adequacy of Information Provided to Participants

Program participants were questioned about the importance of information provided to them about RHESP. Information was provided to participants from both SPS and the contractors performing the work in participants' homes. Table 6-14 provides a summary of the importance of information provided by SPS and contractors to survey respondents.

Table 6-14 Importance of Information Provided

Question	Party Providing Information	Very Important	Somewhat Important	Only Slightly Important	Not Important At All	Don't Know
How important in your decision was information, advice and /or recommendations?	SPS	47%	17%	6%	12%	17%
	Contractor	58%	22%	4%	10%	7%

Survey respondents seemed to value information provided by contractors more than that provided by SPS. A total of 80% of respondents found information provided by their contractors to be important, while 64% of respondents valued information offered by SPS..

While these numbers summarize the importance of information provided by SPS and contractors, respondents' satisfaction with the type of information provided also matters. Table 6-15 summarizes the satisfaction of survey respondents with the information provided by SPS and contractors.

Table 6-15 Satisfaction with Information Provided

Question	Party Providing Information	Very Satisfied	Somewhat Satisfied	Neutral	Somewhat Dissatisfied	Very Dissatisfied	Don't Know
Please rate your satisfaction with the information provided.	SPS	41%	18%	10%	4%	5%	23%
	Contractor	61%	19%	8%	4%	3%	5%

Satisfaction with the information provided by SPS and contractors yielded similar results to respondents' rating of the importance of the information. ADM asked each dissatisfied respondent about their reasons for dissatisfaction with the information provided. For respondents dissatisfied with the information provided by SPS, many stated that SPS did not offer any information. One respondent indicated that the contractor had been their only real source of information. Another respondent said that a neighbor had provided more information about the program than SPS.

As for dissatisfaction with the information provided by contractors, most respondents also said that the contractor did not provide any information. One respondent claimed that the work was not performed as explained by the contractor. A few respondents said that the information was available from the contractor, but that the information was unclear.

In general, survey respondents considered the information provided by contractors to be more satisfactory than the information provided by SPS. This may be due in part to the fact that contractors performing the work can provided more substantial information with regards to the work being performed in the house. At SPS's point of contact with participants, information provided is likely more general information about the program as a whole, as opposed to the customer-specific information that the contractor is in a position to provide.

In addition to the former considerations, program participants already seem somewhat exposed to information about the program when they first learn about it. With the high significance of program discovery through recommendations, the people recommending the program are likely offering important information before respondents even make first contact with SPS. One situation that supports this idea comes from a respondent that claimed her neighbor offered the most information about RHESP. This may decrease respondents' satisfaction with and view of importance of the information provided by SPS. Overall, though, respondents seem mostly satisfied with and value the information provided by SPS and contractors.

6.4.4 Contractors Concerns and Importance to RHESP

Program participants were asked about the process of choosing the contractors that performed the weatherization at respondents' residences. Contractors were also surveyed in order to check the consistency of residential participants' responses. Figure 6-16 summarizes survey results concerning the way respondents chose their contractors. Responses in the “other” category include the fact that the contractor was the only company in town that was participating in the program, having property rental owners set it up and using the contract that she knew from a meeting.

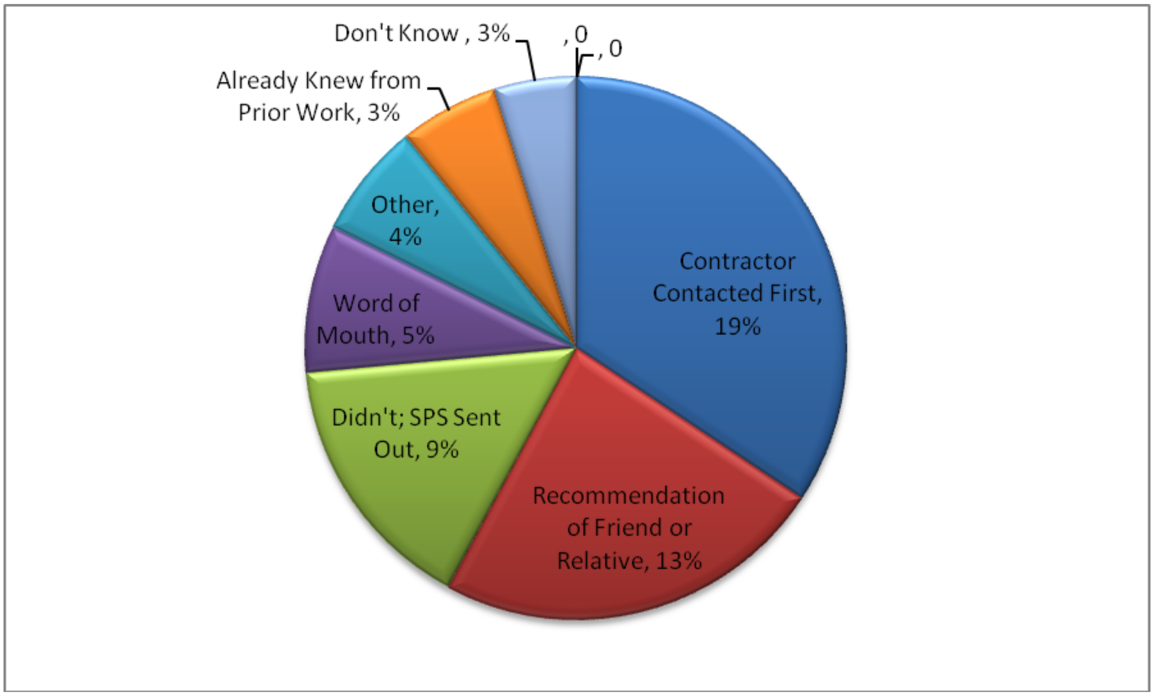

Figure 6-16 Choosing Contractors to Perform Work for RHESP in 2010

Survey respondents that had their house weatherized most often discovered contractors through either calling SPS and setting it up or finding a list of contractors through the SPS website, making up 26% of respondents. Another 22% of respondents chose their contractors by calling the number in the newspaper ad that was listed with the advertisement about the RHESP.

A total of 19% of respondents were contacted first by the contractor. Looking at this category in more depth, contractors were asked about their methods of advertisement. Responses included TV ads, newspapers, flyers, door to door and word of mouth advertisement methods. Contractors reported finding that word of mouth and flyers were the most effective marketing methods. This finding is consistent with the large percentage of respondents that claim they learned about the program through recommendations of friend and relatives.

Contractors were also asked about the level of customer awareness before contact. Responses from contractors varied from large to small percentages of customer awareness prior to contact. One contractor with a high percentage of customer awareness prior to contact said that respondents most commonly learned about the program by word of mouth from their prior customers. Other contractors said that customers discovered the program through other contractors or the internet.

As for the ways that contractors had discovered the program, they reported either being contacted by an SPS Representative or another contractor. Prior to participation in the program, none of the contractors had performed duct sealing or infiltration control in New Mexico residences, as the contractors lacked the training and certification for duct blaster and blower door testing. Contractors report having gone through the SPS courses specifically to participate in RHESP. Program participation has, for the most part, affected the types of equipment or services that contractors offer and many plan to be more active in the program over the next year. This is like due in part to the fact that all contractors reported having an increase in business since participating in RHESP.

6.4.5 Changes in Participant Behavior as a Result of the Program

Program participants were asked about changes in their behavior after participating in RHESP. Most respondents changed their behaviors by turning off lights in unoccupied rooms, turning down the thermostat and conserving water usage with larger wash loads and turning off faucets while not directly in use (e.g. while brushing teeth). Some other interesting energy conservation steps taken by respondents include greywater recycling, installing solar pool heaters, installing new roofs and doubly insulating homes.

6.4.6 Participant Satisfaction with RHESP

Program participants were surveyed about their satisfaction with various program factors. Some factors related only to the weatherization aspects of the program, some related only to low flow showerheads and finally, at the end, all participants were asked about the overall program experience. Survey respondents' satisfaction with the information provided by SPS and the contractors was already discussed in Section 6.4.3. The satisfaction of survey participants is summarized in Table 6-16

Table 6-16 Participant Satisfaction with RHESP

Question	Participants Surveyed	Very Satisfied	Somewhat Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Don't Know
Improvement in Home Comfort	Weatherization	54%	24%	15%	1%	4%	3%
Savings on Utility Bills	Weatherization	29%	19%	28%	4%	6%	14%
Quality of Contractor's Work	Weatherization	63%	22%	8%	3%	3%	2%
Quality of Showerhead Installed	Showerheads	64%	19%	6%	3%	3%	6%

Bathing Comfort with Low-Flow Showerhead	Showerheads	53%	22%	14%	0%	3%	8%
Overall Program Experience	All	67%	19%	6%	4%	3%	2%

When any survey respondents indicated dissatisfaction with a particular factor of RHESP, ADM inquired further about the reason for dissatisfaction. Some survey respondents indicated dissatisfaction with different factors of the program. For those that had their homes weatherized, some respondents were dissatisfied with the improvement of comfort in the home, the savings on utility bills, and the quality of the contractor's work. For those respondents that had installed low flow showerheads, some complained about the quality of the showerheads installed and others complained about the performance of the low-flow showerhead in providing comfortable bathing. Out of all the participants in the program, some indicated dissatisfaction with the overall program experience.

Only 5% of respondents with weatherization indicated dissatisfaction with the improvement of comfort in their homes. Most respondents that were dissatisfied indicated that they did not feel any improvement in the comfort in their homes. This may not indicate an actual dissatisfaction with the comfort level in the home because these respondents are only saying that there was no improvement. Two respondents that indicated dissatisfaction with the improvement in comfort in the home actually complained about seemingly unrelated matters such as the length of time it took for installation and the contractor's work.

Respondents with weatherized homes were asked about their satisfaction with the savings on their utility bills. A total of 10% of these respondents indicated dissatisfaction with this program factor. Most complaints about the savings on utility bills were due to the fact that these respondents had not noticed any savings. One participant gave some insight into a possible reason for a lack of savings. He said that the savings was hard to judge at this time because of bad weather currently in the area. The increased cooling loads associated with unusually hot weather effectively obfuscate the savings to the customer.

Concerning the quality of work performed by contractors on weatherized homes, 6% of respondents expressed dissatisfaction. Issues with this factor varied from one respondent to the next. A couple respondents complained that contractors seemed rushed with the job. Others said the contractors skipped important areas, made messes while performing the work, and that the work seemed unimportant to them. One respondent stated that a contractor damaged her ceiling and did not mention this to them.

Some survey respondents indicated dissatisfaction with the low-flow showerheads. Concerning the quality of the showerheads, two respondents indicated dissatisfaction but neither offered any insight into the reasons for dissatisfaction. One respondent stated that the performance showerhead did not provide adequately comfortable bathing. He claimed that the flow of water out of the showerhead was so low that he ended up removing it.

Some respondents indicated dissatisfaction with the program overall. Issues raised in this regard focused on the work performed by the contractor in their home. One respondent said that the work was cheaply done and that the stripping for the windows had fallen off within a week.

6.4.7 Contractor Satisfaction with RHESP

In addition to program participants, contractors were also asked about their satisfaction with various program factors. Table 6-17 provides a summary of contractors' satisfaction levels regarding various factors in RHESP.

Table 6-17 Contractor Satisfaction with RHESP

Question	Very Satisfied	Somewhat Satisfied	Neutral	Dissatisfied	Very Dissatisfied	Don't Know
Information Provided by SPS to customers	25%	25%	25%	25%	0%	0%
Information Provided by SPS to company	75%	0%	25%	0%	0%	0%
Ease of first applying for training courses	50%	50%	0%	0%	0%	0%
Ease of application process per home	25%	50%	0%	0%	25%	0%
Time elapsed until rebates are paid	0%	75%	0%	0%	25%	0%
Incentive Amounts	0%	75%	0%	0%	0%	DK
Overall Program Experience	0%	75%	0%	0%	0%	DK

In addition to being asked to rate various aspects of RHECP, contractors that were dissatisfied were asked to elaborate on their reasons for dissatisfaction.

6.5 RESIDENTIAL LOW INCOME PROGRAM

ADM surveyed 60 program participants in the evaluation effort for the 2010 Residential Low Income Program. All 60 respondents received weatherization services. Of these 60, 17 respondents also received CFLs and three also received low flow showerheads. All administered surveys were focused on collecting data for development of impact evaluation parameters, but they were also leveraged to collect data useful for the process evaluation effort. Data collected via participant surveying is used in evaluating:

- Advertising effectiveness and customer awareness of the program;
- Customers' reasons for participating in the program;
- Effectiveness of offering CFLs and showerheads;
- Effectiveness of the program in changing participants' behavior;
- Customer satisfaction with various program factors; and
- Recommendations for program improvement.

6.5.1 Advertising Effectiveness and Customer Awareness

Program participants were asked about the way they first learned of SPS's Residential Low Income Program. Analysis of survey data showed that SPS only reached 2% of respondents directly through bill messages or the website. More effective methods included newspapers and magazines, which were indicated by 48% of respondents. Recommendations by friends, relatives, coworkers or neighbors influenced 33% of respondents. Figure 6-17 shows the breakdown of ways that respondents became aware of SPS's Residential Low Income Program. Note that the sum of all percentages will not equal 100% because some respondents learned about the program through multiple sources.

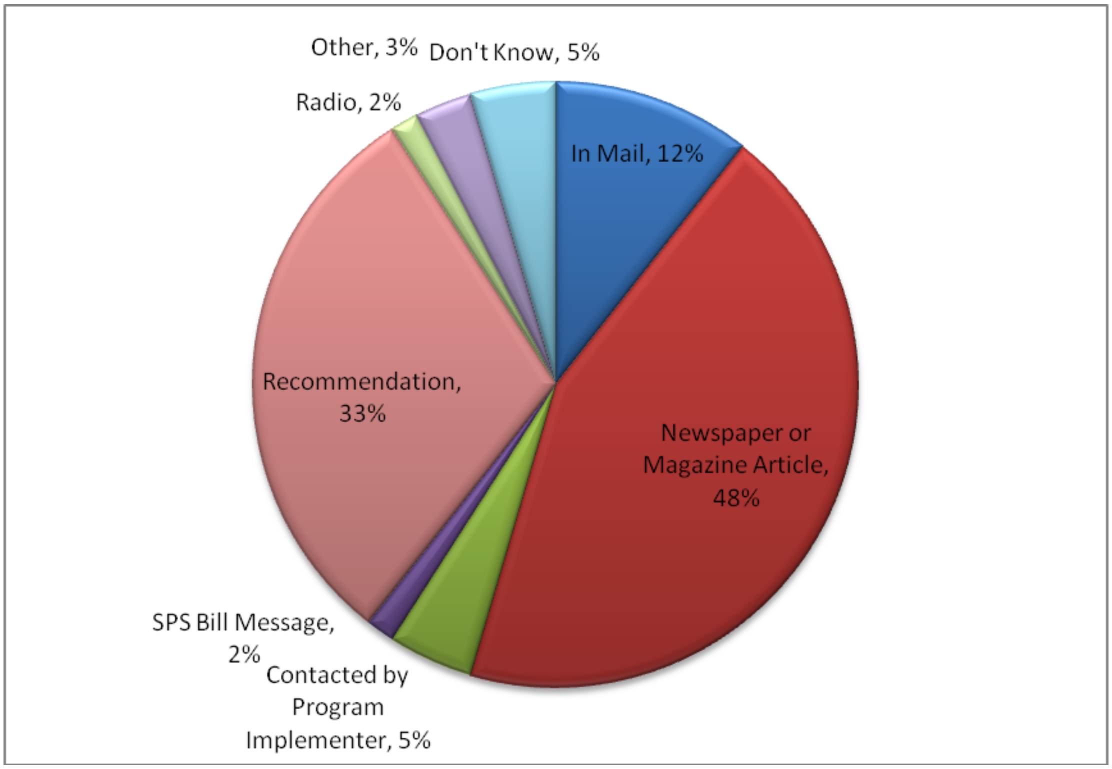

Figure 6-17 Source of Awareness of the Residential Low Income Program

6.5.2 Customer's Reasons for Participating in the Program

ADM inquired with survey respondents as to their motivation for participating in the Low Income program in 2010. They were asked an open-ended question in this regard, with all responses recorded. 63% of respondents indicated a desire to reduce their electric bill, and another 37% stated that a recommendation from a friend or relative that had participated in the program induced them to participate. Figure 6-18 summarizes the results below. A few interesting "other" reasons for respondent participation were curiosity, to see if it was a real program and because it was free.

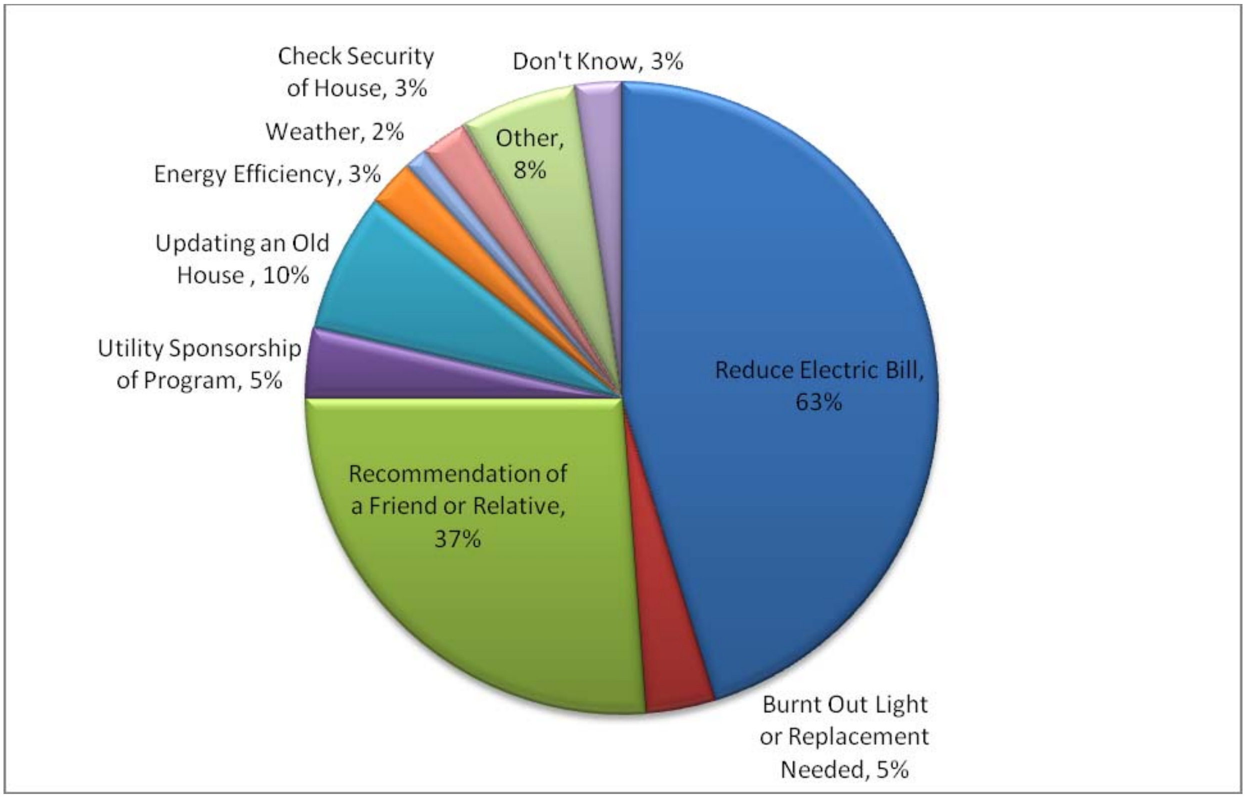

Figure 6-18 Reasons for Customer Participation in Residential Low Income Program

6.5.3 CFLs and Showerhead Replacement

Certain participants in the Residential Low Income Program were also offered CFLs, low flow showerheads, or both. Out of the 60 participants that ADM surveyed, 17 were given CFLs and 3 were given showerheads.

Concerning the participants that had received CFLs, 11 of the survey respondents had CFLs in the house before receiving any through SPS's Residential Low Income Program. There was no clear pattern to the number of CFLs pre-existing in respondents' homes, the numbers ranging from 2 to 18. One respondent could not recall how many CFLs were already in the house. Table 6-18 summarizes the likelihood of respondents installing CFLs without the assistance of SPS's Residential Low Income Program.

Table 6-18 Customer CFL Installation without the Program

Question	Definitely Would Not Have Installed	Probably Would Not Have	Probably Would Have	Definitely Would Have
If you have not received CFLs through the program, how likely is it that you would have installed similar equipment anyway?	0%	44%	31%	25%

According to the survey results, 56% of respondents would have a good chance of installing CFLs without SPS's program. Combined with the fact that 11 of the 17 respondents had installed CFLs in their homes prior to learning about the Residential Low Income Program, these results may mean that the CFL portion of the Residential Low Income Program is less effective than other parts of the program.

ADM also asked the CFL respondents about their satisfaction with the quality of lighting installed in their homes. Table 6-19 summarizes the information gathered through surveys.

Table 6-19 Customer Satisfaction with CFL Quality

Measure	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Quality of the lighting installed	75%	19%	6%	0%	0%

Concerning the participants that had received showerheads, pre-existing units were not considered. Table 6-20 summarizes the likelihood of respondents to install CFLs without the SPS Residential Low Income Program.

Table 6-20 Customer Low Flow Showerhead Installation absent the WAP

Question	Definitely Would Not Have Installed	Probably Would Not Have	Probably Would Have	Definitely Would Have
If you have not received the low flow showerhead through the program, how likely is it that you would have installed a similar unit anyway?	33%	0%	33%	33%

According to the survey results, only 33% of respondents would have likely installed low flow showerheads without SPS's program. This is based only on three responses, however, so conclusive results should wait until the program has had more uptake of this measure. ADM also asked the showerhead recipients about their satisfaction with the quality of the showerheads installed in their homes. Table 6-21 summarizes the information gathered through surveys.

Table 6-21 Customer Satisfaction with Showerhead Quality

Measure	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Quality of the showerhead installed	100%	0%	0%	0%	0%

6.5.4 Customer's Changes in Behavior Due to the program

The next important consideration of the Residential Low Income Program is its impact on respondents' behavior after participating in the program. Respondents were questioned about the extra steps they may have taken to save energy in their homes after participating in the program. A total of 62% of respondents indicated that they had taken extra steps to save energy in their homes since participating in the Residential Low Income Program. Most of the participants' efforts to conserve energy concerned lighting. One very common change in habits was that respondents began turning out the lights more often as they left the house. Another important measure taken by respondents was making a switch to energy efficient light bulbs. Other changes included turning down the heating and cooling systems or installing new windows. Some interesting responses included adding insulation to the attic, turning off the TV and unplugging chargers, buying energy efficient appliances and installing new dryers.

6.5.5 Customer Satisfaction with Weatherization Factors

ADM asked all 60 respondents about their satisfaction with the improvement in comfort in their homes after weatherization, the savings on their utility bills, the effort required for the application process, the service provided by the program staff when applying, the service provided by the crew that installed the equipment, the wait period until installation and the overall program experience. Table 6-22 below summarizes the results.

Table 6-22 Customer Satisfaction with Weatherization Services

Category	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Improvement in comfort in home	60%	20%	15%	3%	0%
Savings on utility bills	47%	15%	10%	3%	5%
Effort required for application process	88%	5%	5%	0%	0%
Service provided by program staff when applying	92%	5%	2%	2%	0%
Service provided by crew that installed the equipment	88%	8%	0%	3%	0%
Waiting period until installation	78%	15%	2%	0%	2%
Overall program experience	82%	10%	5%	2%	2%

When respondents indicated dissatisfaction with any aspect of the program, ADM inquired further about the reasons for the dissatisfaction. There were dissatisfied or very dissatisfied respondents in every category except the effort required for the application process.

- Two respondents indicated that they were dissatisfied with the improvement of comfort in their homes. One of the respondents claimed that air was still coming through weatherized areas. The other respondent said that the caulking was cracked and wanted it replaced, even though the crew said it was fine.

- Five respondents were dissatisfied with the savings on their utility bills. Four of the five respondents said that they had not seen any savings on their bills yet. One respondent indicated that he did not know why he was dissatisfied.

- One respondent indicated dissatisfaction with the service provided by the program staff when applying. After reviewing the respondents' complaint, however, it was determined that this complaint actually concerned the service provided by the crew because the respondent spoke of mishandled equipment. This same respondent also claimed dissatisfaction with the more appropriate category, “service provided by the crew that installed the equipment,” which will be discussed in the next paragraph.

- Concerning the service provided by the crew that installed the equipment, two participants indicated that they were dissatisfied. One participant (the one that put the complaint in the wrong category) was dissatisfied with the way the installation staff put vents back in place, the fact that a pin broke on a door that the staff was handling, and the fact that tape covering the dryer hole was badly placed. The other respondent complained that the installers did not check all the windows, nor did they check the outlets for insulation. The respondent claimed that he was given a packet for outlet insulation and instructed to do it himself.

- Only one respondent was dissatisfied with the waiting period until installation. This respondent was very dissatisfied because she felt 6-8 weeks was too long to wait for installation. Such wait periods are often unavoidable if the application occurred during the peak cooling or heating season, and as such ADM would consider this customer’s indication of dissatisfaction to be anomalous.

6.5.6 Customer Recommendations for Program Improvement

All participants were given an opportunity at the end of the survey to offer comments or suggestions for improving the Residential Low Income Program. Most people that left comments were very happy with the program and wanted SPS to continue offering it. A couple of respondents suggested informing new participants that the installation process could be messy in the house. This seems to be a very contractor specific problem, so SPS may want to make a little note of this in any information it offers new participants.

6.6 SPS BUSINESS PORTFOLIO

This chapter presents the results of the process evaluation of the SPS Business Portfolio[18]. The process evaluation focuses on aspects of program policies and organization, as well as the program delivery framework. The process evaluation is based upon analysis of program components as well as in-depth interviewing with participating SPS customers.

The process chapter begins with a discussion of the overall progress of the program and potential for meeting its goals. The chapter also includes discussion relating to certain issues that are critical to the future success of the program. This discussion is followed by an analysis of

[18] During the data collection process, customers were asked for responses in terms of the specific program component utilized. However, for the purposes of this study, SPS Business Portfolio refers to all analyzed programs, including Motor Efficiency, Cooling Efficiency, Lighting and Small Business Lighting, and Custom Efficiency.

strategic planning and process recommendations, and concludes by highlighting key findings from the surveys of customer participants.

6.6.1 Overall Program Success

During the interviews, the evaluation team analyzed data and questioned respondents about projects that were initiated and in the implementation process. Responses indicate that overall, the program is taking hold in the SPS New Mexico service territory, and increasing in its reach to customers. The program activity data confirm these observations; several previous participants have continued to install measures this year and many current participants are considering implementing additional projects.

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6.6.2 Program Tracking Database Review

Throughout the auditing process, tracking data were provided and continually updated by SPS. These data were used for recording and analyzing participant information, as well as for contacting participants for either surveying or auditing purposes. While this data was very useful and essential for the purposes of accurate participant analysis and communication, there are several improvements that could be made to the tracking procedure.

When working with large amounts of data, the format and organization of documents becomes increasingly important. Originally, tracking data did not include specific project types or codes, and the process of obtaining this information was time consuming. The evaluation process would be expedited if project information (such as measure type, product group, etc.) was included with participant tracking data. Other details such as participant emails for contact purposes were absent from the original data sets and required additional inquiry to obtain. In addition, the method of providing tracking information was inefficient, involving physical mailings of data rather than providing access on a server or other electronic source.

Several program participants who appeared in the tracking data were not the actual facilities that had installed measures, but were instead the builder or contractor that had worked with the customer to install equipment. This creates complications when performing market analyses and conducting surveys, as the intention is to communicate with the actual facility that underwent the retrofit or construction. Because tracking information is essential for accurate analysis, it must be as complete as possible to ensure efficient communication and effective reporting.

6.6.3 Future Program Improvements

As the program continues, it will likely grow in popularity and become more widespread in the SPS service area. While many existing factors are moving the program forward, there are still many areas for improvement that will provide strategic advantage in the future.

6.6.3.1 Development of Prescriptive Protocols

When energy efficiency programs are first offered, there are usually only a few measures that are considered part of the prescriptive program. The specialty or custom measures must be individually analyzed, designed, and evaluated, and do not conform to a set of prescriptive requirements. However, as participation increases, it becomes necessary evaluate the range of program offerings, allowing for the breadth of the program to grow commensurately with the diversity of its participant pool. This involves re-examining the custom measures to determine which of them are common enough and with sufficiently predictable savings to develop deemed (or at least partially-deemed) methodologies. Currently, oil well pump-off controls are in the process of having a deemed protocol developed, with ADM and SPS engineering staff working in concert to develop a model that can provide reasonable estimates of savings. This measure is becoming increasingly popular and as such applying a custom protocol to every application will become burdensome. Although SPS offers custom variations for each of its standard programs, there were no such participants in 2010 as the only custom measures fell under the Custom Efficiency Rebate program. Some customers expressed that the time and effort required to apply for a custom measure was significantly higher than for prescriptive measures.

6.6.4 Post-Installation Verification

SPS does not currently have a system for performing post-installation verifications at customer facilities. This can result in inaccuracies in rebate amounts, measure qualification, and program participation data. While performing evaluation activities, ADM has found several locations where the inspected site did not match its reported data. Participant facilities should be sampled by SPS in order to verify proper installation, correct equipment type, and other essential information. This will cause fewer delays in evaluation, more appropriate rebates, and higher customer awareness of proper protocols.

6.6.4.1 Third-Party Implementer

SPS performs its own implementation for all of its business programs other than the Small Business Lighting program. Although some programs are currently small and relatively manageable, third-party implementers are commonly very helpful with ensuring standardization and accuracy across programs. As measures gain popularity, an outside implementer will be useful in managing the large participant base and taking the programs forward. This past year, two hotels that were participating in New Construction lighting rebates approached the Small Business Lighting implementer and began the application process. Due to the size of their projects, they were referred to the SPS Lighting program by the implementer, and the eventual savings accounted for approximately 40% of the entire Lighting Efficiency program. Implementers are highly experienced in handling unique customer implementation issues such as these, and ADM believes that SPS would benefit from the expertise and oversight that a third-party implementer would provide for their business portfolio.

6.6.4.2 Measurement and Standardization Procedures

The energy efficiency measures in the SPS Business Portfolio were designed using various assumptions based on program forecasts and technical knowledge at the time of program inception. As more data about actual program participation is gathered, there are certain trends and standards that need to be considered for future program improvements. For example, many utilities prescribe to a set of standards for New Construction implementation and evaluation that provides guidelines for measurement and other criteria. Currently, SPS does not closely follow such protocol, causing barriers to comparison between its programs and others in the industry. For instance, SPS measures watts per fixture rather than watts per square foot for lighting equipment, which results in a data type difference when evaluating wattage. This should be changed in order to make results accurate and comparable to standard code.

On the program level, the Small Business Lighting Rebate was designed to accommodate all types of small businesses in the service territory. Results for the current year show that over 20% of the participants are in the education sector, accounting for about a third of total savings. Schools have a significantly higher level of free ridership than small business participants, and the program did not account for this proportion of education sector participants. The expectations and net-to-gross ratio forecasts for this and other programs should be changed to match the total available market and likely participant types.

The prescriptive measures offered by SPS are appealing to customers because of the relatively simple application and approval process, where an inspection is usually not required. Equipment that has predictable savings and usage can usually be considered prescriptive, but it is essential to consider not only the specific equipment type installed, but also how it will be utilized by the customer. Several customers in 2010 participated in the Motor & Drive Efficiency program by installing variable frequency drives on new wells that had also been retrofitted with a pump-off controller and applying for a prescriptive rebate on the drives. However, the VFD itself caused higher energy consumption by running the motor at low speeds rather than allowing it to shut off when not in use. This resulted in a large discrepancy between expected and actual savings. In these specific cases, the oil well controllers counteracted the energy use of the VFD and resulted in overall savings for the facilities, but the expectations for the VFDs were highly inaccurate. Situations such as these indicate the need for careful specifications within prescriptive rebates, as well as post-installation verification procedures.

6.6.5 Overall SPS Business Portfolio Customer Profile

Table 6-23 presents the average, median and range of the incentives for firms participating in an SPS Business Portfolio measure. The average total incentive was about $3,700 while the median was close to $1,800. Total incentives for projects range as high as $28,000. The highest average incentive was for Cooling Rebates, followed by Small Business Lighting. Custom Efficiency measures had the lowest average incentives.

Table 6-23 Average and Median Incentive for all Programs

Program Description	Average	Median	Range
Cooling	$8,262	$4,680	$375 - $23,450
Custom Efficiency	$1,451	$1,365	$883 - $2,105
Lighting	$1,912	$239	$60 - $8,964
Lighting - Small Business	$3,659	$1,981	$96 - $28,168
Motors	$3,193	$2,850	$125 - $15,100
Total - All Programs	$3,726	$1,850	$60 - $28,168

The SPS Business Portfolio programs were utilized by a diverse range of customers in 2010. Figure 6-19 presents the total distribution of participants by facility type.

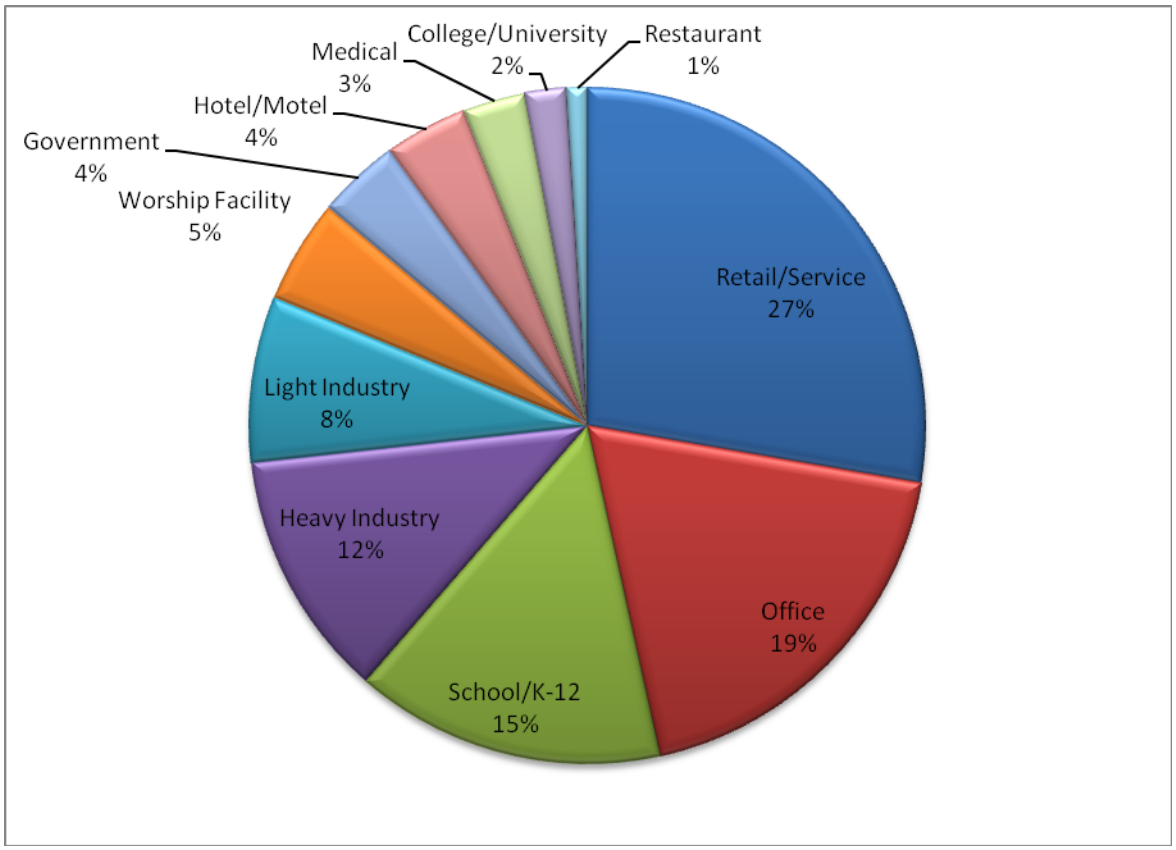

Figure 6-19 SPS Business Portfolio Participants by Facility Type

The distribution of savings for the most part matched the distribution of facilities overall, although several large participants are responsible for a large percentage of savings in sectors such as Retail/service. Retail/service facilities are typically low to moderate in volume of savings per-site, but in aggregate these facilities accounted for the greatest proportion of savings. Figure

6-20 summarizes the distribution of expected savings by facility type. Offices had a slightly lower amount of savings than is suggested by its facility distribution, and Hotel/Motel facilities had a relatively higher level of savings.

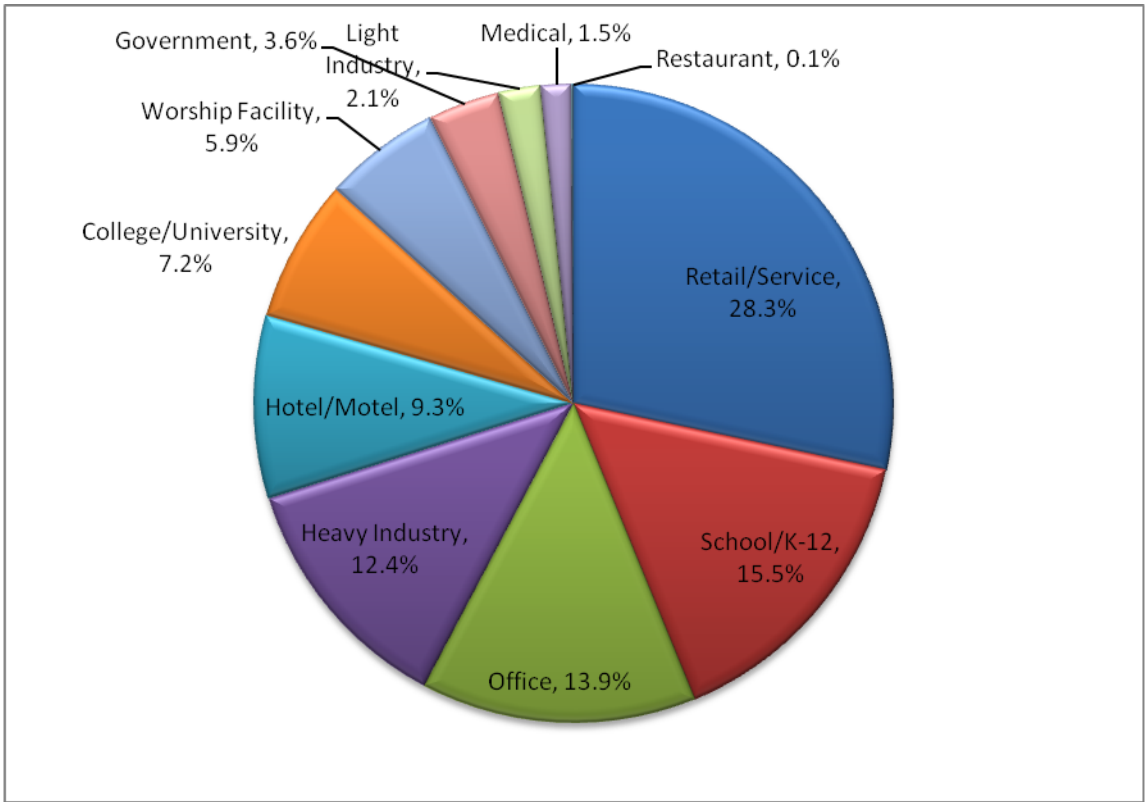

Figure 6-20 Distribution of Expected Savings by Facility Type

6.6.6 Commercial New Construction Rebates Customer Profile

Table 6-24 summarizes the average, median and range of the incentives for New Construction project applications. The average total incentive was roughly $6,000 while the median was close to $1,900. Total incentives for projects range as high as $23,450. The averages are skewed by a few large projects.

Table 6-24 Average and Median Incentive for New Construction Customers

	Average	Median	Range
All Programs	$6,017	$1,891	$125 - $23,450

Figure 6-21 presents the distribution of New Construction rebate participants by facility type. The retail/service and hotel/motel sectors each had two projects, while there were three installation measures in the heavy industry sector.

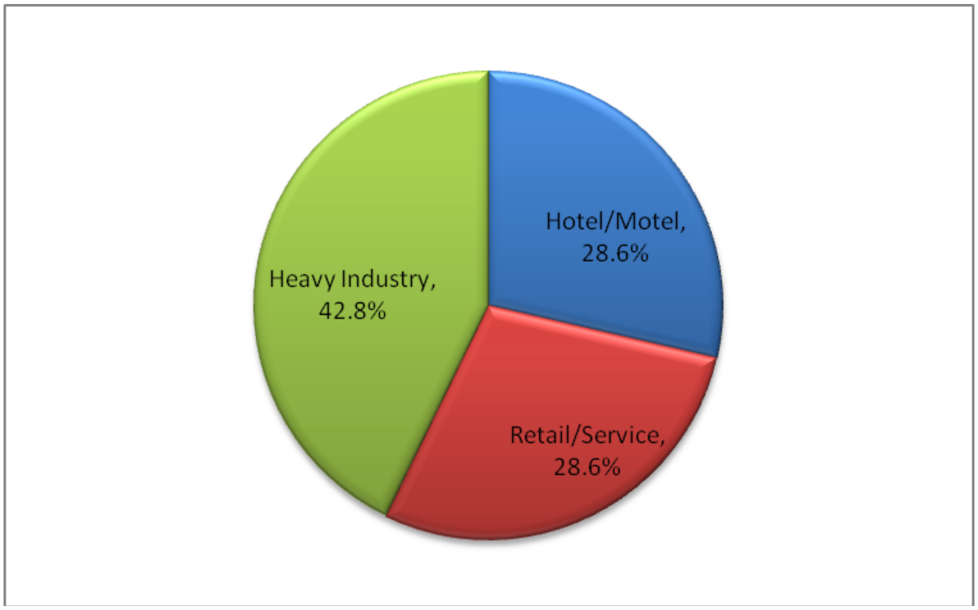

Figure 6-21 New Construction Rebates Distribution of Participants by Facility Type

Participating facility types were relatively evenly distributed within the New Construction rebates component. However, the Retail installations were both performed by a single participant, whose new construction accounted for over 60% of the total expected savings. Figure 6-22 presents the distribution of expected savings by facility type for 2010 New Construction rebates. Although Heavy Industry had the most participants in this type of rebate, its savings were exceptionally low due to the small scale of its Premium Efficiency Motor installations.

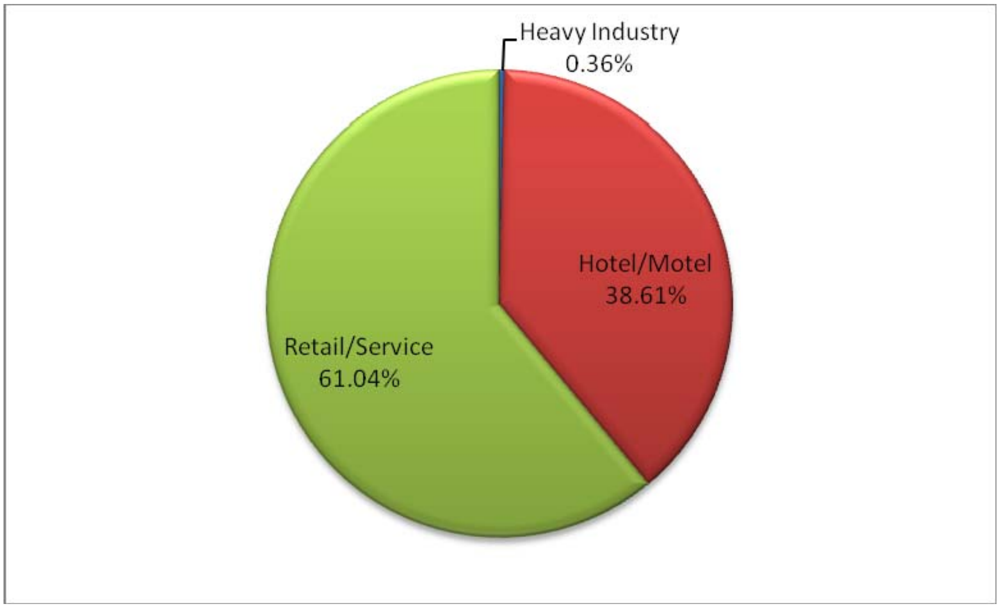

Figure 6-22 Distribution of Expected New Construction Savings by Facility Type

6.6.7 Commercial Retrofit Rebates Customer Profile

Table 6-25 summarizes the average, median and range of the incentives for New Construction project applications. The average total incentive was roughly $3,500 while the median was close to $1,900. Total incentives for projects range as high as $28,168.

Table 6-25 Average and Median Incentive for New Construction Customers

	Average	Median	Range
All Programs	$3,569	$1,850	$60 - $28,168

Figure 6-23 presents the distribution of Retrofit rebate participants by facility type[19]. The Retail/service sector had the largest proportion of participants (29%), followed by Office (21%) and School/K-12 (17%).

[19] These data do not include the facilities that implemented variable frequency drives for their oil well controllers, as the expected savings differs significantly from realized savings and these projects will be discussed separately in order to avoid skewing the data.

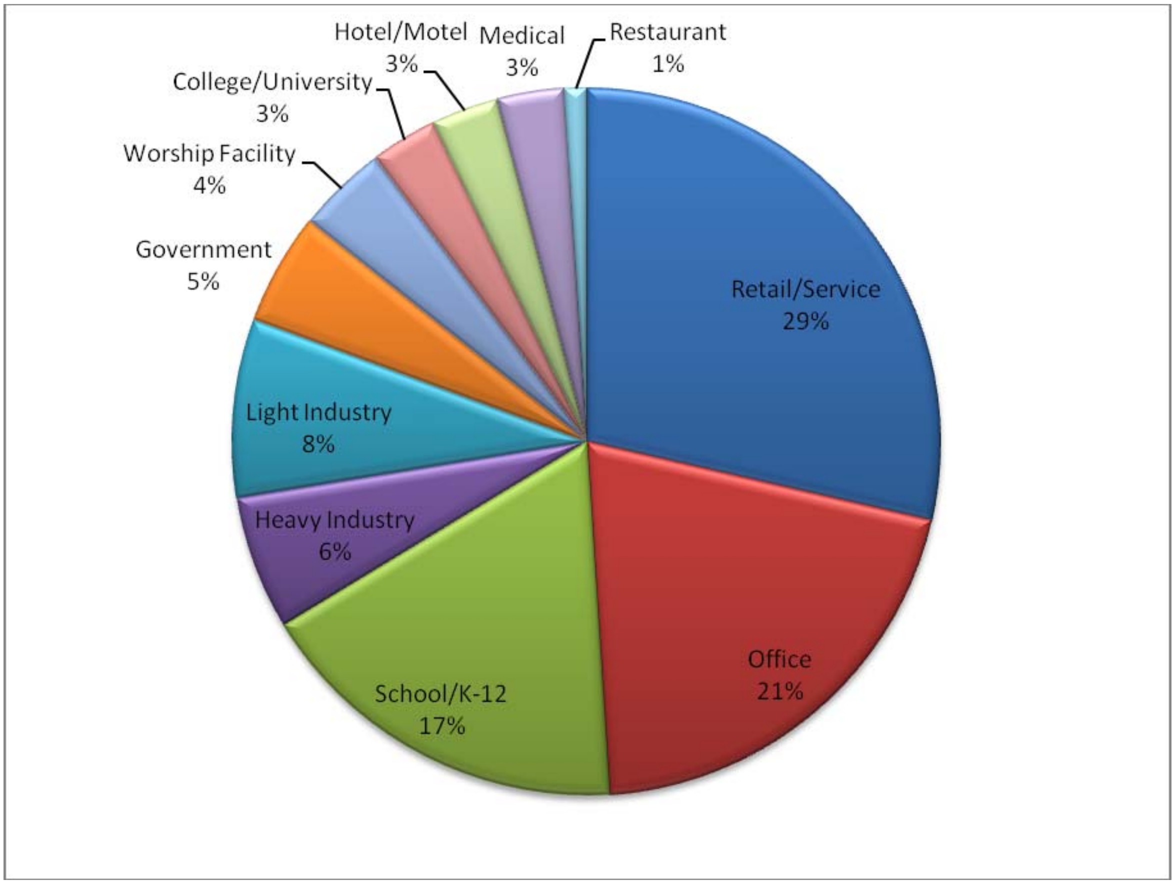

Figure 6-23 Retrofit Rebates Distribution of Participants by Facility Type

With the total program data disaggregated into Retrofit and New Construction projects, it is clear that most of the savings of the Retail/service sector are from New Construction rebates. Retail participants in Retrofit projects were relatively smaller, and although it leads in number of facilities, this sector has the fifth largest Retrofit savings. School/K-12 participants lead with about 25% of savings, followed by Office participants. The education sector in general tends to have larger Retrofit projects, as can be seen by the participation vs. savings of the College/University facilities. They represent only 3% of retrofit participation, but account for nearly 17% of total savings.

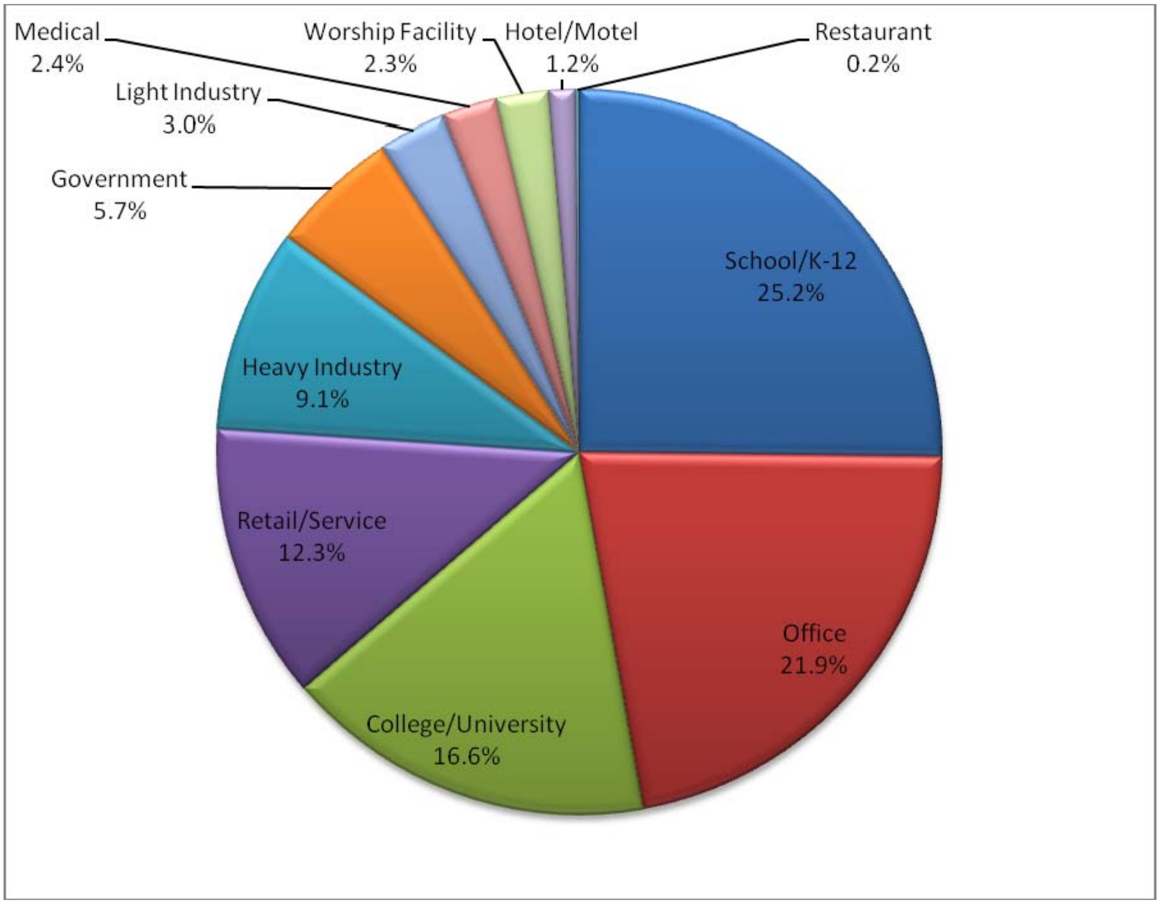

Figure 6-24 Distribution of Expected Retrofit Savings by Facility Type

While claimed or expected savings are often fairly accurate, many facilities were visited as part of a post-verification process in order to determine their realized kWh savings and determine whether any project changes needed to be made. As mentioned above, there were instances in the Retrofit Rebate projects where equipment was installed that increased energy usage rather than decreasing it by the expected amount. Specifically, these projects had an average expected savings of about 65,000 kWh, but the VFDs themselves generated up to a 60,000 kWh increase rather than lowering energy usage. These projects did have spillover effects from other equipment that resulted in net savings, but kWh data from these projects are not included in the process analysis because the contribution of these unique installations skews project data significantly.

6.6.8 Customer Outcomes

SPS utilizes multiple marketing strategies to make customers aware of its programs. The program partners with trade allies such as lighting contractors, motor vendors, engineering firms and others who promote programs with their customers. SPS distributes marketing materials such as brochures, and directly contacts customers with information.

A survey was conducted to collect data about customer decision-making, preferences, and opinions of the SPS Business Portfolio measures. In total, 44 facilities had representatives respond to the survey. Because some decision makers represent more than one facility, such as with retail chains, responses for each of the 44 locations will be considered individually for the purposes of aggregation.

6.6.8.1 How Customers Learn About the Program

Table 6-26 displays the customer responses to how they learned about the program. The percentages are the percentages of respondents. The most common way customers learned about the program was directly through SPS specialists and account representatives. Another 20% learned about the program through other building professionals such as architects, engineers, or energy consultants. Another 16% heard about it from other sources, most commonly an electrician working for the facility. 14% of respondents reported hearing of the program from vendors or contractors, while word of mouth was cited by 11% of respondents. Less than 10% mentioned an SPS brochure in their responses.

Table 6-26 How Customer Decision Makers Learned about the Program

How participants heard about the program	Percent of Respondents
Approached directly by SPS Specialist or Account Representative	30%
An architect, engineer or energy consultant	20%
Some other way (please explain)	16%
An equipment vendor or building contractor	14%
Friends or colleagues (i.e., word of mouth)	11%
SPS Brochure	9%
N	44

An important question is when respondents learned about the program. As shown in Table 6-27, 55% of the customers learned about the program before they planned equipment replacements, and 36% learned about it during planning equipment replacement. About 10% of respondents indicated that they had learned about the program after the equipment had been specified and/or installed.

Table 6-27 When Customer Decision Makers Learned about the Program

When did you learn of the SPS energy efficiency program?	Percent of Respondents
Before planning for replacing the equipment began	55%
During your planning to replace the equipment	36%
Once equipment had been specified but not yet installed	7%
After equipment was installed	2%
N	42

Table 6-28 cross-tabulates the data regarding when customers heard about the program with whether they had previous plans to install equipment. Of the participants who indicated that they learned of the program before beginning equipment replacement planning, nearly three quarters of them had not had prior plans to install equipment. This implies that the program directly influenced these responders to take action.

Table 6-28 When Customer Decision Maker Learned about the Program, by Whether There Were Plans to Install Equipment

	At which point did you learn about the program?			
Had plans to install measure before participating	Before planning for replacing the equipment began	During your planning to replace the equipment	Once equipment had been specified but not yet installed	After equipment was installed
Yes	26%	73%	100%	100%
No	74%	27%	-	-

6.6.8.2 Customer's Attitudes, Behaviors and Decision Making with Respect to Energy Efficiency

Customers were asked about the importance of energy efficiency in facility operational planning as compared with other factors. As shown in Table 6-29, 82% of the customer respondents reported that compared to other factors energy efficiency was a very important factor in planning their operations.

Table 6-29 Importance of Energy Efficiency Compared to Other Factors

How important is energy efficiency as an operational planning factor?	Percent of Respondents
Very Important	82%
Somewhat Important	9%
Only Slightly Important	9%
Not Important at All	-
N	43

Respondents were given a list of factors, shown in Table 6-30, and asked how important each of the factors was in their decision to participate on a scale of 1 to 4 were 1 was not at all important and 4 was very important. The highest percentage of customer respondents rated incentive payments from SPS as "very important" (84%), followed by advice and recommendations from SPS (70%) and the organization's policies (68%). Past experience with energy efficient equipment was very important to 62% of respondents, and advice and/or recommendations from contractors was reported as very important by over half of survey participants. Roughly 15% of respondents rated SPS advice and recommendations as not important. Of these respondents, all but one already had plans to install equipment before hearing about the program, and most reported that they would have proceeded with installation if the rebate had not existed. These participants are likely less reliant on SPS recommendations because of their high level of free ridership and independent planning, and therefore rated it with lower importance.

Table 6-30 Percent Rating Factors Influencing the Decision to Participate

Energy Efficiency Decision Making Factor	Very Important	Somewhat Important	Only Slightly Important	Not Important at All	Don't Know	N
Incentive payments from SPS	84%	9%	7%	-	-	43
Advice/recs from SPS	70%	9%	-	14%	7%	43
Organization's policies	68%	9%	9%	2%	12%	43
Past experience with EE equipment	62%	19%	-	-	19%	43
Advice/recs from Contractor	58%	37%	-	5%	-	43

The importance of energy efficiency and the importance of incentive payments as rated by the customer were examined by the amount of the customer's claimed or expected savings for projects rebated through the energy efficiency programs.

Table 6-31 displays the results. Overall, the highest savings group placed more importance on incentive payments than the lowest savings group. Incentive payments appear to be very important for most participants, with only the savings group under about 9,000 kWh having a significantly lower rating of this factor. Because the customers with the highest expected savings are among SPS's larger customers, they have the most potential for program participation and incentive achievement. In addition, most customers reported that energy efficiency is a major factor in their operational planning. The lowest rating for this item came from Group 2 (17,481 – 85,994 kWh) with only half of respondents rating it as very important. Because this group placed the most importance on incentive payments, it implies that these facilities will be unlikely to seriously consider energy efficiency planning in the absence of rebates from SPS.

Table 6-31 Project Decision Maker Attitudes toward Energy Efficiency and Program Incentives, by Customer Claimed Savings

Group Number	***Claimed kWh Savings***	***Number of Respondents***	***Percent stating that energy efficiency as a factor in facility operational planning is "very important"***	***Percent stating that incentive payments from SPS are "very important" for decision making regarding energy efficiency improvements***
1	85,994 - 617,482	10	90%	90%
2	17,481 - 85,994	10	50%	100%
3	9,141 - 17,481	9	100%	88%
4	1,871 - 9,141	10	80%	60%
All Respondents		39	80%	85%

Customer survey respondents were asked what kinds of energy policies their organizations practice. Some of the response data are shown in

Table *6-32*. The largest percentage of respondents, 71%, stated that they had a staff member responsible for energy and energy efficiency. Roughly one-quarter said that they had an energy management plan, and less than 10% reported having corporate policies that incorporate energy efficiency. None of the respondents mentioned using active training as an energy efficiency activity, and 2% explained that they had no policies or activities in place.

Table 6-32 Customer Energy Efficiency Policies and Activities

Response	Percent of Respondents
A staff member responsible for energy and energy efficiency	71%
An energy management plan	24%
Any others, such as project-specific evaluation or consultants	10%
Corporate policies that incorporate energy efficiency in operations	7%
None	2%
Active training	-
N	41

* Customer could make multiple responses. The percentages are based on the number of respondents rather than the number of responses. Thus, the total exceeds 100%.

6.6.8.3 The Decision Makers

Respondents were asked how many decision makers were involved in energy efficiency planning. As shown in Table 6-33, nearly 70% of the customer respondents said that one or two key people were involved, followed by 30% of the respondents who said that a decision was made by a group or committee. Only 2% of respondents claimed that energy efficiency decisions are based on staff recommendations to a decision maker.

Table 6-33 Decision Maker Characteristics

Who makes energy efficiency decisions?	Percent of Respondents
Made by one or two key people?	68%
Made by a group or committee?	30%
Based on staff recommendations to a decision maker?	2%
N	43

A cross-tabulation of decision maker characteristics and facility type shows a correlation between method of decisions and type of establishment. Retail locations most commonly use one or two people to make energy efficiency decisions. This is likely due to the relatively smaller size of these facilities where there may be a single manager handling equipment changes. One participant in the retail sector explained that their energy efficiency decisions are primarily handled by rebate consultants. Most of the group or committee decision makers are located in the education sector or in worship facilities. Schools are usually larger and often assign tasks to multiple people, as there are various departments involved in the decision process. Government participants mainly cited staff recommendations as their standard method.

6.6.8.4 Where Decision Makers Get Their Information

Respondents were asked whom they rely on for information about energy efficient equipment, materials, and design features. Respondents could provide multiple responses and the percentages are percentages of firms, meaning the total shown in Table 6-34 is more than 100%. The respondents most often reported that brochures and advertisements (73%) were an important source followed by SPS Account Representatives (68%), the SPS Website (65%), and SPS Energy Specialists (58%). Architects, engineers, and energy consultants, as well as trade journals, were mentioned by roughly half of respondents. Between one-third and about 40% of respondents cited friends and colleagues, vendors, trade associations, and contractors. Over 10% mentioned that they did not have specific sources for information, as this was their first involvement with an energy efficiency program.

Table 6-34 Who Respondents Rely on for Information

Information Source	Percent of Respondents
Brochures or ads	73%
SPS Account Representative	68%
SPS Website	65%
SPS Energy Specialist	58%
Architect, engineer, or energy consultant	53%
Trade journal	48%
Friends & colleagues	43%
Vendor	43%
Trade associations / business groups	38%
Contractor	33%
Other	3%
[First timer, no specific sources]	13%
N	40

* Customer could make multiple responses. The percentages are based on the number of respondents rather than the number of responses. Thus, the total exceeds 100%.

6.6.8.5 Participant Decision Process

The participants were asked if they bid the job, awarded the job to one firm, or self-installed the measure. The responses rates are shown in Table 6-35. 48% of respondents said that they used a bidding process, one-third used one firm directly, and 12% self-installed.

Table 6-35 Customer Project Implementation Strategy

Response	Percent of Respondents
Bidding process	48%
One firm only	33%
Self installed/No vendor used	12%
Don't know	7%
N	42

Among the survey respondents who used a bidding process, 55% reported that more than one vendor promoted the program, as shown in Table 6-36. 55% of these firms also said that they selected a firm that promoted the program. 7% of the respondents said that they told the vendor about the program. In other words, the majority of the program participants may not be introducing or asking vendors about the program. Only one participant reporting having previously worked with the contractor, and no respondents claimed that their vendor choice was influenced by the energy efficiency program being part of the project. These results indicate that vendor and contractor involvement with the program may not be heavily influencing customer choices.

Table 6-36 Program and Vendor Choice

Question	Percent of Respondents Saying Yes	N
Did more than one vendor promote the program?	55%	18
Did you select a firm that promoted the program?	55%	18
Did you tell the firm about the program?	7%	14
Had you previously worked with this vendor/contractor?	10%	10
Did the fact that the energy efficiency program was part of the project influence your decision on what vendor/contractor to use?	-	10

6.6.8.6 Financial Methods Used by Decision Makers

Table 6-37 displays the financial methods that respondents claimed to use to review efficiency projects. Respondents could provide more than one method. The percentages are percentage of respondents. The two most common methods were simple payback (98%) and initial cost (79%). These are followed by internal rate of return (64%) and life cycle cost (62%). These are relatively high rates of financial method utilization, as compared to participants of other programs.

Table 6-37 Financial Methods Used to Evaluate Efficiency Improvements

Response	Percent of Respondents
Simple payback	98%
Initial Cost	79%
Internal rate of return	64%
Life cycle cost	62%
N	42

* Customer could make multiple responses. The percentages are based on the number of respondents rather than the number of responses. Thus, the total exceeds 100%.

Figure 6-25 shows the required years for simple payback for the distribution of 8 customer decision makers answering the question. Four firms require a 2-year payback, three cited a 5-year payback, and one mentioned a 10-year payback. Half of the respondents citing a payback timeline also reported using life cycle cost analysis, while the other half uses only the simple payback method.

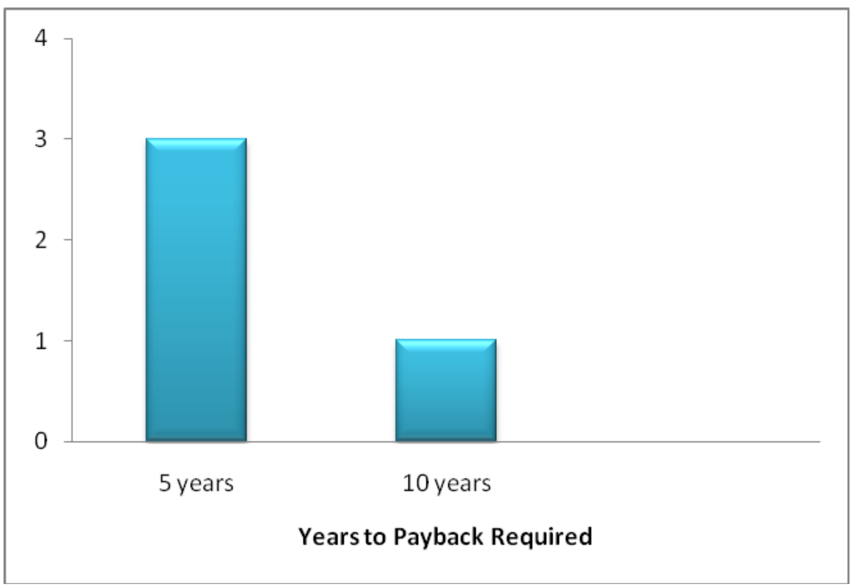

Figure 6-25 Percentage of Respondents Indicating Required Years to Simple Payback

6.6.8.7 Prior Experience with Efficient Equipment

The respondents were asked whether they had purchased or installed energy efficient equipment before participating in the program, with roughly half of the respondents indicating having done so. Respondents were also asked how often they try to purchase and install energy efficient equipment. As shown in Table 6-38, 60% of the respondents said that they always do this and another 23% said that they usually do this. The percentage of respondents that now report always purchasing efficient equipment is higher than the percentage that purchased it before the program. This reinforces the idea that the program has influenced customers to make more energy efficient purchasing decisions.

Table 6-38 Frequency of Trying to Install Energy Efficient Equipment on Replacement

Response	Percent of Respondents
Always	60%
Usually	23%
Sometimes	-
Occasionally	2%
Don't Know	14%
Total	100%
N	43

40% of program participants say that in the last three years they have purchased efficient equipment but did not receive incentives, as shown in Table 6-39. 45% of participants reported having applied for incentives for all previous energy efficient equipment. 7% of respondents had not purchased any energy efficiency equipment or applied for rebates.

Table 6-39 Purchase of Energy Efficient Equipment in Last Three Years without Financial Incentive

Response	Percent of Respondents
Yes, purchased energy efficient equipment with no rebate	40%
No, Applied for financial incentives on all of the energy efficient equipment	45%
Don't Know	7%
Has not purchased energy efficient equipment	7%
N	42

Of the respondents who had purchased energy efficient equipment but had not applied for rebates, several mentioned that they were not aware of the rebates or did not know how to apply. One respondent explained that their past projects were not large enough to merit the rebate application process, and another facility reported that their decision makers were previously politically opposed to such energy efficiency initiatives.

6.6.8.8 Pre- and Post-Inspections

40% of the survey respondents reported that a pre-installation inspection was conducted, and 66% of the survey respondents reported that a post-installation inspection was performed. None of the respondents said that anything changed as a result of either the pre-installation or post-installation, although the responses to this question were limited in number and many decision makers may not be aware of changes that were made.

Table 6-40 Pre- and Post-Installation Inspections

Question	Percent of Respondents Saying Yes	N
Did anyone from SPS come to your facility to do a pre-inspection?	40%	42
Did anything change in the design as a result of the pre-inspection?	0%	3
Did anyone from SPS come to your facility to do a post-inspection?	66%	42
Did anything change in the incentive amount as a result of the post-inspection?	0%	4

6.6.8.9 Satisfaction with the Program

Respondents were asked about their levels of satisfaction with selected aspects of the program on a scale of 1 to 5 where 1 is very dissatisfied and 5 is very satisfied. Overall, satisfaction ratings were very high, with no low scores for any of the program elements. Overall, satisfaction ratings were very high, with no low scores for any of the program elements.

Table 6-41 shows the results. The table is organized by items that had the highest percentage of very satisfied ratings. Respondents reported the greatest satisfaction with their overall program experience and with the performance of the installed equipment. This was followed closely by the time elapsed until the incentive was received, and the incentive amount.

Customers were next most satisfied with the information that had been provided by their SPS Account Representative, and then the quality of the work performed by their contractor. Customers were least satisfied with the savings on their monthly bill and the information that had been provided to them by their contractor. This meets expectations, as the savings on the monthly bill is usually viewed least favorably. Keep in mind that the respondents may not have had sufficient elapsed time from installation to judge savings, may have had other factors influencing consumption that may conceal the savings. For example, if the level of production changes drastically in a manufacturing facility, it can be very difficult to compare current energy use with previous consumption and determine accurate savings. Even with lower than top scores for monthly savings, over 70% of respondents were very satisfied and none of them actually provided a negative rating of this item. Overall, satisfaction ratings were very high, with no low scores for any of the program elements.

Table 6-41 Decision Maker Satisfaction with Selected Elements Program Experience

Element of Program Experience	Percent of Respondents						
	Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	Don't Know	N
Overall program experience	-	-	-	3%	97%	-	35
Performance of the equipment installed	-	-	3%	9%	89%	-	35
The elapsed time until you received the incentive	-	-	-	11%	89%	-	35
Incentive amount	-	-	-	14%	86%	-	35
Information provided by SPS Account Representative	-	-	-	9%	83%	9%	35
Quality of the work conducted by your contractor	-	-	-	13%	81%	6%	32
The effort required for the application process	-	-	-	6%	80%	14%	35
Information provided by your contractor	-	-	6%	9%	80%	6%	35
Savings on your monthly bill	-	-	3%	17%	71%	9%	35

About 78% of respondents reported that the installed measures met their expectations, while 22% said that their expectations were met for the most part. The majority of respondents indicating that they were for the most part satisfied noted that they had hoped for more savings. None of the respondents reported being generally unsatisfied with the energy efficiency measures.

Table 6-42 Energy Efficiency Measure Satisfaction of Customer Expectations

Level of Satisfaction	Percent of Respondents
Met my expectations	78%
For the most part	22%
Did not meet my expectations	-
Total	100%
N	41

Table 6-43 presents results relating to the level of satisfaction with various aspects of program experience relayed by customer decision maker survey respondents. These results are further disaggregated into four groups according to the size of the expected savings associated with the respective respondents. Decision makers in Group 1 who implemented projects with the greatest savings on average reported the highest levels of satisfaction with aspects of their program experience including incentive amount, effort required for the application process, and time until elapsed until receipt of the incentive. Decision makers in groups 3 and 4, with lower overall expected savings, rated some aspects of the program lower, including elapsed time until the incentive was received. These lower savings groups also rated the incentive amount slightly lower, which can be expected due to the lower levels of incentives associated with smaller projects. However, customer satisfaction levels were overall very high across all savings levels.

Table 6-43 Decision Maker Satisfaction Levels, by Customer Claimed Savings

Group Number	Claimed kWh Savings	Number of Respondents	Savings on Monthly Bill	Incentive Amount	Effort Required for the Application Process	Elapsed Time Until Incentive Received	Overall Program Experience
1	85,994 – 617,482	10	4.80	5.00	5.00	5.00	5.00
2	17,481 - 85,994	10	5.00	4.75	4.75	5.00	5.00
3	9,141 - 17,481	9	4.75	4.63	5.00	4.63	5.00
4	1,871 - 9,141	10	5.00	4.89	4.86	4.89	4.89
All Respondents			4.87	4.84	4.92	4.87	4.97

Table 6-44 shows the average satisfaction levels for overall program experience and for the effort required for the application process, disaggregated by the respondent facility type. Across almost all facility types, respondents very highly rated their overall program satisfaction. Nearly all of the business types gave top ratings for their overall program experience, with only slightly lower satisfaction from the medical sector. Across facility types, these satisfaction levels are much higher than average for other energy efficiency programs.

Table 6-44 Project Decision Maker Satisfaction Levels, by Decision Maker Facility Type

Facility Type	Percent of Respondents	Overall Program Experience (1-5)	Effort Required for the Application Process (1-5)
Retail/Service	27%	5.00	5.00
School/K-12	18%	5.00	5.00
Government	2%	5.00	5.00
College/University	2%	5.00	5.00
Office	18%	5.00	4.83
Hotel/Motel	11%	5.00	5.00
Light Industry	2%	5.00	5.00
Medical	5%	4.00	4.00
Heavy Industry	5%	5.00	5.00
Worship Facility	9%	N/A	N/A
Total	44	4.97	4.93

6.6.8.10 Paperwork, Installation and Incentives

Customers did not report any problems with paperwork or with receiving the incentive checks. Customer experiences with paperwork and incentive are summarized in Table 6-45. 28% of the respondents said that they provided the purchase orders and invoices to SPS. Only one participant mentioned that the incentive was not the expected amount.

Table 6-45 Experience with Paperwork and Incentive Delivery

Question	Percent of Respondents Saying Yes	N
Was the incentive check the expected amount?	98%	43
Did you provide SPS copies of purchase orders and invoices that document the final costs?	28%	43
Issues getting paperwork completed?	-	43
Issues receiving incentive check?	-	43

Customer experience with project implementation is summarized in Table 6-46. Nearly 100% of the respondents felt that the implementation either went smoothly or for the most part went smoothly, and all respondents felt that they received a quality installation. All but one reported that the incentive agreement met expectations. Respondents to energy efficiency measure surveys who feel that the incentive did not meet their expectations most often either originally expected to receive more, or feel that the incentive was not worth the time and investment they had spent during the planning and installation process.

Table 6-46 Experience with Project Implementation

Question	Yes	For the Most Part	No	Total	N
Did the implementation go smoothly?	91%	7%	2%	100%	41
Do you feel you got a quality installation?	100%	-	-	100%	42
Did the incentive agreement that you received meet your expectations?	98%	N/A	2%	100%	42

6.6.8.11 Future Energy Efficiency Plans

Finally, as shown in

Table *6-47*, 40% of survey respondents reported that the program resulted in their buying more energy efficiency equipment without an incentive. More than three-quarters of the respondents reported that they would buy energy efficient equipment in the future even if they did not receive an incentive. These results indicate that the program activity is generating spillovers and free ridership effects, while having significant influence on future customer purchasing decisions.

Table 6-47 Future Energy Efficiency Plans

Question	Percent of Respondents Saying Yes	N
Has your experience with the SPS program led you to buy any energy efficient equipment for which you did not apply for a financial incentive?	40%	42
Given your experience with the SPS program, would you buy energy efficient equipment in the future even if financial incentives for such equipment were not being offered through the program?	78%	41

6.7 PORTFOLIO ORGANIZATION

ADM has reviewed the program offerings within the SPS DSM portfolio and has in mind some recommendations for possible reorganization of the portfolio in upcoming SPS filings to the New Mexico Public Regulatory Commission. These recommendations are summarized in the subsections to follow.

6.7.1 Residential Cooling Measures

Presently, SPS is offering rebates for several tiers of cooling equipment, including:

- Window Evaporative Cooling;
- Tier I Central Evaporative Cooling;
- Tier II Central Evaporative Cooling;
- Air-Source Heat Pumps; and
- Central Air Conditioning.

Air-Source Heat Pumps were a stand-alone program that failed TRC testing, and are now offered through the Home Energy Services program. Central Air Conditioning rebates are also offered through the Home Energy Services program. ADM would recommend aggregating residential cooling measures into a Residential High Efficiency Cooling Program, rather than disaggregating by cooling type, or through offering cooling measure rebates through HES. It would allow for more streamlined marketing of residential cooling measures, as the HES residential cooling offerings are often not communicated co customers. In fact, SPS trade allies have indicated that they were unaware that the program offered rebates for such equipment.

ADM has drawn this conclusion based upon examination of successful residential cooling programs both within and outside New Mexico. El Paso Electric Company has had success in offering a comprehensive residential cooling program, in that it's first goal is to induce customers to purchase evaporative cooling, but failing that, then offers a rebate for high efficiency central air conditioning. Presently, there is a subset of the residential cooling market that cannot be induced to switch to evaporative cooling, and this market is not being served well by the residential portfolio as currently constituted. The evaporative cooling rebate program has been marketed successfully, and ADM would assert that the SPS DSM Portfolio would benefit from advertising high efficiency refrigerated air options within the same program. EPE has done so successfully while still maintaining high participation rates in the evaporative component, and having examined the participant data in their program for the past two years, ADM has concluded that any "cannibalization" of the Evaporative component by high efficiency refrigerated air offerings would be minimal.

6.7.2 Business Efficiency Offerings

The SPS Business Efficiency offerings include the following programs:

- Business Lighting Efficiency;

- Business Cooling Efficiency;
- Business Motor & Drive Efficiency;
- Business Custom Efficiency;
- Small Business Lighting Efficiency; and
- Large Customer Self-Direct

Reviewing these offerings, ADM concludes that the structure of the portfolio adds unnecessary costs to the marketing, administrative, and M&V efforts. ADM would recommend aggregating the Lighting, Cooling, Motor, and Custom components into one comprehensive program offering. This would be organized along similar lines to the PNM Commercial Comprehensive Program, which successfully applies NTGR by measure type, along with prescriptive and custom rebates for retrofit and new construction measures, while reducing evaluation costs by allowing for one aggregated sample for field work and analysis. In evaluating that program, ADM over-sampled on the survey effort in order to provide NTGR by measure category, and would do the same for SPS should the business offerings be reorganized in such a manner.

Aggregating into a comprehensive commercial program offering would have other benefits as well, as doing so would allow for the addition of other measure categories without the expense of developing a new program. Should the portfolio be reorganized in this manner in the next filing, ADM would recommend adding Building Envelope and Refrigeration measure categories, as these are not presently available in prescriptive program offerings by SPS. Additionally, by aggregating across programs, funds could be shifted across measures should some measures be over-subscribed in a particular program year. That is, should the lighting component of a commercial comprehensive offering have more participation than expected, it is easier to shift funds from other components within the program rather than from entirely separate program offerings.

ADM would recommend keeping this Small Business Lighting program offering separate from this aggregated program, however. The SBLP has a stand-alone program implementer and provides significantly more outreach, and as such ADM would agree that it should be evaluated separately. However, ADM would suggest that the SBLP be expanded to allow for simple cooling and refrigeration measures. In PNM's small business outreach component, there has been marked success in simple refrigeration measures, including:

- Display night covers;
- Anti-sweat heater controls; and
- Electronically commutated motors.

These have been successfully marketed to restaurants, gas stations, and convenience stores within PNM territory and ADM would assert that this could be replicated within SPS territory by use of trade allies.

7. BUSINESS SECTOR MARKET EVALUATION

This chapter presents ADM's analysis of the business sector of the SPS service territory, and the results of the market evaluation of the SPS Business Portfolio[20].

7.1 INTRODUCTION

The market evaluation focuses on the effectiveness of the program in terms of market saturation and industry distribution. This analysis shows where the programs are performing most effectively in terms of total available market, and identifies potential opportunities and areas of improvement. The chapter begins with a discussion of the general distribution of industries in the SPS service territory, and then continues with an analysis of which of these industries are currently being served by the SPS Business Portfolio programs. The chapter continues by comparing industry participation with specific project aspects for a more detailed comparison of market opportunities. This is followed by a comparison to program participation in 2009, and the chapter concludes with an examination of the largest potential areas of the market that SPS's programs have not reached.

7.2 INDUSTRY DISTRIBUTION

The SPS service territory in New Mexico covers several large counties with moderate levels of commercial activity. By referencing NAICS codes within U.S. Census County Business Patterns, it is possible to break down the market by industry[21]. New Mexico's largest industry by number of businesses is retail trade, with roughly 7,000 total establishments and over 100,000 employees. Health care and social assistance employs the most people out of any industry in the state, with close to 110,000.

The five largest counties covered by SPS in New Mexico are Chaves, Curry, Eddy, Lea, and Roosevelt. These counties account for the vast majority of both available businesses and observed participation in SPS's commercial programs and as such will be the focus of this market evaluation. They are relatively similar with regard to industry distribution, and have a large number of businesses in the retail trade, health care, and other services (labor unions, social advocacy and religious organizations). Lea County has the largest total market of these, leading in Transportation and warehousing, Administrative and support, and Accommodation and food services. Chaves County is the second largest, and leads in industries such as Professional services and Health care. Roosevelt County has the fewest businesses, with only a few hundred in total. Table 7-1 outlines the total market in the industries that have at least one participant in the 2010 SPS Business Portfolio programs. These sectors are the major contributors to the market and offer the most substantial energy savings opportunities.

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[20] During the data collection process, customers were asked for responses in terms of the specific program utilized. However, for the purposes of this study, SPS Business Portfolio refers to all analyzed programs, including Cooling Efficiency, Motor Efficiency, Lighting Efficiency, Small Business Lighting Efficiency, and Custom Efficiency projects.

[21] Industry data is taken from 2008 County Business Patterns, the most recent year available at the time of this report.

Table 7-1 Total Available Market by County

Industry Classification	Chaves	Curry	Eddy	Lea	Roosevelt	Industry Total
Retail/wholesale trade	319	248	267	315	65	1,214
Other services (except public administration)	130	126	129	148	44	577
Health care and social assistance	182	103	118	112	29	544
Accommodation and food services	119	89	109	124	26	467
Finance and insurance	126	84	77	84	30	401
Professional, scientific, and technical services	106	76	76	81	16	355
Mining, quarrying, and oil and gas extraction	56	1	101	180	1	339
Administrative and support and waste management and remediation services	50	35	53	80	8	226
Manufacturing	41	24	39	37	12	153
Arts, entertainment, and recreation	12	10	13	15	5	55
Educational services	9	5	9	3	4	30
Agriculture, forestry, fishing and hunting	7	4	8	2	3	24
County Total	1,491	1,035	1,264	1,544	351	5,685

NAICS codes include several sublevels of classification within each industry. For example, Health care and social assistance includes hospitals, medical laboratories, and child care centers. In order to obtain a better understanding of the available market, it is useful to outline the most populous specific industries per county. This will assist in targeting the largest groups that are very similar in building type and potential implementations. For all counties, the accommodation and food services industry is largely represented by full-service restaurants. In the health care and social assistance industry, the most common facilities are offices of dentists and physicians. Law and accounting offices are the most common type of business in the professional, scientific, and technical services industry. Lea County has a large number of oil production support firms, which have participated in energy efficiency programs by installing variable frequency drives and well controllers for oil extraction equipment. In Chaves and Eddy counties, gasoline stations are a major part of the Retail/wholesale trade sector. In Lea County, this industry is largely populated by industrial equipment dealers.

7.3 MARKET SATURATION

In order to understand how effectively the SPS Business Portfolio is addressing various facility types and industries, it is important to look at the total available market as compared to the participant data. This allows for both a comparison among industries and an overall idea of program acceptance within each industry. Figure 7-1shows the market saturation for each industry that had at least one participant in the SPS Business Portfolio energy efficiency programs.

7.4 COUNTY-LEVEL SATURATION

The highest saturation is in Educational services, with over 50% of total facilities participating. This is a very high market share; the SPS Business Portfolio programs are reaching educational facilities at a faster rate than all other industries, and with more participating facilities than all but one other industry. This is due in large part to successful outreach by the program implementer for the Small Business Lighting Program, who has successfully brought in several of the largest school districts within SPS territory.

Unfortunately, the potential in this industry is somewhat limited, as it is one of the smaller sectors in the market, but it currently represents a large portion of participants and savings. The educational services industry is followed by Agriculture, forestry, fishing and hunting at about 17%. These participants were mainly farm owners who implemented lighting or motor replacement measures. In terms of number of participants, Professional services leads with 19, followed by Retail/wholesale trade and Educational services lead with 17 each. Professional services contains 14 participants and Finance and insurance has 10 participants. Finance and insurance facilities were mainly located in office buildings and primarily engaged in the Small Business Lighting rebate. Many of the retail participants were home improvement and equipment stores, while Accommodation and food services consisted of several hotels.

The lowest market saturation is in the health care and social assistance with less than .2%. This sector includes several hospitals, as well as many medical offices located in office buildings. Another largely unaddressed industry is Other services, whose firms are often located in office buildings but include a large number of worship facilities as well. The aggregated percentage of saturation for all four counties is roughly 2.25%. As many of these businesses are located in rental spaces of office buildings, they are likely not the decision makers for their firms; the building owner is most often the person who would decide whether to participate in an energy efficiency retrofit. Based on the saturation data, there are likely a large number of office parks and business centers that have decision makers who would be responsible for retrofitting several businesses at once; these may offer significant potential for future program years.

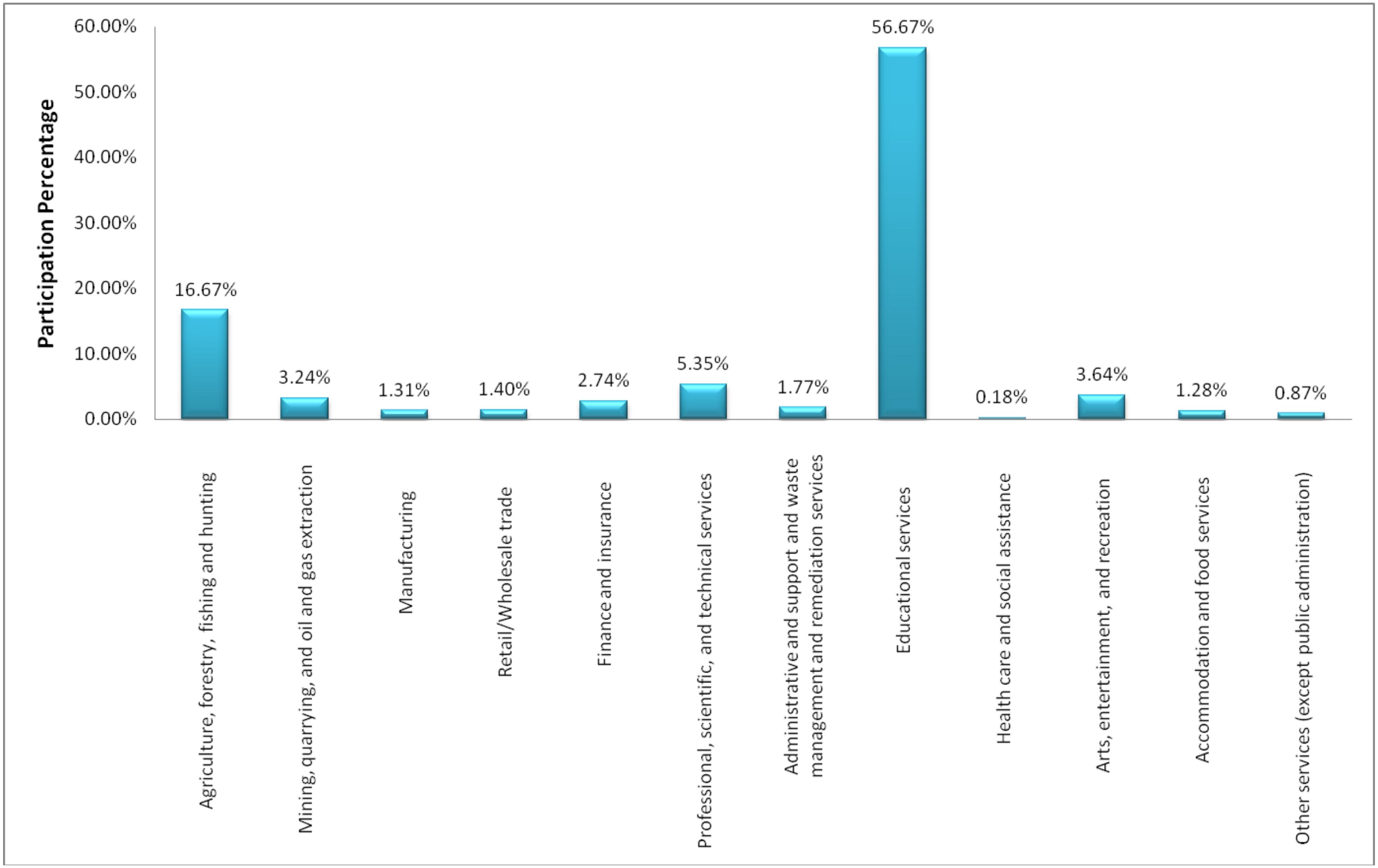

Figure 7-1 Market Share by Industry

On the county level, Lea had the most program participants with 42, and highest saturation with about 3.5%. Chaves County had 24 participants, the second highest of these counties, as well as the second highest saturation at close to 2.1%. Table 7-2 displays these results. Several industries only have participants in one or two counties, including Agriculture, Arts, entertainment, and recreation, and Other services. With only 3 participants and the lowest total saturation, Roosevelt County has the greatest potential for improvement in terms of remaining available market share. However, because the other counties have substantially larger markets than Roosevelt, Lea County and Chaves County currently contain the most potential participants of any area.

Table 7-2 Industry Participation by County

Industry Classification	Chaves	Curry	Eddy	Lea	Roosevelt	Industry Total
Professional, scientific, and technical services	3	1	1	14	-	19
Retail/wholesale trade	2	2	5	8	-	17
Educational services	9	4	1	2	1	17
Mining, quarrying, and oil and gas extraction	-	-	2	9	-	11
Finance and insurance	2	1	5	1	2	11
Accommodation and food services	2	1	2	1	-	6
Other services (except public administration)	-	-	-	5	-	5
Agriculture, forestry, fishing and hunting	4	-	-	-	-	4
Administrative and support and waste management and remediation services	-	1	3	-	-	4
Manufacturing	-	1	-	1	-	2
Arts, entertainment, and recreation	1	-	-	1	-	2
Health care and social assistance	1	-	-	-	-	1
County Total	24	11	19	42	3	99

Table 7-3 displays the county participation data categorized by measure type. Lighting had the most participants with 75, with over 40% of the installations located in Lea County[22]. This was followed by Motors, with 12 participants. There was at least one Motor installation in each county, and Motors measures accounted for the entirety of Roosevelt County's participation. Chaves, Curry, Eddy, and Lea counties had at least one participant in each prescriptive program, while Chaves, Eddy, and Lea each had a custom measure installed. Although Curry County contains a larger total market than Eddy County, it has fewer participants overall. This indicates that the program is reaching Eddy County more effectively than Curry County. Participation for each program is fairly proportional to the size of each county, meaning that there is not an unexpected saturation of a particular program in any area.

[22] In the Market Evaluation, the Lighting program aggregates the results of both the Lighting Efficiency Rebate program and Small Business Lighting Efficiency Rebate program.

Table 7-3 Program Participation by County

Product Group	Chaves	Curry	Eddy	Lea	Roosevelt	Program Total
Cooling	2	2	2	2	-	8
Custom Efficiency	1	-	1	1	-	3
Lighting	19	8	15	33	-	75
Motors	2	1	1	6	3	13
County Total	24	11	19	42	3	99

7.5 INDUSTRY PARTICIPANT FACILITY TYPES

In the Process Evaluation of this report, participants were classified by facility type and analyzed in terms of installation type and survey results. Most of the participants within industry categories in the 2010 program belonged to a single facility type. This includes Finance and insurance firms which were located in offices, Health care organizations which operated in medical facilities, and Administrative and support participants which only existed in government buildings. However, some industries had participants from various facility types. Table 7-4 presents the distribution of these participants across the classifications used in the Process Evaluation. This will assist in understanding customer profiles across industries, and which measures may be appropriate for these types of customers in future years. Most of the participants from the Accommodation and food services industry were hotels or motels. Worship facilities accounted for 80% of the other services industry, while more than 80% of Educational services participants were located in K-12 schools. Professional services participants were distributed mainly between retail locations and offices, with a small number represented by medical facilities.

Table 7-4 Industry Distribution across Facility Types

	Accommodation and Food Services	Educational Services	Other Services (Except Public Administration)	Professional, Scientific, and Technical Services	Retail Trade
College/University	-	12%	-	-	-
Hotel/ Motel	83%	-	-	-	-
Light Industry	-	-	-	-	18%
Medical	-	-	-	11%	-
Office	-	-	-	42%	-
Restaurant	17%	-	-	-	-
Retail/Service	-	6%	20%	47%	82%
School/K-12	-	82%	-	-	-
Worship Facility	-	-	80%	-	-
N	6	17	5	19	17

7.6 DISTRIBUTION OF MEASURES BY INDUSTRY

Levels of expected kWh savings of projects were compared with the industry of the participant in order to examine which industries tend to have larger or smaller potential savings. Table 7-5 divides participants into quartiles of kWh savings for total program participation. The participating health care facility had a large project in the top group. Oil and gas extraction had fairly high expected savings, with 55% over 24,651 kWh. The educational services industry had the most projects over 24,651 in savings, with 6. Retail trade projects were fairly evenly distributed over the four levels of savings. Arts, entertainment and recreation as well as Other services tended to have mid to low-range savings.

Table 7-5 Industry Participation by Expected Savings Levels

	Expected kWh Savings				
Industry Classification	**> 24,651**	**24,651 - 10,958**	**10,958 - 3,497**	**< 3,497**	**N**
Health care and social assistance	100%	-	-	-	1
Mining, quarrying, and oil and gas extraction	55%	9%	9%	27%	11
Educational services	53%	12%	24%	12%	17
Administrative and support and waste management and remediation services	50%	-	50%	-	4
Accommodation and food services	33%	33%	17%	17%	6
Retail trade	23%	23%	23%	30%	17
Finance and insurance	18%	36%	27%	18%	11
Professional, scientific, and technical services	5%	32%	42%	21%	19
Agriculture, forestry, fishing and hunting	-	50%	50%	-	4
Arts, entertainment, and recreation	-	-	50%	50%	2
Manufacturing	-	50%	-	50%	2
Other services (except public administration)	-	60%	40%	-	5

For the facilities that were visited by ADM to verify savings and equipment installation, realized kWh savings were assigned to the same savings levels as above and classified by industry. Table 7-6 displays the results. Educational services had the highest percentage of measured realized savings in the top savings level, followed by Finance and insurance. Administrative and support facilities had projects evenly distributed among savings levels. Four projects in the oil and gas extraction sector qualified for savings in the top group with over 60,000 kWh expected savings, but due to specific equipment usage their realized savings were negative. In the set of facilities with measured realized savings, these firms in the oil and gas extraction industry only had top level savings in 22% of projects. As discussed in the Process Evaluation, the type of measure installed in these facilities is becoming more common for these industries, and SPS should consider how to accommodate such situations through the coming program years.

Table 7-6 Industry Participation by Realized Savings Levels

Industry Description	> 24,651	24,651 - 10,958	10,958 - 3,497	< 3,497	N
Educational services	87%	13%	-	-	8
Finance and insurance	50%	25%	-	25%	4
Accommodation and food services	40%	20%	20%	20%	5
Retail trade	40%	40%	20%	-	5
Mining, quarrying, and oil and gas extraction	22%	22%	33%	22%	9
Administrative and support and waste management and remediation services	25%	25%	25%	25%	4
Professional, scientific, and technical services	25%	-	75%	-	4
Other services (except public administration)	-	100%	-	-	1

Industry distribution was measured across measure categories for SPS Business Portfolio projects. Table 7-7 displays the results. Some facilities participated in more than one type of project. As typical with commercial programs, Lighting was the most common measure implemented for all industries in this group, with several industries exclusively implementing lighting retrofits. As expected due to their participation size, retail trade and professional services accounted for most of the lighting retrofit projects. Oil and gas extraction support firms had the most projects under the Motors measure, the second most common implementation type. Cooling measures were only implemented in a few industries including Educational services and Retail trade, while the Custom Efficiency installations were either for Accommodation and food services or Retail trade.

Table 7-7 Industry Participation by Product Group

Industry Classification	Cooling	Custom Efficiency	Lighting	Motors	N
Professional, scientific, and technical services	-	-	20	-	20
Educational services	4	-	12	1	17
Retail trade	2	-	15	-	17
Finance and insurance	1	-	8	2	11
Mining, quarrying, and oil and gas extraction	-	2	2	6	10
Accommodation and food services	1	1	4	-	6
Other services (except public administration)	-	-	5	-	5
Administrative and support and waste management and remediation services	-	-	4	-	4
Agriculture, forestry, fishing and hunting	-	-	2	2	4
Arts, entertainment, and recreation	-	-	2	-	2
Manufacturing	-	-	1	1	2
Health care and social assistance	-	-	1	-	1
Program Total	8	3	76	12	99

7.7 DISTRIBUTION OF SAVINGS BY INDUSTRY

Program participants were analyzed by measure type and industry classification in relation to percentage of expected annual kWh savings. The results are displayed in Table 7-8. Lighting accounts for the most savings for nearly all sectors, representing at least 90% of savings in seven of the industries. Several industries exclusively implemented Lighting measures, including Professional services, Administrative and support, and Health care. Retail trade represented the most savings from lighting, at over 760,000 kWh. While it appears that most industries can significantly benefit from lighting implementations, other measures that are currently generating high savings for specific industries should be considered for future marketing efforts to those sectors. Motors rebates accounted for over half the savings of the agriculture industry, and over 40% of the expected savings in the oil and gas extraction industry. Educational services had the highest percentage of Cooling savings, with 32% of its expected savings coming from this measure. Facilities in this sector, in addition to those of the health care and food services industries, typically display high cooling loads and as such cooling retrofits have the potential to provide a greater return on investment than typical for businesses within SPS service territory.

Table 7-8 Percentage of Expected Savings by Measure Type and Industry Classification

Industry Classification	Cooling	Custom Efficiency	Lighting	Motors	Total kWh Savings
Educational services	32%	-	54%	14%	919,013
Retail trade	15%	-	85%	-	899,195
Accommodation and food services	3%	1%	96%	-	477,392
Mining, quarrying, and oil and gas extraction	-	36%	5%	59%	453,196
Finance and insurance	2%	-	93%	5%	374,356
Professional, scientific, and technical services	-	-	100%	-	207,022
Administrative and support and waste management and remediation services	-	-	100%	-	126,081
Other services (except public administration)	-	-	100%	-	68,530
Agriculture, forestry, fishing and hunting	-	-	45%	55%	41,992
Health care and social assistance	-	-	100%	-	25,265
Manufacturing	-	-	84%	16%	14,403
Arts, entertainment, and recreation	-	-	100%	-	11,623
Program Total	441,655	165,876	2,566,649	443,888	3,618,068

7.8 PROGRAM COMPARISON – 2009-2010

The SPS Business Portfolio in New Mexico has become significantly more widespread over the past two years. The 2008 program consisted of only a few Lighting Rebate participants totaling just over 55,000 kWh in savings. In 2009 several new measures were added, and the program experienced substantial growth in terms of kWh savings and overall number of facilities participating. Since 2009, program participation has increased across industries and geographical areas.

The 2009 and 2010 program groups are similar in terms of distribution among participating customers. Table Table 7-9 displays the relative use of each program between these years. 2010 saw an increase in Motors as compared to the other measures, although Lighting accounted for over three-quarters of installations in both years.

Table 7-9 Program Distribution among Participants, 2009-2010

	Percent of Total Participants	
Product Group	**2009**	**2010**
Lighting	84%	77%
Motors	6%	12%
Cooling	8%	8%
Custom Efficiency	2%	3%

In order to understand the program's growth, historical program data should be periodically reviewed. Figure 7-2 shows a county comparison of participants, expressing the participation difference between 2009 and 2010.

As mentioned above, Chaves, Eddy, and Lea Counties have the most available remaining non-participants of any county in the SPS New Mexico service territory. However, by examining the data it is clear that program participation is growing the fastest in Lea County, and this implies that the program is becoming more well-known and accepted within the largest cities in SPS territory. Conversely, there were only two more participants in Roosevelt in 2010, indicating that the program has not reached the region as effectively as other counties in the past year.

The 2010 program saw more participants in most counties. The most notable difference is with Lea, whose participation is over four times higher than in 2009 and includes 33 more participants. Eddy also shows a substantial increase, increasing from 3 participants in 2009 to 19 in 2010.

Curry is the only county whose participation decreased in 2010. Curry had several more participants in the educational services in 2009, primarily participating in the Lighting Rebate program. Other than in this industry, participation in Curry has remained fairly stable since 2009.

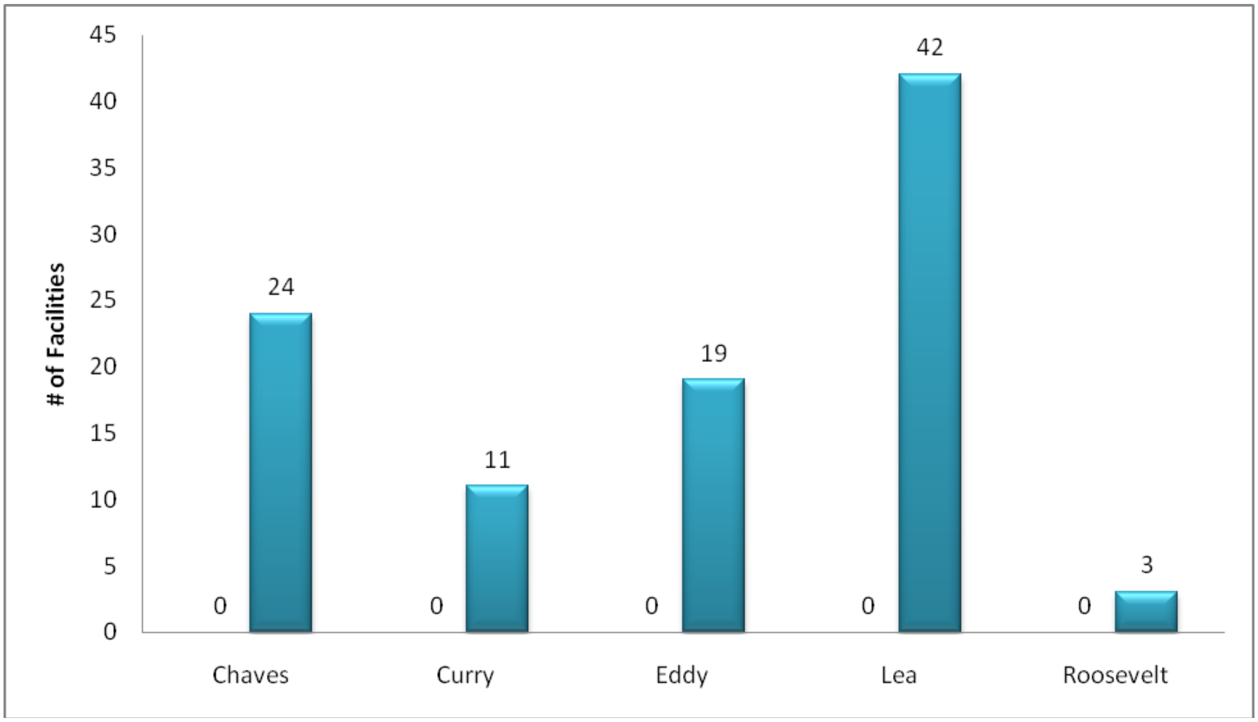

Figure 7-2 Participant Comparison by County, 2009-2010

Comparing 2009 data in terms of industry totals, the 2010 SPS Business Portfolio programs have more participants in nearly all of the analyzed sectors. The industry with the greatest percentage participation increase is Agriculture, which did not have any participants in 2009. This is followed by Educational services, which increased from 40% to over 50%. In 2009, the program had less than a 1% total market share in all counties besides Curry, which had a 1.6% saturation rate. In 2010, saturation is above 1% for all counties. Lea experienced a dramatic change, from .68% saturation in 2009 to 3.56% saturation in 2010. Total program participants increased from 38 in 2009 to over 100 in 2010. Several businesses that participated in the 2009 program had more than one location and continued their participation with new facilities in the 2010 program. These included companies in the educational services as well as professional services industries. Figure 7-3 compares the percentage saturation by industry for the 2009 and 2010 programs. Several new industries began participating in 2010, including Arts, entertainment, and recreation and Health care and social assistance.

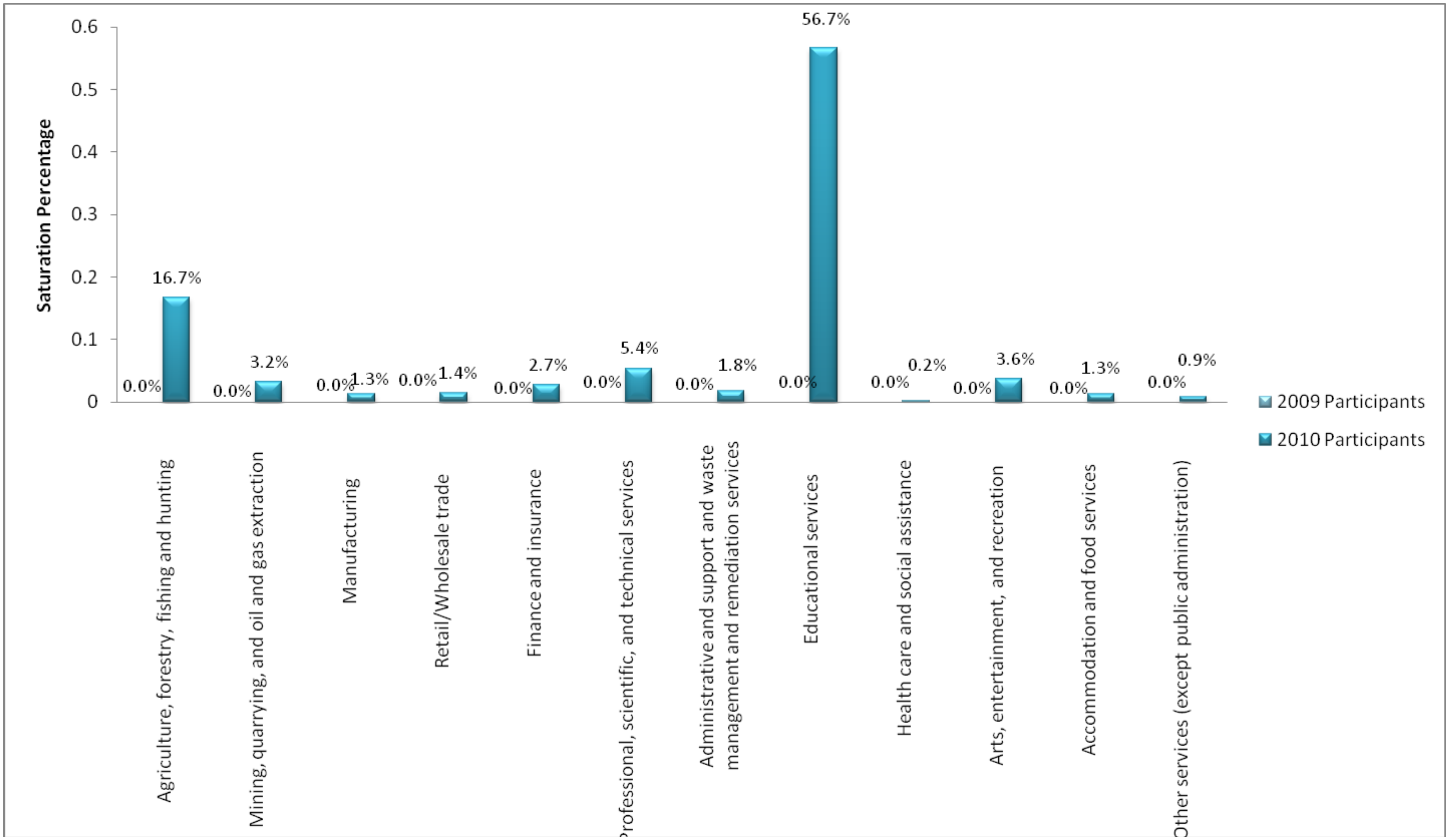

Figure 7-3 Market Saturation Comparison, 2009-2010

7.9 MARKET OPPORTUNITIES

From the results discussed above, ADM concludes that there remains a large available participant pool for the SPS Business Portfolio. Specifically, there are industries such as Manufacturing and Health care that encompass a large share of SPS's high-use facilities. In addition, the SPS Business Portfolio has not reached the real estate and rental industry, which contains businesses that lease both commercial and residential buildings, including warehouses and multi-family dwellings. This sector has several hundred firms within the New Mexico SPS service territory which would likely be worthwhile candidates for energy efficiency measures. According to the New Mexico Department of Labor Statistics, the accommodation and food services industry in the state is expected to grow by over 10% in the next few years. This could result in a large number of new construction projects as these facilities are mainly restaurants and hotels. Many of the industries with low participation, such as Administrative support and Finance and insurance have firms that are located in office buildings and could likely benefit from common measures such as lighting efficiency.

The SPS Business Portfolio has had substantial increased success within Lea, Eddy, and Chaves counties, though this has not yet occurred to the same degree in Curry or Roosevelt counties. Though Roosevelt County has a markedly lower amount of total businesses than the others, it also lags behind sharply in participation rate, not just on an absolute scale. The participation observed in Roosevelt County was from independent facilities that are not part of chains. The data show that a portion of companies are willing to expand their participation into multiple program years and locations, meaning that appealing to businesses with large networks of facilities would likely develop participation in areas that those companies serve. As such it would seem that the larger and more widespread businesses that exist in multiple counties would be a viable market to seek in future program years.

8. APPENDIX A: SITE REPORTS

This appendix includes the site-level reports for the business portfolio evaluations.

8.1 BUSINESS COOLING EFFICIENCY

This subsection presents the site reports for the Business Cooling Efficiency evaluation.

8.1.1 1-6KT8X

EXECUTIVE SUMMARY

The participant is a community college that received incentives from SPS for the installation of a high efficiency chiller. The facility installed a 773 ton York Max-E Centrifugal chiller equipped with a VFD. The chiller is positioned in a central plant setting, serving several buildings located within the campus. The new chiller has a rated efficiency of 0.524 kW/ton and due to the VFD a part load efficiency of 0.371 kW/ton. According to SPS's 2010 Tech Assumptions a centrifugal chiller above 300 tons must have a minimum rated efficiency of 0.550 kW/ton and is not required to have a VFD installed on the compressor. This minimum efficiency is consistent with the ASHRAE 90.1-2004 standards which require an operating COP of 6.10. Due to the improved efficiency of the new chiller and the added benefit of the VFD allowing the chiller to run much more efficiently at part load, allows the chiller to save energy compared to a baseline chiller. ADM calculated project savings through eQuest building simulation and application review. The overall project realization rate is 92%.

M&V METHODOLOGY

ADM verified the installation of the York Max-E Centrifugal chiller and used calibrated simulation, to calculate the total savings due to the installed chiller. eQuest was used to compile two building simulation models, one for the as-built conditions and one for the baseline conditions. The baseline model was calibrated using monthly billing data, building characteristics, operating schedules and operational setpoints obtained during ADM's site visit. The as-built model was obtained by taking the equipment in the baseline model, a constant speed chiller with a rated efficiency of 0.550 kW/ton, and changing the equipment characteristics to match that of the installed York Max-E chiller. The kWh savings for the energy efficiency measures was calculated by subtracting the as-built building energy consumption from that of the baseline building consumption.

RESULTS

It was calculated that the high efficiency chiller has an annual energy savings of 214,116 kWh and a peak demand reduction of 59.7 kW resulting in a realization rate of 92%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
773 Ton VFD Chiller	232,934	18.34	214,116	59.7	92%	326%
Total	**232,934**	**18.34**	**214,116**	**59.7**	**92%**	**326%**

ADM feels that the demand reduction calculated by SPS underestimates the actual reduction present. If it is assumed that the peak demand reduction is constant for every hour of the year the maximum amount of energy savings is 160,658 kWh.

8.1.2 1-7E6OM

EXECUTIVE SUMMARY

The participant is a retail facility that received incentives from SPS for implementing energy efficient HVAC systems in a new construction project. The facility installed (17) 15-Ton Roof Top Units (RTU) and (1) 10-Ton RTU. The RTUs have an Energy Efficiency Rating (EER) of 11.8 for the 15-Ton units and an 11.0 EER for the 10-Ton unit. ADM calculated project savings via review of the systems installed and application of deemed equivalent full load hours for the facility type in the appropriate weather zone. Gross realization for this project is 101%.

M&V METHODOLOGY

ADM verified the installation of all 18 RTU's and concluded that the new RTUs have a rated EER of 11.8 and 11.0, with a baseline EER of 9.5 and 10.1 for the 15 and 10 Ton RTU's accordingly being derived from IECC 2006. The Equivalent Full Load Hours value was obtained from SPS's 2010 Tech Assumptions which was stated to be 1,681 hours for a retail type facility. ADM reviewed this value via simulation of archetypical buildings with Roswell NM TMY weather data and determined the value to be reasonable. Using this data, ADM calculated the energy savings using the following equation:

The parameters in this equation are detailed in the table below.

Parameters for Calculation of kWh Savings for HVAC Retrofits

Parameter	Definition
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
EFLH	Equivalent Full Load Hours (Encompassing both heating and cooling hours in cases of heat pumps)

Following this, ADM calculated peak kW savings. Peak savings for RTU retrofits are calculated using the following equation:

Parameters for Calculation of kW reduction for HVAC Retrofits

Parameter	Definition
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
CF	Coincidence factor.

RESULTS

It was calculated that the high efficiency HVAC systems have an annual energy savings of 91,097 kWh and a demand reduction of 51.64 kW resulting in a realization rate of 101%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
15 Ton RTU's	89,123	56.5	89,708	56.5	101%	100%
10 Ton RTU	1,380	0.9	1,634	0.9	101%	100%
Total	**90,503**	**57.4**	**107,173**	**57.4**	**101%**	**100%**

8.1.3 1-7IJT3

EXECUTIVE SUMMARY

The participant is a retail facility that received incentives from SPS for implementing energy efficient HVAC systems. The site installed two 30 Ton Roof Top Units (RTU) manufactured by York. The new RTUs have a claimed Energy Efficiency Rating (EER) of 10.5. ADM calculated project savings via review of the systems installed and application of deemed equivalent full load hours for the facility type in the appropriate weather zone. Gross realization for this project is 22%.

M&V METHODOLOGY

ADM verified the installation of the two 30 ton RTU's and concluded that the new RTUs have a rated EER of 10.13, with a baseline EER of 9.3 being derived from IECC 2006. The Equivalent Full Load Hours was obtained from SPS's 2010 Tech Assumptions which was stated to be 1,681 hours for a retail type facility.ADM calculated the energy savings using the following equation:

The parameters in this equation are detailed in the table below.

Parameters for Calculation of kWh Savings for HVAC Retrofits

Parameter	***Definition***
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
EFLH	Equivalent Full Load Hours (Encompassing both heating and cooling hours in cases of heat pumps)

Following this, ADM calculated peak kW savings. Peak savings for RTU retrofits are calculated using the following equation:

Parameters for Calculation of kW reduction for HVAC Retrofits

Parameter	Definition
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
CF	Coincidence factor.

RESULTS

It was calculated that the high efficiency HVAC systems have an annual energy savings of 9,064 kWh and a demand reduction of 5.71 kW resulting in a realization rate of 22%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
15 Ton RTU's	40,653	7.96	9,064	5.71	22%	72%
Total	**40,653**	**7.96**	**9,064**	**5.71**	**22%**	**72%**

ADM attributes the low realization rate to the implementer overestimating the equivalent full load hours used in their calculations. The implementer claimed a total of 4,594 full load hours while the 2010 Tech Assumptions states that 1,681 hours should be used for determining the annual energy savings. The low realization rate is also compounded by the implementer overestimating the installed efficiency at an EER of 10.5 when nameplate data shows an EER of 10.13.

8.1.4 1-74FWJ

EXECUTIVE SUMMARY

The participant is a middle school that received incentives from SPS for implementing energy efficient HVAC systems. The site installed (35) 3 Ton, (10) 4 Ton, (7) 5 Ton, (1) 7.5 Ton, (1) 8.5 Ton, and (4) 10 Ton Roof Top Units (RTU) manufactured by Trane. The new RTUs have a claimed Seasonal Energy Efficiency Rating (SEER) of 15.0 for the: 3, 4, and 5 Tons units while the 7.5 and 8.5 Ton units are rated at 13.2 and the 10 Ton unit has a rating of 12.47 SEER. ADM calculated project savings via review of the systems installed and application of deemed equivalent full load hours for the facility type in the appropriate weather zone. Gross realization for this project is 115%.

M&V METHODOLOGY

ADM verified the installation of the all of the RTU's and concluded that the claimed SEER values are consistent with name plate data and the manufacturer's literature. The baseline SEER for each unit was derived using IECC 2006. The Equivalent Full Load Hours was obtained from SPS's 2010 Tech Assumptions which was stated to be 786 hours for a middle school. ADM calculated the energy savings using the following equation:

The parameters in this equation are detailed in the table below.

Parameters for Calculation of kWh Savings for HVAC Retrofits

Parameter	**Definition**
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
EFLH	Equivalent Full Load Hours (Encompassing both heating and cooling hours in cases of heat pumps)

Following this, ADM calculated peak kW savings. Peak savings for RTU retrofits are calculated using the following equation:

Parameters for Calculation of kW reduction for HVAC Retrofits

Parameter	***Definition***
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
CF	Coincidence factor.

RESULTS

It was calculated that the high efficiency HVAC systems have an annual energy savings of 31,069 kWh and a demand reduction of 41.85 kW resulting in a realization rate of 115%.

Verified Gross Savings/Realization rates

Measure Description	**Claimed**		**Realized**		**kWh Realization Rate**	**kW Realization Rate**
	Electric Savings (kWh)	**Demand Savings (kW)**	**Electric Savings (kWh)**	**Demand Savings (kW)**		
(35) 3 Ton RTU's	-	-	16,506	22.24	-	-
(10) 4 Ton RTU's	-	-	6,288	9.41	-	-
(7) 5 Ton RTU's	-	-	5,502	8.24	-	-
(1) 7.5 Ton RTU's	-	-	595	0.89	-	-
(1) 8.5 Ton RTU's	-	-	675	1.01	-	-
(4) 10 Ton RTU's	-	-	1,503	2.25	-	-
Total	**27,090**	**36.7**	**31,069**	**41.85**	**115%**	**114%**

ADM attributes the high realization rate to the implementer underestimating the equivalent full load hours used in their calculations. The implementer claimed a total of 664 full load hours while the 2010 Tech Assumptions states that 786 hours should be used for determining the annual energy savings.

8.1.5 1-7WMIK

EXECUTIVE SUMMARY

The participant is a hotel that received incentives from SPS for implementing energy efficient HVAC systems in a new construction project. The facility installed (26) 1-Ton Package Terminal Air Conditioners (PTAC) which have an Energy Efficiency Rating (EER) of 11.2. ADM calculated project savings via review of the systems installed and application of deemed equivalent full load hours for the facility type in the appropriate weather zone. Gross realization for this project is 186%.

M&V METHODOLOGY

ADM verified the installation of all 26 PTACs and concluded that the new PTACs have a rated EER of 11.2, with a baseline EER of 8.2 being derived from IECC 2006. The Equivalent Full Load Hours value was obtained from SPS's 2010 Tech Assumptions which was stated to be 2,338 hours for a lodging type facility. ADM reviewed this value via simulation of archetypical buildings with Roswell NM TMY weather data and determined the value to be reasonable. Using this data, ADM calculated the energy savings using the following equation:

The parameters in this equation are detailed in the table below.

Parameters for Calculation of kWh Savings for HVAC Retrofits

Parameter	***Definition***
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
EFLH	Equivalent Full Load Hours (Encompassing both heating and cooling hours in cases of heat pumps)

Following this, ADM calculated peak kW savings. Peak savings for RTU retrofits are calculated using the following equation:

Parameters for Calculation of kW reduction for HVAC Retrofits

Parameter	Definition
#Units	Quantity of Rebated HVAC Units
Cap	Unit Capacity (Measured in Tons)
$SEER_{base}$	Baseline SEER
$SEER_{Post}$	Installed SEER
CF	Coincidence factor.

RESULTS

It was calculated that the high efficiency HVAC system have an annual energy savings of 22,248 kWh and a demand reduction of 10.08 kW resulting in a realization rate of 186%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
PTACs	11,942	5.44	22,248	10.08	186%	185%
Total	**11,942**	**5.44**	**22,248**	**10.08**	**186%**	**185%**

ADM attributes the high realization rate to improper baseline assumptions made by the implementer. Per SPS's 2010 Tech Assumptions, a PTAC unit has a baseline EER of 9.0, in which IECC 2006 is referenced as the baseline. However, upon further exploration, it was discovered that the baseline EER for a PTAC is dependent upon the capacity of the unit installed. The use of the IEEC 2006 equation results in an EER of 8.2, thus leading to the high realization rate.

8.2 BUSINESS LIGHTING EFFICIENCY

This subsection presents the site reports from the evaluation of the Business Lighting Efficiency Program.

8.2.1 1-7E6NK

EXECUTIVE SUMMARY

The customer received incentives from SPS for implementing energy efficient lighting. ADM performed project savings through engineering analysis and site inspection. Gross kWh realization for this project is 161%.

CUSTOMER PROJECT AND DESCRIPTION

The facility converted (537) 400W metal halide fixtures to 6L T8s, (76) 400W MH to 320W pulse start MH and (34) 400W MH to 360W pulse start MHs.

M&V METHODOLOGY

ADM confirmed the installation of the T8s and pulse start metal halides during the site visit, and also installed monitoring equipment to determine the annual operating hours. It was determined from extrapolation of the monitoring data that the lights at the facility operate for approximately 6,140 hours per year. ADM calculated the light savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = \left(kW_{base} - kW_{post}\right) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The table below shows the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	**Post**	**Base**	**Post**	**Base**	**Post**				
6L T8	537	537	458	186	6,140	6,140	590,047	942,571	1.051	160%
320W MH	76	76	458	367	6,140	6,140	23,035	42,464	1.000	184%
360W MH	34	34	458	418	6,140	6,140	4,400	8,350	1.000	190%
						Total	**617.482**	**993,386**		**161%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	**Post**	**Base**	**Post**	**Base**	**Post**				
6L T8	537	537	458	186	0.91	0.91	216.62	176.52	1.328	81%
320W MH	76	76	458	367	0.91	0.91	4.46	6.29	1.000	141%
360W MH	34	34	458	418	0.91	0.91	1.62	1.24	1.000	77%
						Total	**222.69**	**184.05**		**83%**

RESULTS

ADM obtained the annual operational hours from seven weeks of monitoring data extrapolated to an annual schedule. It was calculated that the high efficiency lighting has an annual energy savings of 993,386 kWh and a peak demand reduction of 184.05 kW resulting in a gross kWh realization rate of 161%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
6L T8	942,571	176.52	160%	81%
320W MH	42,464	6.29	184%	141%
360W MH	8,350	1.24	190%	77%
Total	**993,386**	**184.05**	**161%**	**83%**

ADM attributes the high realization rate to the underestimation of operating hours claimed by the implementer. The claimed hours of operation is stated as approximately 2,560 hours annually for all lighting within the facility, compared to the monitored 6,140 hours.

8.2.2 1-7W69E

EXECUTIVE SUMMARY

The participant is a hotel/motel facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage CFLs and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 110%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a hotel, installed a claimed (484) 14W CFLs, (1,093) 18W CFLs, and (157) 23W CFLs as opposed to incandescent lighting.

M&V METHODOLOGY

On site, ADM verified installation of:

- (484) 14W CFLs;
- (1,093) 18W CFLs; and
- (157) 23W CFLs.

Due to the inconsistent manor in which lighting in a hotel operates, ADM used the provided annual operating hours from the 2010 Tech Assumptions, which is stated at 2,697.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
14W CFL	484	484	60	14	8,760	8,760	73,896	225,068	1.154	305%
18W CFL	1,093	1,093	75	18	1,145	1,145	186,509	82,320	1.154	44%
23W CFL	157	157	100	23	1,145	1,145	33,840	15,974	1.154	47%
						Total	**294,245**	**323,361**		**110%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
14W CFL	484	484	60	14	1.0	1.0	16.74	26.78	1.203	160%
18W CFL	1,093	1,093	75	18	0.67	0.67	42.26	50.22	1.203	119%
23W CFL	157	157	100	23	0.67	0.67	7.67	9.74	1.203	127%
						Total	**66.67**	**86.74**		**130%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts and manufacturers specifications to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 323,361 kWh and a peak demand reduction of 86.74 kW resulting in a gross kWh realization rate of 110%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
14W CFL	225,068	26.78	305%	160%
18W CFL	82,320	50.22	44%	119%
23W CFL	15,974	9.74	47%	127%
Total	**323,361**	**86.74**	**110%**	**130%**

ADM attributes the overall high realization rate, to the assumed lighting hours used by the implementer. 2,251 hours were used for all areas, even those that typically operate 24/7 in a hotel setting. ADM choose to use DEER's reported value of 1,145 hours for room lighting, while the common areas were assumed to operate 8,760 hours. This substantial increase in hours for common areas outweighed the decrease in hours for hotel room thus resulting in a higher overall realization rate.

8.2.3 1-7X88P

EXECUTIVE SUMMARY

The participant is a hotel/motel facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage CFLs and T8s in which operating hours were determined through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 42%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a hotel, installed a claimed (350) 26W CFLs, (210) 18W CFLs as opposed to incandescent lighting. The facility also opted to install (90) 4' 25W T8 bulbs instead of a standard 32W T8 bulb.

M&V METHODOLOGY

On site, ADM verified the installation of:

- (350) 26W CFLs;
- (210) 18W CFLs; and
- (90) 4' 25W T8 bulbs.

Due to the inconsistent manor in which lighting in a hotel operates, ADM used the reported annual operating hours from DEER, which is stated at 1,145 for guest rooms.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
26W CFL	350	350	120	26	1,145	1,145	107,390	43,472	1.154	40%
18W CFL	210	210	75	18	1,145	1,145	44,608	15,816	1.154	35%
4' 25W T8	90	90	27	21	8,760	8,760	1,603	5,459	1.154	341%
						Total	**153,601**	**64,747**		**42%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
26W CFL	350	350	120	26	0.67	0.67	24.33	26.52	1.203	109%
18W CFL	210	210	75	18	0.67	0.67	10.11	9.65	1.203	95%
4' 25W T8	90	90	27	21	1.0	1.0	0.36	0.65	1.203	179%
						Total	**34.80**	**36.82**		**106%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts and manufacturers specifications to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 64,747 kWh and a peak demand reduction of 36.82 kW resulting in a gross kWh realization rate of 42%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
26W CFL	43,472	26.52	40%	109%
18W CFL	15,816	9.65	35%	95%
4' 25W T8	5,459	0.65	341%	179%
Total	**64,747**	**36.82**	**42%**	**106%**

ADM attributes the overall low realization rate, to the assumed lighting hours used by the implementer. 2,251 hours were used for all areas, even those that typically operate 24/7 in a hotel setting. ADM choose to use DEER's reported value of 1,145 hours for room lighting, while the common areas were assumed to operate 8,760 hours. This substantial decrease in hours for hotel rooms resulted in the overall low realization rate.

8.2.4 1-6IPUH

EXECUTIVE SUMMARY

The customer received incentives from SPS for implementing energy efficient lighting. ADM performed project savings through engineering analysis and site inspection. Gross kWh realization for this project is 184%.

CUSTOMER PROJECT AND DESCRIPTION

The customer converted 15 incandescent exit signs to high efficient LED exit signs which were placed throughout the facility.

M&V METHODOLOGY

During ADMs site visit, 15 LED exit signs were verified installed and in good working order. Due to the safety nature of exit signs, it is determined that the signs operate 24/7 or 8,760 hours per year. Manufacturer data in conjunction with the 2010 SPS Technical Assumptions was used to calculate the annual savings of the exit signs. ADM calculated the light savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = \left(kW_{base} - kW_{post}\right) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The table below shows the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
Led Exit Sign	15	15	30	3.2	8,760	8,760	2,097	3,867	1.098	184%
						Total	**2,097**	**3,867**		**184%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
Led Exit Sign	15	15	30	3.2	1.0	1.0	0.42	0.53	1.314	126%
						Total	**0.42**	**0.53**		**126%**

RESULTS

It was calculated that the LED exit signs have an annual energy savings of 3,867 kWh and a peak demand reduction of .53 kW resulting in a gross kWh realization rate of 184%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
LED Exit Sign	3,867	0.53	184%	126%
Total	**3,867**	**0.53**	**184%**	**126%**

The high realization rate is attributed to SPS assuming that the exit signs operate for 4,993 hours when in fact they are operational for 8,760 hours for safety reasons.

8.2.5 1-6YXNS

EXECUTIVE SUMMARY

The customer received incentives from SPS for implementing energy efficient lighting. ADM performed project savings through engineering analysis and site inspection. Gross kWh realization for this project is 178%.

CUSTOMER PROJECT AND DESCRIPTION

The customer converted 10 incandescent exit signs to high efficient LED exit signs which were placed throughout the facility.

M&V METHODOLOGY

During ADMs site visit, 10 LED exit signs were verified installed and in good working order. Due to the safety nature of exit signs, it is determined that the signs operate 24/7 or 8,760 hours per year. Manufacturer data in conjunction with the 2010 SPS Technical Assumptions was used to calculate the annual savings of the exit signs. ADM calculated the light savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The table below shows the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
LED Exit Sign	10	10	30	3.2	8,760	8,760	1,449	2,578	1.098	178%
						Total	**1,449**	**2,578**		**178%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
LED Exit Sign	10	10	30	3.2	1.0	1.0	0.39	0.35	1.314	90%
						Total	**0.39**	**0.35**		**90%**

RESULTS

It was calculated that the LED exit signs have an annual energy savings of 2,578 kWh and a peak demand reduction of .35 kW resulting in a gross kWh realization rate of 178%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
LED Exit Sign	2,578	0.35	178%	90%
Total	**2,578**	**0.35**	**178%**	**90%**

The high realization rate is attributed to SPS assuming that the exit signs operate for 3,678 hours when in fact they are operational for 8,760 hours for safety reasons.

8.3 BUSINESS CUSTOM EFFICIENCY

This subsection presents the site reports from the evaluation of the Business Custom Efficiency Program.

8.3.1 1-6TNHE

EXECUTIVE SUMMARY

The customer received incentives from SPS for implementing an oil well pump-off controller. ADM performed project savings calculations through engineering analysis and monitoring techniques. The overall project realization rate is 100%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed a Lufkin SAMS pump-off controller on an oil well pump equipped with a40 HP motor. The SAMS controller is designed to allow the oil depth of the well to reach an optimum depth before allowing the pump to start. Once the pump has been engage the controller only allows pumping if the oil depth is above the optimum pumping depth and once the level falls below this depth the pump is shut off. The original control strategy involved the use of an adjustable timer that would simply turn the pump on and off based on the set position of the timer.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that SAMS controller was installed on the oil well pump. In order to calculate the savings due to the SAMS controller, ADM installed monitoring equipment to measure energy consumption for a two week period before the controller's installation. This equipment was left in place for another two weeks after the controller's installation, thus providing pre and post energy consumptions.

ADM used the monitoring data to compile average weekly profiles for both the pre and post control strategies. These weekly profiles were then extrapolated to average annual consumptions. The energy savings was then calculated by subtracting the as-built energy consumption from the pre controller energy consumption.

RESULTS

ADM obtained the energy savings due to the installation of the SAMS pump controller by using pre and post monitoring data. It was calculated that the seven SAMS pump controllers have an annual energy savings of 59,420 kWh and a demand reduction of 6.8 kW resulting in a realization rate of 100%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
SAMS Pump Controllers	59,420	6.78	59,420	6.78	100%	100%
Total	**59,420**	**6.78**	**59,420**	**6.78**	**100%**	**100%**

8.3.2 1-74KEL

EXECUTIVE SUMMARY

The customer received incentives from SPS for implementing an oil well pump controller. ADM performed project savings calculations through engineering analysis and monitoring techniques. The overall project realization rate is 100%.

CUSTOMER PROJECT AND DESCRIPTION

Devon energy installed a Lufkin SAMS pump off controller on a 75 Hp oil well pump. The SAMS controller is designed to allow the oil depth of the well to reach an optimum depth before allowing the pump to start. Once the pump has been engage the controller only allows pumping until the oil depth has fallen below the optimum pumping depth. The original control strategy involved the use of an adjustable timer that would simply turn the pump on and off.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that the SAMS controller was installed on the oil well pump. However, ADM discovered a discrepancy as the rebate calculation assumes that the pump has a 60 Hp motor when in actuality the pump is equipped with a 75 Hp motor. In order to calculate the savings due to the SAMS controller, ADM installed monitoring equipment to measure energy consumption for a two week period before the controller's installation. This equipment was left in place for another week after the controller's installation, thus providing pre and post energy consumptions.

ADM used the monitoring data to compile average weekly profiles for both the pre and post control strategies. These weekly profiles were then extrapolated to average annual consumptions. The energy savings was then calculated by subtracting the as-built energy consumption from the pre controller energy consumption.

RESULTS

ADM obtained the energy savings due to the installation of the SAMS pump controller by using pre and post monitoring data. It was calculated that the SAMS pump controller has an annual energy savings of 103,549 kWh and a demand reduction of 11.95 kW resulting in a realization rate of 100%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
SAMS Pump Controller	103,546	11.95	103,546	11.95	100%	100%
Total	**103,546**	**11.95**	**103,546**	**11.95**	**100%**	**100%**

8.4 BUSINESS MOTOR EFFICIENCY

This subsection presents the site reports from the evaluation of the Business Motor Efficiency Program.

8.4.1 1-7UV2L

EXECUTIVE SUMMARY

The participant is a University that received incentives from SPS for the installation of VFDs on HVAC related motors. ADM verified the installation of 13 VFDs and collected name plate information of all motors being served. Gross kWh realization for this project is 110%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a university, installed a total of 13 VFDs on HVAC related motors. It was claimed that (1) 30 Hp, (1) 25 Hp, (1) 20 Hp, (1) 15 Hp, (1) 10 Hp, (2) 7.5 Hp, (2) 5 Hp and (1) 2 Hp motors had VFDs installed, in which all motors served HVAC fans. The facility also installed (3) 15 Hp VFDs and hydronic pumps serving the HVAC system.

M&V METHODOLOGY

On site, ADM verified the installation of:

- (1) 30 Hp VFD serving a fan motor;
- (1) 25 Hp VFD serving a fan motor;
- (1) 15 Hp VFD serving a fan motor;
- (1) 10 Hp VFD serving a fan motor;
- (2) 7.5 Hp VFDs serving fan motors;
- (2) 5 Hp VFDs serving fan motors;
- (1) 2 Hp VFD serving a fan motor; and
- (3) 15 Hp VFDs serving pump motors.

Using this data, ADM calculated VFD savings as follows:

$$Annual\ kWh\ Savings = HP * LF * Conv * \left(\frac{1}{Eff}\right) * Hrs * \%_{drive}$$

Parameters for kWh Savings Calculation of VFD Measures

Hp	Rated Horsepower of Installed Motor
LF	Motor Load Factor (.75 Pumps) (.65 Fans)
Conv	Conversion Factor Between Horsepower and Kilowatts (.746)
Eff	Motor Efficiency from SPS's Deemed Savings Technical Assumptions
Hrs	Operating Hours of Pump from SPS's Deemed Savings Technical Assumptions
$\%_{drives}$	Percent Savings Due to VFD Drives

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Reduction = HP * LF * Conv * \left(\frac{1}{Eff}\right) * CF * \%_{drive}$$

Parameters for Peak Demand (kW) Savings Calculation of VFD Measures

Hp	Rated Horsepower of Installed Motor
LF	Motor Load Factor (0.75)
Conv	Conversion Factor Between Horsepower and Kilowatts (0.746)
Eff_{base}	Baseline Motor Efficiency from SPS's Deemed Savings Technical Assumptions
Eff_{post}	Installed Motor Efficiency
CF	Coincidence Factor (0.78)

Motor Retrofit kWh Savings Calculations

Measure	Quantity	HP	Serves	Efficiency	Hours	Expected kWh Savings	Realized kWh Savings	Realization Rate
25 Hp VFD	1	25	Fan	76.3%	3,631	15,840	21,966	139%
7.5 Hp VFD	2	7.5	Fan	94.1%	3,631	9,848	10,691	109%
30 Hp VFD	1	30	Fan	77.4%	3,631	18,864	25,985	138%
10 Hp VFD	1	10	Fan	94.7%	3,631	6,492	7,077	109%
20 Hp VFD	1	20	Fan	95.0%	3,631	12,770	14,118	111%
15 Hp VFD	1	15	Fan	95.0%	3,631	9,577	10,590	111%
5 Hp VFD	2	5	Fan	94.6%	3,631	6,640	7,085	107%
2 Hp VFD	1	2	Fan	92.5%	3,631	1,383	1,450	105%
15 Hp VFD	3	15	Pump	95.0%	3,641	33,243	27,610	83%
					Total	**114,657**	**126,572**	**110%**

Motor Retrofit kW Savings Calculations

Measure	Quantity	HP	Serves	Efficiency	CF	Expected kW Reduction	Realized kW Reduction	Realization Rate
25 Hp VFD	1	25	Fan	76.3%	0.78	3.40	4.72	139%
7.5 Hp VFD	2	7.5	Fan	94.1%	0.78	2.12	2.30	109%
30 Hp VFD	1	30	Fan	77.4%	0.78	4.05	5.58	138%
10 Hp VFD	1	10	Fan	94.7%	0.78	1.40	1.52	109%
20 Hp VFD	1	20	Fan	95.0%	0.78	2.74	3.03	111%
15 Hp VFD	1	15	Fan	95.0%	0.78	2.06	2.27	111%
5 Hp VFD	2	5	Fan	94.6%	0.78	1.43	1.52	107%
2 Hp VFD	1	2	Fan	92.5%	0.78	0.30	0.31	105%
15 Hp VFD	3	15	Pump	95.0%	0.78	7.12	5.91	83%
					Total	**24.61**	**27.17**	**110%**

RESULTS

It was calculated that the 13 installed VFDs have an annual energy savings of 126,572 kWh and a peak demand reduction of 27.17 kW resulting in a gross kWh realization rate of 110%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
25 Hp VFD	21,966	4.72	139%	139%
7.5 Hp VFD	10,691	2.30	109%	109%
30 Hp VFD	25,985	5.58	138%	138%
10 Hp VFD	7,077	1.52	109%	109%
20 Hp VFD	14,118	3.03	111%	111%
15 Hp VFD	10,590	2.27	111%	111%
5 Hp VFD	7,085	1.52	107%	107%
2 Hp VFD	1,450	0.31	105%	105%
15 Hp VFD	27,610	5.91	83%	83%
Total	**126,572**	**27.17**	**110%**	**110%**

8.4.2 1-7APHV

EXECUTIVE SUMMARY

The customer received incentives from SPS for the installation of a VFD on a more efficient style oil well pump referred to as a Rotaflex. ADM performed project savings calculations through engineering analysis and monitoring extrapolation. The overall project realization rate is 22%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed a VFD on a Rotaflex oil well pump. The Rotaflex pump is more energy efficient than a standard beam pump. It operates at a much lower stroke per minute which allows the pump head to fill more efficiently during pumping operation. The Rotaflex also offers a strokes length approximately three to four times longer than a conventional beam pump, allowing the pump to produce the same amount of oil with a 20% reduction in electrical consumption.

The installation of the VFD was coupled with a SAMs pump off controller. In a situation where no VFD is present the well would operate at normal speed unit the oil depth went below the threshold level, in which the well would then be shut off. Once the oil depth surpassed the threshold level the pump turns back on and continues pumping. With the VFD installed, instead of the pump completely shutting off the pump goes into idle mode, in which the pumping speed is reduced down 1.5 strokes per minute or a VFD output of 24.5 Hz. The baseline control strategy for the Rotaflex pump uses a SAMs controller with no VFD installed.

The downfall to the installation of a VFD is the fact that the pump is always running whether full speed or in idle mode. Due to this there are no savings attributed to the measure as the VFD causes the pump to operate more than if a SAMs or time clock were installed by themselves. The benefit from installation of the VFD is a dramatic decrease in equipment wear as the VFD prevents cold start and stops, thus extending the life of the well.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that the VFD was installed on the Rotaflex oil well pump. In order to calculate the savings due to the VFD, ADM used post installation monitoring data obtain from monitoring equipment installed on the well. The baseline consumption used monitoring data from a SAMs equipped beam pump and then reduced the annual consumption by 20%, due to manufacturers claimed savings for a Rotaflex versus a standard beam pump.

ADM normalized the monitoring data from the beam pump to the seating nipple depth, horsepower and motor efficiency. This was then extrapolated to that of the installed Rotaflex well to ensure physical characteristics were taken into consideration.

RESULTS

It was calculated that the installation of a VFD, decreases annual energy consumption by 18,418 kWh and a demand reduction of 2.61 kW resulting in a realization rate of 22%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
75 Hp VFD	83,840	11.54	18,418	2.61	22%	23%
Total	**83,840**	**11.54**	**18,418**	**2.61**	**22%**	**23%**

ADM attributes the low realization rate to SPS using a deemed savings approach for VFD savings. The assumption made by SPS assumes that the motor operates for 5,667 hours and the VFD reduces consumption by 33 percent. These assumptions do not apply to this particular configuration as the oil well pumps are either on or off and do not have the potential to benefit from the installation of a VFD.

However, ADM was able to identify spillover savings at the site for the installation of the Rotaflex well. Common industry practice is to install a standard beam pump, which is controlled by a time clock. Due to the Rotaflex pump being of new installation and having a SAMs controller installed at the same time savings may be attributed to this configuration. The Rotaflex pump alone decreases energy consumption by approximately 20 percent compared to a standard beam pump and the installation of the SAMs controller also contributes to energy savings.

By assuming a baseline configuration of a standard beam pump with a time clock and an as-built configuration of a Rotaflex pump with a SAMs controller, spillover savings can be attributed. ADM calculated spillover savings as 146,023 kWh with a demand reduction of 16.36 kW.

Spillover Savings

Measure Description	Calculated	
	Electric Savings (kWh)	Demand Savings (kW)
Rotaflex with SAMs	146,023	16.36
Total	**146,023**	**16.36**

8.4.3 1-74GHJ

EXECUTIVE SUMMARY

The customer received incentives from SPS for the installation of a VFD on a more efficient style oil well pump referred to as a Rotaflex. ADM performed project savings calculations through engineering analysis and monitoring extrapolation. The overall project realization rate is 23%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed a VFD on a Rotaflex oil well pump. The Rotaflex pump is more energy efficient than a standard beam pump. It operates at a much lower stroke per minute which allows the pump head to fill more efficiently during pumping operation. The Rotaflex also offers a strokes length approximately three to four times longer than a conventional beam pump, allowing the pump to produce the same amount of oil with a 20% reduction in electrical consumption.

The installation of the VFD was coupled with a SAMs pump off controller. In a situation where no VFD is present the well would operate at normal speed unit the oil depth went below the threshold level, in which the well would then be shut off. Once the oil depth surpassed the threshold level the pump turns back on and continues pumping. With the VFD installed, instead of the pump completely shutting off the pump goes into idle mode, in which the pumping speed is reduced down 1.5 strokes per minute or a VFD output of 24.5 Hz. The baseline control strategy for the Rotaflex pump uses a SAMs controller with no VFD installed.

The downfall to the installation of a VFD is the fact that the pump is always running whether full speed or in idle mode. Due to this there are no savings attributed to the measure as the VFD causes the pump to operate more than if a SAMs or time clock were installed by themselves. The benefit from installation of the VFD is a dramatic decrease in equipment wear as the VFD prevents cold start and stops, thus extending the life of the well.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that the VFD was installed on the Rotaflex oil well pump. In order to calculate the savings due to the VFD, ADM used monitoring data from an almost identical well in the same oil field with a VFD installed. The baseline consumption used monitoring data from a SAMs equipped beam pump and then reduced the annual consumption by 20%, due to manufacturers claimed savings for a Rotaflex versus a standard beam pump.

ADM normalized the monitoring data from the beam pump to the seating nipple depth, horsepower and motor efficiency. This was then extrapolated to that of the installed Rotaflex well to ensure physical characteristics were taken into consideration.

RESULTS

It was calculated that the installation of a VFD, decreases annual energy consumption by 18,120 kWh and a demand reduction of 2.57 kW resulting in a realization rate of 23%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
75 Hp VFD	78,422	11.48	18,120	2.57	23%	22%
Total	**78,422**	**11.48**	**18,120**	**2.57**	**23%**	**22%**

ADM attributes the low realization rate to SPS using a deemed savings approach for VFD savings. The assumption made by SPS assumes that the motor operates for 5,667 hours and the VFD reduces consumption by 33 percent. These assumptions do not apply to this particular configuration as the oil well pumps are either on or off and do not have the potential to benefit from the installation of a VFD.

However, ADM was able to identify spillover savings at the site for the installation of the Rotaflex well. Common industry practice is to install a standard beam pump, which is controlled by a time clock. Due to the Rotaflex pump being of new installation and having a SAMs controller installed at the same time savings may be attributed to this configuration. The Rotaflex pump alone decreases energy consumption by approximately 20 percent compared to a standard beam pump and the installation of the SAMs controller also contributes to energy savings.

By assuming a baseline configuration of a standard beam pump with a time clock and an as-built configuration of a Rotaflex pump with a SAMs controller, spillover savings can be attributed. ADM calculated spillover savings as 143,660 kWh with a demand reduction of 16.10 kW.

Spillover Savings

Measure Description	Calculated	
	Electric Savings (kWh)	Demand Savings (kW)
Rotaflex with SAMs	143,660	16.10
Total	**143,660**	**16.10**

8.4.4 1-74KEL

EXECUTIVE SUMMARY

The customer received incentives from SPS for the installation of a VFD on a conventional style oil well pump. ADM performed project savings calculations through engineering analysis and monitoring extrapolation. The overall project realization rate is -96.6%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed a VFD on a conventional oil well pump already equipped with a SAMs controller. In a situation where no VFD is present the well would operate at normal speed until the oil depth went below the threshold level, in which the well would then be shut off. Once the oil depth surpassed the threshold level the pump turns back on and continues pumping. With the VFD installed, instead of the pump completely shutting off the pump goes into an idle mode, in which the pumping speed is reduced. The baseline is assumed to be a conventional style pump with a SAMs controller.

The downfall to the installation of a VFD is the fact that the pump is always running whether full speed or in idle mode. Due to this there is not as much savings attributed to the measure as the VFD causes the pump to operate more than if a SAMs or time clock were installed by themselves. The benefit from installation of the VFD is a dramatic decrease in equipment wear as the VFD prevents cold start and stops, thus extending the life of the pump.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that the VFD was installed on a conventional oil well pump. In order to calculate the savings due to the VFD, ADM used baseline monitoring data from another conventional style pump with a SAMs controller. ADM normalized the monitoring data from the other conventional pump to the seating nipple depth and horsepower and then extrapolated the data to that of the well at hand to ensure physical characteristics were taken into consideration. Monitoring data from the post installation was then compared to the normalized baseline data to determine the annual energy savings.

RESULTS

It was calculated that the installation of a VFD increases annual energy consumption by 60,908 kWh and a demand increase of 7.19 kW resulting in a negative realization rate of -96.6%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
60 Hp VFD	63,074	9.23	-60,908	-7.19	-96.6%	-77.9%
Total	**63,074**	**9.23**	**-60,908**	**-7.19**	**-96.6%**	**-77.9%**

ADM attributes the negative realization rate to SPS using a deemed savings approach for VFD savings. The assumption made by SPS assumes that the motor operates for 5,667 hours and the VFD reduces consumption by 33 percent. These assumptions do not apply to this particular configuration as the oil well pumps are either on or off and do not have the potential to benefit from the installation of a VFD.

However, ADM was able to identify spillover savings at the site for the installation of the SAMs controller. Since the VFD is unable to work on a conventional style pump with only a time clock, a SAMs controller is necessary to allow a VFD to operate. Therefore, spillover savings can be attributed to the use of the SAMs controller.

By assuming a baseline configuration of a standard beam pump with a time clock and an as-built configuration of a pump with a SAMs controller, spillover savings can be attributed. ADM calculated spillover savings as 84,910 kWh with a demand reduction of 9.80 kW. Even though there is a large amount of spill over savings a considerable amount of it is negated by the installation of the VFD.

Spillover Savings

Measure Description	Calculated	
	Electric Savings (kWh)	Demand Savings (kW)
SAMs Controller	84,910	9.80
Total	**84,910**	**9.80**

8.4.5 1-7B285

EXECUTIVE SUMMARY

The customer received incentives from SPS for the installation of a VFD on a conventional style oil well pump. ADM performed project savings calculations through engineering analysis and monitoring extrapolation. The overall project realization rate is -164%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed a VFD on a conventional oil well pump already equipped with a SAMs controller. In a situation where no VFD is present the well would operate at normal speed until the oil depth went below the threshold level, in which the well would then be shut off. Once the oil depth surpassed the threshold level the pump turns back on and continues pumping. With the VFD installed, instead of the pump completely shutting off the pump goes into idle mode, in which the pumping speed is reduced. The baseline is assumed to be a conventional style pump with a SAMs controller.

The downfall to the installation of a VFD is the fact that the pump is always running whether full speed or in idle mode. Due to this there is not as much savings attributed to the measure as the VFD causes the pump to operate more than if a SAMs or time clock were installed by themselves. The benefit from installation of the VFD is a dramatic decrease in equipment wear as the VFD prevents cold start and stops, thus extending the life of the pump.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that the VFD was installed on a conventional oil well pump. In order to calculate the savings due to the VFD, ADM used baseline monitoring data from another conventional style pump with a SAMs controller. ADM normalized the monitoring data from the other conventional pump to the seating nipple depth and horsepower and then extrapolated the data to that of the well at hand to ensure physical characteristics were taken into consideration. Monitoring data from the post installation was then compared to the normalized baseline data to determine the annual energy savings.

RESULTS

It was calculated that the installation of a VFD increases annual energy consumption by 63,760 kWh and a demand increase of 7.37 kW resulting in a negative realization rate of -164%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
40 Hp VFD	38,825	6.19	-63,760	-7.37	-164%	-119%
Total	**38,825**	**6.19**	**-63,760**	**-7.37**	**-164%**	**-119%**

ADM attributes the negative realization rate to SPS using a deemed savings approach for VFD savings. The assumption made by SPS assumes that the motor operates for 5,667 hours and the VFD reduces consumption by 33 percent. These assumptions do not apply to this particular configuration as the oil well pumps are either on or off and do not have the potential to benefit from the installation of a VFD.

However, ADM was able to identify spillover savings at the site for the installation of the SAMs controller. Since the VFD is unable to work on a conventional style pump with only a time clock, a SAMs controller is necessary to allow a VFD to operate. Therefore, spillover savings can be attributed to the use of the SAMs controller.

By assuming a baseline configuration of a standard beam pump with a time clock and an as-built configuration of a pump with a SAMs controller, spillover savings can be attributed. ADM calculated spillover savings as 66,459 kWh with a demand reduction of 7.38 kW. Even though there is a large amount of spill over savings a considerable amount of it is negated by the installation of the VFD.

Spillover Savings

Measure Description	Calculated	
	Electric Savings (kWh)	Demand Savings (kW)
SAMs Controller	66,459	7.38
Total	**66,459**	**7.38**

8.4.6 1-7241K

EXECUTIVE SUMMARY

The participant is a manufacturing facility that received incentives from SPS for the installation of a high efficiency motor. ADM verified the installation of the high efficiency motor and collected name plate information. Gross kWh realization for this project is 99%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a grain mill, installed a claimed 125 Hp motor with a 95.4% rated efficiency. The motor is configured to power the mill stone used to crush corn into milled oats.

M&V METHODOLOGY

On site, ADM verified the installation of:

- (1) 95.4% efficient 125 Hp motor serving a mill stone.

Using this data, ADM calculated motor savings as follows:

$$Annual\ kWh\ Savings = HP * LF * Conv * \left(\frac{1}{Eff_{base}} - \frac{1}{Eff_{post}}\right) * Hrs$$

Parameters for kWh Savings Calculation of Motor Retrofit Measures

Hp	Rated Horsepower of Installed Motor
LF	Motor Load Factor (.75)
Conv	Conversion Factor Between Horsepower and Kilowatts (.746)
Eff_{base}	Baseline Motor Efficiency from SPS's Deemed Savings Technical Assumptions
Eff_{post}	Installed Motor Efficiency
Hrs	Operating Hours of Pump from SPS's Deemed Savings Technical Assumptions

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Reduction = HP * LF * Conv * \left(\frac{1}{Eff_{base}} - \frac{1}{Eff_{post}}\right) * CF$$

Parameters for Peak Demand (kW) Savings Calculation of Motor Retrofit Measures

Hp	Rated Horsepower of Installed Motor
LF	Motor Load Factor (0.75)
Conv	Conversion Factor Between Horsepower and Kilowatts (0.746)
Eff_{base}	Baseline Motor Efficiency from SPS's Deemed Savings Technical Assumptions
Eff_{post}	Installed Motor Efficiency
CF	Coincidence Factor (0.78)

Motor Retrofit kWh Savings Calculations

Measure	Quantity	HP	Efficiency		Hours	Expected kWh Savings	Realized kWh Savings	Realization Rate
			Base	Post				
High Efficiency Mill Motor	1	125	91.3%	95.4%	5,137	17,118	16,912	99%
					Total	**17,118**	**16,912**	**99%**

Motor Retrofit kW Savings Calculations

Measure	Quantity	HP	Efficiency		CF	Expected kW Reduction	Realized kW Reduction	Realization Rate
			Base	Post				
High Efficiency Mill Motor	1	10	91.3%	95.4%	0.78	2.57	2.57	100%
					Total	**2.57**	**2.57**	**100%**

RESULTS

It was calculated that the high efficiency motor has an annual energy savings of 16,912 kWh and a peak demand reduction of 2.57 kW resulting in a gross kWh realization rate of 99%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
High Efficiency Mill Motor	16,912	2.57	99%	100%
Total	**16,912**	**2.57**	**99%**	**100%**

8.4.7 1-7T1RH

EXECUTIVE SUMMARY

The customer received incentives from SPS for the installation of a VFD on a total of five HVAC pumps. ADM performed a documentation review and used deemed savings calculations to determine an overall realization rate of 100%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed a total of five VFDs on supporting hydronic pumps for the HVAC system. These VFDs were installed on two 7.5 Hp, two 3 Hp, and one 1 Hp pump. It is assumed that the baseline pumps are operated at constant speed.

MEASUREMENT AND VERIFICATION EFFORT

Due to the low savings reported in the project application, it was not cost effective to warrant a field verification trip. Therefore ADM used the deemed savings equations shown in the 2010 Technical Assumptions provided by SPS. The following equation was used to verify the energy savings

$$kWh_{Savings} = HP \times .746 \times Lf_{Drives} \times \frac{1}{Eff} \times Hrs \times Drive_{Savings}$$

Where:

$kWh_{savings}$ = annual energy savings

Hrs = VFD operating hours

Lf_{Drives} = drive load factor of 75%

Eff = motor efficiency

Hp = horsepower rating of installed drive

$Drive_{savings}$ = average savings of the installation of a VFD, 33%

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
2 - 7.5 Hp VFD	11,394	2.44	11,394	2.44	100%	97%
2 – 3 Hp VFD	4,663	0.99	4,663	1.00	100%	101%
1 – 1 Hp VFD	815	0.18	815	0.17	100%	100%

Total	**16,872**	**3.61**	**16,872**	**3.61**	**100%**	**100%**

8.4.8 1-7B2AO, 1-7QGIV, 1-7QGHZ

EXECUTIVE SUMMARY

The customer received incentives from SPS for the installation of high efficiency motors on three conventional style oil well pumps. ADM performed project savings calculations through engineering analysis and application of validated deemed assumptions for this measure type. The overall project realization rate is 105%.

CUSTOMER PROJECT AND DESCRIPTION

The customer installed premium efficiency motors on three standard oil well pumps. The new motors have a rated efficiency of 94.1% compared to a baseline efficiency of 93.0%.

MEASUREMENT AND VERIFICATION EFFORT

During ADMs site visit it was verified that the premium efficiency motors were installed on a conventional oil well pump. ADM applied deemed hours of operation and load factor for this measure in estimating savings. kWh savings for this measure were calculated as:

$$Annual\ kWh\ Savings = HP \times LF \times .746\ {}^{kW}/_{HP} * \left(\frac{1}{Eff_{std}} - \frac{1}{Eff_{prem}}\right) * Hrs$$

Parameters for kWh Savings Calculation of Premium Efficiency Motor Retrofits

Parameter	Definition
HP	Motor Horsepower
LF	Load Factor
Eff_{std}	Efficiency Rating of a Standard Efficiency Motor of the Specified HP
Eff_{prem}	Efficiency Rating of a Premium Efficiency Motor of the Specified HP
Hrs	Hours of Operation Per Year

Following this, peak demand (kW) reduction is calculated. Peak Coincident Factors for NEMA Premium Efficiency Motors are taken from SPS technical assumptions, which ADM determined to be reasonable estimates of PCF. Demand savings are calculated as:

$$Peak\ kW\ Savings = HP \times LF \times .746\ {}^{kW}/_{HP} * \left(\frac{1}{Eff_{std}} - \frac{1}{Eff_{prem}}\right) * PCF$$

RESULTS

It was calculated that the installation of premium efficiency motor creates an annual energy savings of 4,344 kWh and a demand reduction of 0.51 kW resulting in a gross kWh realization rate of 105%.

Verified Gross Savings & Realization Rates

Measure Description	Claimed		Realized		kWh Realization Rate	kW Realization Rate
	Electric Savings (kWh)	Demand Savings (kW)	Electric Savings (kWh)	Demand Savings (kW)		
40 HP Premium Eff. Motor	4,125	.66	4,344	.51	105%	77.1%
Total	**4,125**	**.66**	**4,344**	**0.51**	**105%**	**77.1%**

8.4.9 1-7T4B0

EXECUTIVE SUMMARY

The participant is a manufacturing facility that received incentives from SPS for the installation of a high efficiency motor. ADM verified the installation of the high efficiency motor and collected name plate information. Gross kWh realization for this project is 100%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a grain mill, installed a claimed 10 Hp motor with a 91.7% rated efficiency. The motor is configured to power a fan used to blow air into a grain silo, designed to act as grain storage.

M&V METHODOLOGY

On site, ADM verified the installation of:

- (1) 91.7% efficient 10 Hp motor serving a fan.

Using this data, ADM calculated motor savings as follows:

$$Annual\ kWh\ Savings = HP * LF * Conv * \left(\frac{1}{Eff_{base}} - \frac{1}{Eff_{post}}\right) * Hrs$$

Parameters for kWh Savings Calculation of Motor Retrofit Measures

Hp	Rated Horsepower of Installed Motor
LF	Motor Load Factor (.75)
Conv	Conversion Factor Between Horsepower and Kilowatts (.746)
Eff_{base}	Baseline Motor Efficiency from SPS's Deemed Savings Technical Assumptions
Eff_{post}	Installed Motor Efficiency
Hrs	Operating Hours of Pump from SPS's Deemed Savings Technical Assumptions

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Reduction = HP * LF * Conv * \left(\frac{1}{Eff_{base}} - \frac{1}{Eff_{post}}\right) * CF$$

Parameters for Peak Demand (kW) Savings Calculation of Motor Retrofit Measures

Hp	Rated Horsepower of Installed Motor
LF	Motor Load Factor (0.75)
Conv	Conversion Factor Between Horsepower and Kilowatts (0.746)
Eff_{base}	Baseline Motor Efficiency from SPS's Deemed Savings Technical Assumptions
Eff_{post}	Installed Motor Efficiency
CF	Coincidence Factor (0.78)

Motor Retrofit kWh Savings Calculations

Measure	Quantity	HP	Efficiency		Hours	Expected kWh Savings	Realized kWh Savings	Realization Rate
			Base	Post				
High Efficiency Fan Motor	1	10	86.3%	91.7%	4,316	1,648	1,648	100%
					Total	**1,648**	**1,648**	**100%**

Motor Retrofit kW Savings Calculations

Measure	Quantity	HP	Efficiency		CF	Expected kW Reduction	Realized kW Reduction	Realization Rate
			Base	Post				
High Efficiency Fan Motor	1	10	86.3%	91.7%	0.78	0.30	0.30	100%
					Total	**0.30**	**0.30**	**100%**

RESULTS

It was calculated that the high efficiency motor has an annual energy savings of 1,648 kWh and a peak demand reduction of 0.30 kW resulting in a gross kWh realization rate of 100%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
High Efficiency Fan Motor	1,648	0.30	100%	100%
Total	**1,648**	**0.30**	**100%**	**100%**

8.5 SMALL BUSINESS LIGHTING

This subsection presents the site reports from the evaluation of the Small Business Lighting Program.

8.5.1 1-750XC

EXECUTIVE SUMMARY

The participant is a bank that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through monitoring data. Gross kWh realization for this project is 81%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a bank, converted a claimed (42) 4' 1L T12, (90) 4' 3L T12, (328) 4' 4L T12, and (20) 8' 2L T12 to more efficient T8 fixtures. Also, (63) 60W incandescent lamps were replaced with 13W CFLs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (42) 4' 1-Lamp T8 fixtures, replacing 4' 1-Lamp T12s;
- (90) 4' 3-Lamp T8 fixtures, replacing 4' 3-Lamp T12s;
- (10) 4' 4-Lamp T8 fixtures, replacing 4' 4-Lamp T12s;
- (318) 4' 2-Lamp T8 fixtures, replacing 4' 4-Lamp T12s;
- (20) 8' 2-Lamp T8 fixtures, replacing 8' 2-Lamp T12s and;
- (63) 13W CFLs, replacing 60W Incandescent

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the facility operate for approximately 2,604 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 1L T12 to 4' 1L T8	42	42	41	28	2,604	2,604	1,802	1,578	1.110	88%
8' 2L T12 to 8' 2L T8	20	20	145	94	2,604	2,604	2,588	2,948	1.110	114%
4' 3L T12 to 4' 3L T8	90	90	141	82	2,604	2,604	21,148	15,348	1.110	73%
4' 4L T12 to 4' 4L T8	10	10	172	110	2,604	2,604	2,588	1,792	1.110	69%
4' 4L T12 to 4' 2L T8	318	318	172	55	2,604	2,604	134,285	106,573	1.110	79%
60W Incd. To 13W CFL	63	63	60	13	2,604	2,604	10,084	8,481	1.110	84%
						Total	**168,739**	**136,721**		**81%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 1L T12 to 4' 1L T8	42	42	41	28	0.81	0.81	0.66	0.53	1.194	80%
8' 2L T12 to 8' 2L T8	20	20	145	94	0.81	0.81	0.95	0.99	1.194	104%
4' 3L T12 to 4' 3L T8	90	90	141	82	0.81	0.81	7.78	5.14	1.194	66%
4' 4L T12 to 4' 4L T8	10	10	172	110	0.81	0.81	0.95	0.60	1.194	63%
4' 4L T12 to 4' 2L T8	318	318	172	55	0.81	0.81	49.30	35.98	1.194	73%
60W Incd. To 13W CFL	63	63	60	13	0.81	0.81	3.70	2.86	1.194	77%
						Total	**61.94**	**46.10**		**74%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 136,721 kWh and a peak demand reduction of 46.1 kW resulting in a realization rate of 81%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 1L T12 to 4' 1L T8	1,578	0.53	88%	80%
8' 2L T12 to 8' 2L T8	2,948	0.99	114%	104%
4' 3L T12 to 4' 3L T8	15,348	5.14	73%	66%
4' 4L T12 to 4' 4L T8	1,792	0.60	69%	63%
4' 4L T12 to 4' 2L T8	106,573	35.98	79%	73%
60W Incd. To 13W CFL	8,481	2.86	84%	77%
Total	**136,721**	**46.10**	**81%**	**74%**

8.5.2 1-74HQ3

EXECUTIVE SUMMARY

The participant is a middle school that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through monitoring data. Gross kWh realization for this project is 56%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a middle school, converted a claimed (537) 4’ 4L T12 and (10) 4’ 2L T12 to more efficient T8 fixtures. The facility also converted (24) incandescent exit signs to LED exit signs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (537) 4’ 3-Lamp T8 fixtures, replacing 4’ 4-Lamp T12s;
- (10) 4’ 2-Lamp T8 fixtures, replacing 4’ 2-Lamp T12s and;
- (24) LED Exit Signs, replacing Incandescent Exit Signs

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the school operate on average 1,582 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	10	10	87	55	1,582	1,582	727	545	1.076	75%
4' 4L T12 to 4' 3L T8	537	537	172	82	1,582	1,582	111,460	56,674	1.076	51%
LED Exit Signs	24	24	30	2	8,760	8,760	2,106	6,334	1.076	301%
Total							**114,293**	**63,553**		**56%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	10	10	87	55	0.28	0.28	0.31	0.12	1.348	39%
4' 4L T12 to 4' 3L T8	537	537	172	82	0.28	0.28	46.87	12.57	1.348	27%
LED Exit Signs	24	24	30	2	0.28	0.28	0.89	0.91	1.348	102%
Total							**48.07**	**13.59**		**28%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 63,553 kWh and a peak demand reduction of 13.59 kW resulting in a gross kWh realization rate of 56%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	545	0.12	75%	39%
4' 4L T12 to 4' 3L T8	56,674	12.57	51%	27%
LED Exit Signs	6,334	0.91	301%	102%
Total	**63,553**	**13.59**	**56%**	**28%**

ADM attributes the low realization rate to an overestimation of lighting operating hours at 1,735 by the implementer.

8.5.3 1-750YC

EXECUTIVE SUMMARY

The participant is a bank that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage T8 lamps and determined operating hours through monitoring data. Gross kWh realization for this project is 118%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a bank, converted a claimed (6) 4’ 1L T12, (250) 4’ 2L T12, and (281) 4’ 4L T12 to more efficient T8 fixtures. Also, (63) 60W incandescent bulbs were replaced with CFLs and (20) incandescent exit signs were replaced with LED exit signs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (6) 4’ 1-Lamp T8 fixtures, replacing 4’ 1-Lamp T12s;
- (250) 4’ 2-Lamp T8 fixtures, replacing 4’ 2-Lamp T12s;
- (281) 4’ 2-Lamp T8 fixtures, replacing 4’ 4-Lamp T12s;
- (63) 13W CFLs, replacing 60W Incandescent and;
- (20) LED Exit Signs, replacing Incandescent Exit Signs

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the facility operate for approximately 2,604 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 1L T12 to 4' 1L T8	6	6	45	24	2,604	2,604	191	225	1.11	118%
4' 2L T12 to 4' 2L T8	250	250	90	48	2,604	2,604	20,656	23,124	1.11	112%
4' 4L T12 to 4' 2L T8	281	281	172	48	2,604	2,604	83,132	95,029	1.11	114%
60W Incd. To 13W CFL	63	63	60	13	2,604	2,604	7,487	8,559	1.11	114%
LED Exit Sign	20	20	40	3.2	8,760	8,760	1,922	7,390	1.11	385%
						Total	**113,388**	**132,382**		**118%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 1L T12 to 4' 1L T8	6	6	45	24	0.81	0.81	0.10	0.08	1.194	78%
4' 2L T12 to 4' 2L T8	250	250	90	48	0.81	0.81	10.43	7.74	1.194	74%
4' 4L T12 to 4' 2L T8	281	281	172	48	0.81	0.81	41.98	31.80	1.194	76%
60W Incd. To 13W CFL	63	63	60	13	0.81	0.81	3.78	2.86	1.194	76%
LED Exit Sign	20	20	30	3.2	1.0	1.0	0.97	0.91	1.194	94%
						Total	**57.26**	**43.38**		**76%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 132,382 kWh and a peak demand reduction of 43.4 kW resulting in a gross kWh realization rate of 118%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 1L T12 to 4' 1L T8	225	0.08	118%	78%
4' 2L T12 to 4' 2L T8	23,124	7.74	112%	74%
4' 4L T12 to 4' 2L T8	95,029	31.80	114%	76%
60W Incd. To 13W CFL	8,559	2.86	114%	76%
LED Exit Sign	7,390	0.91	385%	94%
Total	**132,382**	**43.38**	**118%**	**76%**

8.5.4 1-7VUM6

EXECUTIVE SUMMARY

The participant is an elementary school that received incentives from SPS for implementing energy efficient lighting. ADM verified the installation of low-wattage 4-ft T8 lamps, 15W CFLs and determined operating hours through monitoring data. Gross kWh realization for this project is 74%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, an elementary school, converted a claimed (125) 4' 2L T12, (543) 4' 3L T12, and (44) 4' 4L T12 fixtures to more efficient T8 fixtures. The school also converted (30) 60W incandescent lamps to 15W CFLs, and delamped (78) existing 4' 4L T8 to 4' 3L T8s. The school installed 28W T8 lamps in all of the fixtures opposed to the standard 32W T8 lamps.

M&V METHODOLOGY

On site, ADM verified installation of:

- (125) 4' 2-Lamp T8 fixtures, replacing 4' 2-Lamp T12s;
- (543) 4' 3-Lamp T8 fixtures, replacing 4' 3-Lamp T12s;
- (44) 4' 4-Lamp T8 fixtures, replacing 4' 4-Lamp T12s;
- (78) 4' 3-Lamp T8 fixtures, replacing 4' 4-Lamp T8s;
- (30) 15W CFLs, replacing 60W incandescent lamps; and
- (2227) 28W T8 lamps, replacing 32W T8 lamps.

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the school operate on average 1,582 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls

HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	125	125	87	55	1,582	1,582	8,710	6,809	1.076	78%
4' 4L T8 to 4' 3L T8	78	78	110	82	1,582	1,582	5,883	3,718	1.076	63%
4' 3L T12 to 4' 3L T8	543	543	141	82	1,582	1,582	70,858	54,534	1.076	77%
4' 4L T12 to 4' 4L T8	44	44	172	110	1,582	1,582	6,030	4,644	1.076	77%
60W Incd. To 15W CFL	30	30	60	15	1,582	1,582	3,117	2,298	1.076	74%
32W T8 lamps to 28W T8 lamps	2,227	2,227	27	24	1,582	1,582	17,482	11,373	1.076	65%
						Total	**112,080**	**83,375**		**74%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	125	125	87	55	0.28	0.28	3.66	1.51	1.348	41%
4' 4L T8 to 4' 3L T8	78	78	110	82	0.28	0.28	2.47	0.82	1.348	33%
4' 3L T12 to 4' 3L T8	543	543	141	82	0.28	0.28	29.80	12.09	1.348	41%
4' 4L T12 to 4' 4L T8	44	44	172	110	0.28	0.28	2.54	1.03	1.348	41%
60W Incd. To 15W CFL	30	30	60	15	0.28	0.28	1.31	0.51	1.348	39%
32W T8 lamps to 28W T8 lamps	2,227	2,227	27	24	0.28	0.28	7.35	2.52	1.348	34%
						Total	**47.13**	**18.49**		**39%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 83,375 kWh and a peak demand reduction of 18.49 kW resulting in a realization rate of 39%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	6,809	1.51	78%	41%
4' 4L T8 to 4' 3L T8	3,718	0.82	63%	33%
4' 3L T12 to 4' 3L T8	54,534	12.09	77%	41%
4' 4L T12 to 4' 4L T8	4,644	1.03	77%	41%
60W Incd. To 15W CFL	2,298	0.51	74%	39%
32W T8 lamps to 28W T8 lamps	11,373	2.52	65%	34%
Total	**83,375**	**18.49**	**74%**	**39%**

ADM attributes the low realization rate to an overestimation of lighting operating hours at 1,736 by the implementer.

8.5.5 1-6UOFA

EXECUTIVE SUMMARY

The participant is an elementary school that received incentives from SPS for implementing energy efficient lighting. ADM verified the installation of low-wattage 4-ft T8 lamps, high bay T5 fixtures and determined operating hours through monitoring data. Gross kWh realization for this project is 77%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, an elementary school, converted a claimed (40) 4' 2L T12 and (620) 4' 3L T12 fixtures to more efficient T8 fixtures. The school also converted (15) 400W metal halides in the multipurpose room to 4' 6L T5HO fixtures.

M&V METHODOLOGY

On site, ADM verified installation of:

- (39) 4' 2-Lamp T8 fixtures, replacing 4' 2-Lamp T12s;
- (620) 4' 3-Lamp T8 fixtures, replacing 4' 3-Lamp T12s; and
- (15) 4' 6-Lamp T5HO fixtures, replacing 400W metal halides.

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the school operate on average 1,582 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	39	39	87	55	1,582	1,582	2,787	2,124	1.076	76%
4' 3L T12 to 4' 3L T8	620	620	141	82	1,582	1,582	80,906	62,268	1.076	77%
400W MH to 6L T5HO	15	15	458	358	1,582	1,582	3,463	2,553	1.076	74%
Total							**87,156**	**66,945**		**77%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	39	39	87	55	0.28	0.28	1.17	0.47	1.348	40%
4' 3L T12 to 4' 3L T8	620	620	141	82	0.28	0.28	34.02	13.81	1.348	41%
400W MH to 6L T5HO	15	15	458	358	0.28	0.28	1.46	0.57	1.348	39%
Total							**36.65**	**14.84**		**41%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 66,945 kWh and a peak demand reduction of 14.84 kW resulting in a gross kWh realization rate of 77%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
4' 2L T12 to 4' 2L T8	2,124	0.47	76%	40%
4' 3L T12 to 4' 3L T8	62,268	13.81	77%	41%
400W MH to 6L T5HO	2,553	0.57	74%	39%
Total	**66,945**	**14.84**	**77%**	**41%**

ADM attributes the low realization rate to an overestimation of lighting operating hours at 1,735 by the implementer. The low realization rate may also be due to improper assumption of fixture wattage, but no assumptions were given in the project application.

8.5.6 1-7A5FZ

EXECUTIVE SUMMARY

The participant is an elementary school that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through monitoring data. Gross kWh realization for this project is 75%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, an elementary school, converted a claimed (376) 4' 4L T12 to more efficient T8 fixtures with 28W lamps, thus reducing the overall energy consumption due to lighting.

M&V METHODOLOGY

On site, ADM verified installation of:

- (376) 4' 3-Lamp T8 fixtures, replacing 4' 3-Lamp T12s

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the school operate on average 1,582 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = \left(kW_{base} - kW_{post}\right) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 4L T12 to 4' 3L T8	376	376	172	72	1,582	1,582	84,832	64,004	1.076	75%
						Total	**84,832**	**64,004**		**75%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 4L T12 to 4' 3L T8	376	376	172	72	0.28	0.28	35.67	14.19	1.348	40%
						Total	**35.67**	**14.19**		**40%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 64,004 kWh and a peak demand reduction of 14.19 kW resulting in a gross kWh realization rate of 75%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 4L T12 to 4' 3L T8	64,004	14.19	75%	40%
Total	**64,004**	**14.19**	**75%**	**40%**

ADM attributes the low realization rate to an overestimation of lighting operating hours at 1,735 by the implementer.

8.5.7 1-74FUU

EXECUTIVE SUMMARY

The participant is a middle school that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through monitoring data. Gross kWh realization for this project is 81%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a middle school, converted a claimed (199) 4' 4L T12 and (6) 4' 2L T12 to more efficient T8 fixtures. The facility also converted (15) incandescent exit signs to LED exit signs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (199) 4' 3-Lamp T8 fixtures, replacing 4' 4-Lamp T12s;
- (6) 4' 2-Lamp T8 fixtures, replacing 4' 2-Lamp T12s and;
- (15) LED Exit Signs, replacing Incandescent Exit Signs

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the school operate on average 1,582 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	6	6	87	55	1,582	1,582	–	327	1.076	–
4' 4L T12 to 4' 3L T8	199	199	172	82	1,582	1,582	–	30,487	1.076	–
LED Exit Signs	15	15	30	2	8,760	8,760	–	3,959	1.076	–
Total							**43,057**	**34,773**		**81%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	6	6	87	55	0.28	0.28	–	0.07	1.348	–
4' 4L T12 to 4' 3L T8	199	199	172	82	0.28	0.28	–	6.76	1.348	–
LED Exit Signs	15	15	30	2	0.28	0.28	–	0.57	1.348	–
Total							**18.1**	**7.40**		**41%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 34,773 kWh and a peak demand reduction of 7.40 kW resulting in a gross kWH realization rate of 81%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
4' 2L T12 to 4' 2L T8	327	0.07	–	–
4' 4L T12 to 4' 3L T8	30,487	6.76	–	–
LED Exit Signs	3,959	0.57	–	–
Total	**34,773**	**7.40**	**81%**	**41%**

ADM attributes the low realization rate to an overestimation of lighting operating hours at 1,735 by the implementer. There was not sufficient program documentation to provide realization estimates at the measure level.

8.5.8 1-7515G

EXECUTIVE SUMMARY

The participant is a small office facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps, 13W CFLs, and T5HO high bay fixtures and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 113%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a small office, converted a claimed (3) 4’ 2L T12 and (128) 4’ 4L T12 to more efficient T8 fixtures. Also, (8) 1,000 W metal halides were converted to 4’ 10L T5HO along with (22) 60W Incandescent bulbs to 13W CFLs, and (1) incandescent exit sign to a LED exit sign.

M&V METHODOLOGY

On site, ADM verified installation of:

- (3) 4’ 2-Lamp T8 fixtures, replacing 4’ 2-Lamp T12 fixtures;
- (128) 4’ 4-Lamp T8 fixtures, replacing 4’ 4-Lamp T12 fixtures;
- (8) 4’ 10-Lamp T5HO fixtures, replacing 1,000W Metal halides;
- (22) 13W CFLs, replacing 60W incandescent lamps; and
- (1) LED Exit Sign, replacing an incandescent exit sign.

ADM used the typical business hours provided by the site contact to calculate the annual lighting operating hours at 2,607, as a result of a Monday through Friday, 7:00 a.m. till 5:00 p.m.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	3	3	87	55	2,607	2,607	239	275	1.098	115%
4' 4L T12 to 4' 4L T8	128	128	172	110	2,607	2,607	19,419	22,717	1.098	117%
60W Inc. to 13W CFL	22	22	60	13	2,607	2,607	2,615	2,960	1.098	113%
1,000W MH to 4' 10L T5HO	8	8	1,080	585	2,607	2,607	10,013	10,324	1.098	103%
LED Exit Signs	1	1	30	2	8,760	8,760	96	269	1.098	281%
Total							**32,382**	**36,544**		**113%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	3	3	87	55	0.66	0.66	0.12	0.08	1.314	69%
4' 4L T12 to 4' 4L T8	128	128	172	110	0.66	0.66	9.81	6.88	1.314	70%
60W Inc. to 13W CFL	22	22	60	13	0.66	0.66	1.32	0.90	1.314	68%
1,000W MH to 4' 10L T5HO	8	8	1,080	585	0.66	0.66	5.06	2.61	1.314	52%
LED Exit Signs	1	1	30	2	1.0	1.0	0.05	0.04	1.314	80%
						Total	**16.35**	**10.51**		**64%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 36,544 kWh and a peak demand reduction of 10.51 kW resulting in a gross kWh realization rate of 113%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	275	0.08	115%	69%
4' 4L T12 to 4' 4L T8	22,717	6.88	117%	70%
60W Inc. to 13W CFL	2,960	0.90	113%	68%
1,000W MH to 4' 10L T5HO	10,324	2.61	103%	52%
LED Exit Signs	269	0.04	281%	80%
Total	**36,544**	**10.51**	**113%**	**64%**

8.5.9 1-7A5H9

EXECUTIVE SUMMARY

The participant is a middle school that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through monitoring data. Gross kWh realization for this project is 75%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, an elementary school, converted a claimed (137) 4’ 4L T12 to more efficient T8 fixtures with 28W lamps.

M&V METHODOLOGY

On site, ADM verified installation of:

- (137) 4’ 3-Lamp T8 fixtures, replacing 4’ 3-Lamp T12s

It was determined from the extrapolation of data provided by installed monitoring equipment that the lights at the school operate on average 1,582 hours per year.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = \left(kW_{base} - kW_{post}\right) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 4L T12 to 4' 3L T8	137	137	172	72	1,582	1,582	30,909	23,321	1.076	75%
						Total	**30,909**	**23,321**		**75%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 4L T12 to 4' 3L T8	137	137	172	72	0.28	0.28	• 13.00	5.17	1.348	40%
						Total	**13.00**	**5.17**		**40%**

RESULTS

ADM obtained the annual operational hours from monitoring equipment installed at the facility. It was calculated that the high efficiency lighting has an annual energy savings of 30,909 kWh and a peak demand reduction of 5.17 kW resulting in a realization rate of 75%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
4' 4L T12 to 4' 3L T8	23,321	5.17	75%	40%
Total	**23,321**	**5.17**	**75%**	**40%**

ADM attributes the low realization rate to an overestimation of lighting operating hours at 1,735 by the implementer.

8.5.10 1-7MUCQ

EXECUTIVE SUMMARY

The participant is a church that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps, 13W CFLs, and determined operating hours through facility staff interviews and monitoring equipment. Gross kWh realization for this project is 98%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a church, converted a claimed (106) 4' 4L T12 to more efficient T8 fixtures. Also, (26) 60W Incandescent lamps were converted to 16W CFLs, (11) 60W Incandescent lamps were converted to 14W CFLs and (5) incandescent exit signs were converted to LED exit signs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (106) 4' 4-Lamp T8 fixtures, replacing 4' 4-Lamp T12 fixtures;
- (24) 16W CFLs, replacing 60W incandescent lamps;
- (10) 14W CFLs, replacing 60W incandescent lamps; and
- (5) LED exit signs, replacing incandescent exit signs.

ADM used extrapolated monitoring data to determine the annual hours of lighting operation for the facility. It was determined that the church operates its lights for approximately 2,312 hours annually.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 4L T12 to 4' 4L T8	106	106	172	110	2,312	2,312	17,660	16,684	1.098	94%
60W Inc. to 16W CFL	24	24	60	16	2,312	2,312	3,542	2,681	1.098	76%
60W Inc. to 14W CFL	10	10	60	14	2,312	2,312	1,168	1,168	1.098	100%
LED Exit Signs	5	5	40	2	8,760	8,760	439	1,828	1.098	416%
Total							**22,809**	**22,360**		**98%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 4L T12 to 4' 4L T8	106	106	172	110	.25	.25	7.43	2.16	1.314	29%
60W Inc. to 16W CFL	24	24	60	16	.25	.25	1.49	0.35	1.314	23%
60W Inc. to 14W CFL	10	10	60	14	.25	.25	0.49	0.15	1.314	31%
LED Exit Signs	5	5	40	2	.25	.25	0.18	0.06	1.314	34%
Total							**9.59**	**2.72**		**28%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 22,360 kWh and a peak demand reduction of 2.72 kW resulting in a gross kWh realization rate of 98%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 4L T12 to 4' 4L T8	16,684	2.16	94%	29%
60W Inc. to 16W CFL	2,681	0.35	76%	23%
60W Inc. to 14W CFL	1,168	0.15	100%	31%
LED Exit Signs	1,828	0.06	416%	34%
Total	**22,360**	**2.72**	**98%**	**28%**

8.5.11 1-7FEEY

EXECUTIVE SUMMARY

The participant is a small office facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and 13W CFLs and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 82%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a small office, converted a claimed (7) 4’ 2L T12 and (40) 4’ 4L T12 to more efficient T8 fixtures. Also, (16) 8’ 2L T12 fixtures were converted to 4’ 4L Tandem T8 fixtures along with (14) 60W Incandescent lamps to 13W CFLs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (16) 4’ 2-Lamp T8 fixtures, replacing 4’ 2-Lamp T12 fixtures;
- (39) 4’ 4-Lamp T8 fixtures, replacing 4’ 4-Lamp T12 fixtures;
- (5) 4’ 4-Lamp T8 fixtures, replacing 8’ 2-Lamp T12 fixtures; and
- (13) 13W CFLs, replacing 60W incandescent lamps.

ADM used the typical business hours provided by the site contact to calculate the annual lighting operating hours at 2,607, as a result of a Monday through Friday, 7:00 a.m. till 5:00 p.m.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	16	16	87	48	2,607	2,607	806	1,466	1.098	182%
4' 4L T12 to 4' 4L T8	39	39	172	96	2,607	2,607	9,053	6,921	1.098	76%
8' 2L T12 to 4' 4L T8	5	5	145	96	2,607	2,607	740	501	1.098	68%
60W Inc. to 13W CFL	13	13	60	13	2,607	2,607	2,509	1,884	1.098	75%
						Total	**13,108**	**10,772**		**82%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	16	16	87	48	0.66	0.66	0.2	0.4	1.314	201%
4' 4L T12 to 4' 4L T8	39	39	172	96	0.66	0.66	2.5	2.1	1.314	84%
8' 2L T12 to 4' 4L T8	5	5	145	96	0.66	0.66	0.2	0.2	1.314	75%
60W Inc. to 13W CFL	13	13	60	13	0.66	0.66	0.7	0.6	1.314	83%
Total							**3.6**	**3.3**		**93%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 10,772 kWh and a peak demand reduction of 3.3 kW resulting in a realization rate of 82%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	1,466	0.4	182%	201%
4' 4L T12 to 4' 4L T8	6,921	2.1	76%	84%
8' 2L T12 to 4' 4L T8	501	0.2	68%	75%
60W Inc. to 13W CFL	1,884	0.6	75%	83%
Total	**10,772**	**3.3**	**82%**	**93%**

ADM attributes the low realization rate to a slight overestimation in operating hours by the implementer at 2,868. It was discovered during the onsite verification that the operating hours are approximately 2,607.

8.5.12 1-734KE

EXECUTIVE SUMMARY

The participant is a hotel/motel facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 64%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a hotel, converted a claimed (87) 4' 2L T12 and (6) 4' 4L T12 to more efficient T8 fixtures. Also, (51) 2L 32W T8 fixtures were converted to 25W T8 lamps.

M&V METHODOLOGY

On site, ADM verified installation of:

- (39) 4' 2-Lamp T8 fixtures, replacing 4' 2-Lamp T12s;
- (6) 4' 4-Lamp T8 fixtures, replacing 4' 4-Lamp T12s; and
- (51) 4' 25W 2-Lamp T8 fixtures, replacing 4' 2-Lamp 32W T8 fixtures.

The onsite contact informed that the remaining 2L fixtures were to be installed, but is being completed at a slower pace. Due to the inconsistent manor in which lighting in a hotel operates, ADM used the provided annual operating hours from the 2010 Tech Assumptions, which is stated at 2,697.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	39	39	87	55	2,697	2,697	8,204	3,884	1.154	47%
4' 4L T12 to 4' 4L T8	6	6	172	110	2,697	2,697	1,078	1,158	1.154	107%
2L 32w T8 to 2L 25W T8	51	51	55	42	2,697	2,697	1,817	2,063	1.154	114%
						Total	**11,099**	**7,105**		**64%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	39	39	87	56	0.51	0.51	1.9	0.8	1.203	42%
4' 4L T12 to 4' 4L T8	6	6	172	111	0.51	0.51	0.2	0.2	1.203	100%
2L 32w T8 to 2L 25W T8	104	104	55	44	0.51	0.51	0.4	0.4	1.203	100%
						Total	**2.5**	**1.4**		**56%**

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RESULTS

ADM obtained the annual operational hours from interviews with site contacts and manufacturers specifications to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 7,105 kWh and a peak demand reduction of 1.4 kW resulting in a gross kWh realization rate of 64%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	3,884	0.8	47%	42%
4' 4L T12 to 4' 4L T8	1,158	0.2	107%	100%
2L 32w T8 to 2L 25W T8	2,063	0.4	114%	100%
Total	**7,105**	**1.4**	**64%**	**56%**

ADM attributes the low realization rate to a large portion of the 2L T8 fixtures not being installed. These fixtures were a large component of the site-level savings and them not being installed thus constitutes a significant reduction in savings.

8.5.13 1-7756J

EXECUTIVE SUMMARY

The participant is a small retail facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 96%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a small retail facility, converted a claimed (2) 4' 2L T12 and (78) 8' 2L T12 to more efficient T8 fixtures.

M&V METHODOLOGY

On site, ADM verified installation of:

- (2) 4' 2-Lamp T8 Fixtures, replacing 4' 2L T12 fixtures; and
- (78) 4' 4-Lamp T8 Fixtures, replacing 8' 2L T12 fixtures.

ADM confirmed the installation of the T8s during the site visit and also obtained business operating hours. It was informed that store is open Monday through Saturday 9 a.m. till 6 p.m. during which time all of the lights are left on. This schedule results in an annual runtime of 2,816 hours for the facility and its lights.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	2	2	87	55	2,816	2,816	215	198	1.101	92%
8' 2L T12 to 4' 4L T8	78	78	145	110	2,816	2,816	8,766	8,464	1.101	97%
						Total	**8,981**	**8,663**		**96%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	2	2	87	55	1	1	0.08	0.09	1.337	113%
8' 2L T12 to 4' 4L T8	78	78	145	110	1	1	3.22	3.65	1.337	113%
						Total	**3.30**	**3.74**		**113%**

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RESULTS

ADM obtained the annual operational hours from interviews with site contacts and manufacturers specifications to determine the annual savings. ADM calculated a savings from the high efficiency lighting of 8,663 kWh and a peak demand reduction of 3.74 kW resulting in a realization rate of 96%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
4' 2L T12 to 4' 2L T8	198	0.09	92%	113%
8' 2L T12 to 4' 4L T8	8,464	3.65	97%	113%
Total	**8,663**	**3.74**	**96%**	**113%**

8.5.14 1-7TDHU

EXECUTIVE SUMMARY

The participant is a small office and warehouse that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage T8 lamps, CFLs and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 171%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a small office, converted a claimed (62) 4’ 2L T12, (17) 4’ 4L T12, and (15) 8’ 2L T12 to more efficient T8 fixtures. Additionally, the facility replaced (3) 60W incandescent lamps were with 13W CFLs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (62) 4’ 2-Lamp T8 fixtures, replacing 4’ 2-Lamp T12s;
- (17) 4’ 4-Lamp T8 fixtures, replacing 4’ 4-Lamp T12s;
- (15) 8’ 2-Lamp T8 fixtures, replacing 8’ 2-Lamp T12s; and
- (3) 15W CFLs, replacing 60W Incandescent.

ADM used the typical business hours provided by the site contact to calculate the annual lighting operating hours at 3,598, as a result of a Monday through Friday, 6:00 a.m. till 6:00 p.m. and a Saturday, 6:00 a.m. till 3:00 p.m. business schedule.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	62	62	87	55	3,598	3,598	4,731	7,838	1.098	166%
4' 4L T12 to 4' 4L T8	17	17	172	110	3,598	3,598	2,552	4,164	1.098	163%
8' 2L T12 to 8' 2L T8	15	15	145	94	3,598	3,598	1,328	2,752	1.000	114%
60W Incd. To 15W CFL	3	3	60	15	3,598	3,598	349	533	1.098	101%
						Total	**8,960**	**15,288**		**171%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	62	62	87	55	1.0	1.0	2.39	2.61	1.314	109%
4' 4L T12 to 4' 4L T8	17	17	172	110	1.0	1.0	1.29	1.38	1.314	108%
8' 2L T12 to 8' 2L T8	15	15	145	94	1.0	1.0	0.67	0.77	1.000	114%

60W Incd. To 15W CFL	3	3	60	15	1.0	1.0	0.18	0.18	1.314	100%
						Total	**4.52**	**4.93**		**109%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 15,288 kWh and a peak demand reduction of 4.93 kW resulting in a gross realization rate of 171%.

Verified Gross Savings & Realization Rates

Measure	**Verified**			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
4' 2L T12 to 4' 2L T8	7,838	2.61	166%	109%
4' 4L T12 to 4' 4L T8	4,164	1.38	163%	108%
8' 2L T12 to 8' 2L T8	2,752	0.77	114%	114%
60W Incd. To 15W CFL	533	0.18	101%	100%
Total	**15,288**	**4.93**	**171%**	**109%**

ADM attributes the high realization rate, to an underestimation of operating hours claimed by the implementer. The implementer assumed the facility operates for approximately 1,902 hours per year compared to the informed 3,598 hours, as determined through the site contact.

8.5.15 1-7MQAR

EXECUTIVE SUMMARY

The participant is a small office that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage T8 lamps and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 97%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a small office, converted a claimed (12) 4’ 2L T12 and (20) 4’ 4L T12 to more efficient T8 fixtures. Also, (14) 60W incandescent bulbs were replaced with 13W CFLs.

M&V METHODOLOGY

On site, ADM verified installation of:

- (12) 4’ 2-Lamp T8 fixtures, replacing 4’ 2-Lamp T12s;
- (18) 4’ 4-Lamp T8 fixtures, replacing 4’ 4-Lamp T12s and;
- (0) 13W CFLs, replacing 60W Incandescent

ADM used the typical business hours provided by the site contact to calculate the annual lighting operating hours at 3,885, as a result of a Monday through Friday, 4:30 a.m. till 5:00 p.m. and a Saturday; Sunday 5:00 a.m. till 11:00 a.m. business schedule.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = (kW_{base} * Hours_{base} - kW_{post} * Hours_{post}) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x W/Fixture$_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x W/Fixture$_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	12	12	87	55	3,885	3,885	1,381	1,638	1.098	119%
4' 4L T12 to 4' 4L T8	18	18	172	110	3,885	3,885	4,527	4,761	1.098	105%
60W Inc. to 13W CFL	0	0	60	13	3,885	3,885	717	0	1.098	0%
						Total	**6,625**	**6,399**		**97%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	12	12	87	55	0.66	0.66	0.38	0.34	1.314	91%
4' 4L T12 to 4' 4L T8	18	18	172	110	0.66	0.66	1.23	0.98	1.314	79%
60W Inc. to 13W CFL	0	0	60	13	0.66	0.66	0.20	0.0	1.314	0%
						Total	**1.81**	**1.31**		**73%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 6,399 kWh and a peak demand reduction of 1.31 kW resulting in a gross kWh realization rate of 97%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	1,638	0.34	119%	91%
4' 4L T12 to 4' 4L T8	4,761	0.98	105%	79%
60W Inc. to 13W CFL	0	0.0	0%	0%
Total	**6,399**	**1.31**	**97%**	**73%**

ADM attributes the low realization rate to all of the claimed fixtures and bulbs not being installed. ADM was unable to verify any of the 13W CFLs and was only able to verify 18 of the 20 the 4’ 4L T8 fixtures.

8.5.16 1-7515G

EXECUTIVE SUMMARY

The participant is a small retail facility that received incentives from SPS for implementing energy efficient lighting. ADM verified installation of low-wattage 4-ft T8 lamps, 13W CFLs, and determined operating hours through facility staff interviews and examination of lighting schedules. Gross kWh realization for this project is 83%.

CUSTOMER PROJECT AND DESCRIPTION

The facility, a retail facility, converted a claimed (5) 4' 2L T12 and (22) 4' 4L T12 to more efficient T8 fixtures. Also, (4) 60W Incandescent bulbs were converted to 13W CFLs, thus reducing the overall energy consumption due to lighting.

M&V METHODOLOGY

On site, ADM verified installation of:

- (5) 4' 2-Lamp T8 fixtures, replacing 4' 2-Lamp T12 fixtures;
- (22) 4' 4-Lamp T8 fixtures, replacing 4' 4-Lamp T12 fixtures; and
- (0) 13W CFLs, replacing 60W incandescent lamps.

ADM used the typical business hours provided by the site contact to calculate the annual lighting operating hours. ADM was informed that the business is open Monday through Friday 8:30 a.m. till 6:30 p.m., and Saturday 9:30 a.m. till 1:00 p.m. during which time all of the lights are left on. This schedule results in an annual runtime of 2,789 hours for the facility and its lights.

Using this data, ADM calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(kW_{base} * Hours_{base} - kW_{post} * Hours_{post}\right) * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kWpost	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures Including Impact of Lighting Controls
HCEF	Heating/Cooling Energy Interactive Factor

Following this, ADM calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = (kW_{base} - kW_{post}) * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

kW_{base}	Total Baseline Fixtures x $W/Fixture_{base}$ / 1000 W/kW
kW_{post}	Total Installed Fixtures x $W/Fixture_{post}$ / 1000 W/kW
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

The heating cooling interaction factor was determined through energy simulation for like buildings in the same climate zone. The tables below summarize the energy savings calculations for this lighting project.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Lamps)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	5	5	87	55	2,789	2,789	536	491	1.101	92%
4' 4L T12 to 4' 4L T8	22	22	172	110	2,789	2,789	4,495	4,188	1.101	93%
60W Inc. to 13W CFL	0	0	60	13	2,789	2,789	640	0	1.101	0%
						Total	**5,671**	**4,680**		**83%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Lamps)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 2L T12 to 4' 2L T8	5	5	87	55	1.0	1.0	0.20	0.21	1.337	109%
4' 4L T12 to 4' 4L T8	22	22	172	110	1.0	1.0	1.65	1.82	1.337	111%
60W Inc. to 13W CFL	0	0	60	13	1.0	1.0	0.24	0.0	1.337	0%
						Total	**2.09**	**2.04**		**98%**

RESULTS

ADM obtained the annual operational hours from interviews with site contacts to determine the annual savings. It was calculated that the high efficiency lighting has an annual energy savings of 4,680 kWh and a peak demand reduction of 2.04 kW resulting in a realization rate of 83%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
4' 2L T12 to 4' 2L T8	491	0.21	92%	109%
4' 4L T12 to 4' 4L T8	4,188	1.82	93%	111%
60W Inc. to 13W CFL	0	0.0	0%	0%
Total	**4,680**	**2.04**	**83%**	**98%**

ADM attributes the low realization rate to the CFLs not being installed although they were claimed in the expected savings calculations provided by the implementer.

9. APPENDIX B: SURVEY FORMS

This appendix contains the survey forms used in evaluating SPS 2010 DSM Portfolio.

Southwestern Public Service Company
Residential Air Source Heat Pumps Rebate Program
Verification & Net-to-Gross Survey Questionnaire

10.____

11.____ ID No.

Customer Name: ____________________________________

Date of interview: __________________________________

Date data entered ___________________________________

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Hello, my name is _________________. I am calling on behalf of Southwestern Public Service Company (SPS), your electric service provider.

May I please speak to _________________________ *(Contact Person)?*

Address: ____ ZIP: _________________

Phone: ( ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling from ADM Associates, Inc. on behalf of Southwestern Public Service Company (SPS). Through the Residential Air Source Heat Pumps Rebate Program, SPS offered rebates for buying high efficiency Heat Pumps. Because you purchased a high efficiency heat pump and received a rebate through the program, we would appreciate your taking about 5 minutes to answer some questions about your participation in the program. The information you provide will help SPS to improve the program.

Did you receive a rebate for installation of a high efficiency evaporative cooler or air conditioner through SPS's Residential Air Source Heat Pump Rebate Program?

- ❑ No. Thank you for your time in assisting with this survey. (END CALL)
- ❑ Yes. *Continue interview with this person.*

Q.1 How did you first hear about SPS's Residential Air Source Heat Pump Rebate Program and the rebate for buying high efficiency heat pumps?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)

- ☐ Received information in mail
- ☐ Read newspaper or magazine article
- ☐ Was contacted by an HVAC contractor
- ☐ SPS bill message
- ☐ SPS web site
- ☐ Other *(Specify)* ____________________
- ☐ Don't know (*DO NOT READ)*

Q.2 How did you choose the contractor you used to install the heat pump?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)

- ☐ Contractor contacted me first
- ☐ Found contractor through SPS web site or by calling SPS
- ☐ Other *(Specify)* ____________________
- ☐ Don't know (*DO NOT READ)*

Q.3 Why did you decide to purchase a more efficient heat pump?

- ☐ Wanted a more efficient heat pump
- ☐ Wanted to reduce my monthly electric bill
- ☐ Contractor recommended
- ☐ First Heat Pump
- ☐ Replacing a Broken Unit
- ☐ Other (Specify: ____________________**)**

Q.4 Did you have specific plans to install the efficient heat pump <u>before</u> you talked with anyone about the Residential Air Source Heat Pump Rebate Program?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.5 What factors motivated you to install the heat pump through the program in 2010?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)

- ☐ Rebate / Incentive payment that program provided
- ☐ Wanted energy efficient heat pump because it is good for environment
- ☐ Recommendation of a friend/relative
- ☐ Recommendation of retailer/dealer
- ☐ Utility sponsorship of the program
- ☐ First Heat Pump
- ☐ Replacing a Broken Unit
- ☐ Other (Describe: ____________________)
- ☐ Don't know

Q.6 When did you become aware of the rebate SPS offered for purchasing higher efficiency heat pumps?

- ☐ Before deciding to buy high efficiency equipment
- ☐ After already deciding to buy high efficiency equipment
- ☐ Same time as made decision to buy high efficiency equipment
- ☐ Don't know

Q.7 In your decision to buy the high efficiency heat pump, how important was information, advice and / or recommendations from your contractor?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.8 How important in your decision was information, advice and / or recommendations from SPS?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.9 How important was SPS's rebate in your decision to buy the high efficiency heat pump?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.10 How was the decision to apply for the rebate on the heat pump made?

- ☐ We (home owner) made the decision.
- ☐ Contractor made the decision.
- ☐ Decision was made jointly between us and the contractor
- ☐ Other ________________________________
- ☐ Don't Know

Q.11 Did you have to change the quantity of equipment or the efficiency level of the heat pump you installed in order to qualify for the program incentive/rebate?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.12 If you had not been able to receive the rebate through the Residential Air Source Heat Pump Rebate Program, how likely is it that you would have installed the high efficiency heat pump anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed
- ☐ Don't know (DON'T READ)

Q.13 Would you have been able to purchase the high efficiency heat pump if the rebates offered through the program were not available?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.14 If SPS had not paid a portion of the equipment cost, would you have purchased the same equipment <u>within one year of when it was installed</u>?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.15 If you had not been able to install the higher efficiency heat pump, would you have installed standard efficiency equipment instead?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.16 Please think about your <u>overall</u> experience with the Residential Air Source Heat Pump Rebate Program. Considering all aspects of your experience with the program, how would you rate your overall satisfaction with the program. Would you say you were:
Very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?

Very Satisfied	*Somewhat Satisfied*	*Somewhat Dissatisfied*	*Very Dissatisfied*	*Would not answer*
☐	☐	☐	☐	☐

Ask only if person answers that he/she was somewhat dissatisfied or very dissatisfied:

Why were you dissatisfied with the service?

____

____

Q.17 Do you have any comments about the Residential Air Source Heat Pump Rebate Program, or any suggestions with regard to how it might be improved?
Comments (if any): ____
____
____
____

Thank you for your help! SPS will use your ideas to improve its programs for its residential customers.

Southwestern Public Service Company
Residential Evaporative Cooling Rebate Program-CENTRAL EVAP
Verification & Net-to-Gross Survey Questionnaire

12.____

13.____ID No.

Customer Name: ______________________________

Date of interview: ____________________________

Date data entered ____________________________

....

Hello, my name is _________________. I am calling on behalf of Southwestern Public Service Company (SPS), your electric service provider.

May I please speak to _________________________ *(Contact Person)?*

Address: ____ ZIP: _________________

Phone: (   ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling from ADM Associates, Inc. on behalf of Southwestern Public Service Company (SPS). Through the Residential Evaporative Cooling Rebate Program, SPS offered rebates for buying Evaporative Coolers. Because you purchased an Evap Cooler and received a rebate through the program, we would appreciate your taking about 5 minutes to answer some questions about your participation in the program. The information you provide will help SPS to improve the program.

Did you receive a rebate for installation of an evaporative cooler or air conditioner through SPS's Residential Evaporative Cooler Rebate Program?

- ❑ No. Thank you for your time in assisting with this survey. (END CALL)
- ❑ Yes. *Continue interview with this person.*

Q.1 How did you first hear about SPS's Residential Evaporative Cooler Rebate Program and the rebate for buying Evap Coolers?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Received information in mail
- ☐ Read newspaper or magazine article
- ☐ Was contacted by an HVAC contractor
- ☐ SPS bill message
- ☐ SPS web site
- ☐ Other *(Specify)* ____________________
- ☐ Don't know (*DO NOT READ)*

Q.2 Why did you decide to purchase am Evap Cooler?
(DO NOT READ. Check all mentioned)
- ☐ Old unit did not provide sufficient cooling
- ☐ Lower energy cost than air conditioning/refrigerated air
- ☐ Contractor recommended
- ☐ First Evap Cooler
- ☐ Replacing Broken Unit
- ☐ Other (Specify: ____________________**)**

Q.3 What type of cooling system did you have before this unit?
- ☐ Window Evap Cooler
- ☐ Central Evap Cooler
- ☐ Window Air Conditioner
- ☐ Central Air Conditioner
- ☐ None

Q.4 Did you have specific plans to install the Evap Cooler <u>before</u> you talked with anyone about the Residential Evaporative Cooler Rebate Program?
- ☐ Yes
- ☐ No
- ☐ Don't know

Q.5 What factors motivated you to install the evap cooler through the program in 2010?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Rebate / Incentive payment that program provided
- ☐ Recommendation of a friend/relative
- ☐ Recommendation of retailer/dealer
- ☐ Utility sponsorship of the program
- ☐ First Evap Cooler
- ☐ Replacing Broken Unit
- ☐ Other (Describe: ____________________)
- ☐ Don't know

Q.6 When did you become aware of the rebate SPS offered for purchasing evap coolers?

- ☐ Before deciding to buy the equipment
- ☐ After already deciding to buy the equipment
- ☐ Same time as made decision to buy the equipment
- ☐ Don't know

Q.7 In your decision to buy the evap cooler, how important was information, advice and / or recommendations from your contractor?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.8 How did you choose the contractor you used to install the Evap Cooler?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)

- ☐ Contractor contacted me first
- ☐ Found contractor through SPS web site or by calling SPS
- ☐ Personal Reference
- ☐ Other *(Specify)* ____________________
- ☐ Don't know (*DO NOT READ)*

Q.9 How important in your decision was information, advice and / or recommendations from SPS?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.10 How important was SPS's rebate in your decision to buy the high efficiency evap cooler?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.11 How important was the effect on your cooling costs in your decision to buy the evap cooler?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.12 How was the decision to apply for the rebate on the evap cooler made?

- ☐ We (home owner) made the decision.
- ☐ Contractor made the decision.
- ☐ Decision was made jointly between us and the contractor
- ☐ Other ______________________________
- ☐ Don’t Know

Q.13 Did you have to change the efficiency level of the evap cooler you installed in order to qualify for the program incentive/rebate?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Q.14 If you had not been able to receive the rebate through the Residential Evaporative Cooler Rebate Program, how likely is it that you would have installed the high efficiency evap cooler anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed
- ☐ Don’t know (DON’T READ)

Q.15 If you had not been able to receive the rebate through the Residential Evaporative Cooler Rebate Program, would you have purchased a central air conditioning unit instead?

- ☐ Yes (Skip to Q.17)
- ☐ No (Ask Q.16)
- ☐ Don’t know

Q.16 If you had not been able to receive the rebate through the Residential Evaporative Cooler Rebate Program, would you have purchased a window air conditioning unit instead?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Q.17 If SPS had not paid a portion of the equipment cost, would you have purchased the same equipment <u>within one year of when it was installed</u>?

- ☐ Yes
- ☐ No
- ☐ Don’t know

Q.18 Please think about your <u>overall</u> experience with the Residential Evaporative Cooler Rebate Program. Considering all aspects of your experience with the program, how

would you rate your overall satisfaction with the program? Would you say you were:
Very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?

Very Satisfied	*Somewhat Satisfied*	*Somewhat Dissatisfied*	*Very Dissatisfied*	*Would not answer*
☐	☐	☐	☐	☐

Ask only if person answers that he/she was somewhat dissatisfied or very dissatisfied:

Why were you dissatisfied with the service?

____

____

Q.19 Do you have any comments about the Residential Evaporative Cooler Rebate Program, or any suggestions with regard to how it might be improved?
Comments (if any): ____

____

____

____

Thank you for your help! SPS will use your ideas to improve its programs for its residential customers.

Southwestern Public Service Company
Residential Evaporative Cooling Rebate Program-WINDOW EVAP
Verification & Net-to-Gross Survey Questionnaire

14.____

15.____ID No.
Customer Name: ____________________________________
Date of interview: __________________________________
Date data entered ___________________________________

....

Hello, my name is _________________. I am calling on behalf of Southwestern Public Service Company (SPS), your electric service provider.

May I please speak to _________________________ *(Contact Person)?*

Address: ____ ZIP: _________________

Phone: ( ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling from ADM Associates, Inc. on behalf of Southwestern Public Service Company (SPS). Through the Residential Evaporative Cooling Rebate Program, SPS offered rebates for buying Evaporative Coolers. Because you purchased an Evap Cooler and received a rebate through the program, we would appreciate your taking about 5 minutes to answer some questions about your participation in the program. The information you provide will help SPS to improve the program.

Did you receive a rebate for installation of a high efficiency evaporative cooler or air conditioner through SPS's Residential Evaporative Cooler Rebate Program?

- ❑ No. Thank you for your time in assisting with this survey. (END CALL)
- ❑ Yes. *Continue interview with this person.*

Q.1 How did you first hear about SPS's Residential Evaporative Cooler Rebate Program and the rebate for purchasing Evap Coolers?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Received information in mail
- ☐ Read newspaper or magazine article
- ☐ Was contacted by an HVAC contractor
- ☐ SPS bill message
- ☐ SPS web site
- ☐ Friends/Word of Mouth
- ☐ Other *(Specify)* ____________________
- ☐ Don't know (*DO NOT READ)*

Q.2 Why did you decide to purchase an Evap Cooler?

(DO NOT READ. Check all mentioned)
- ☐ Old unit did not provide sufficient cooling
- ☐ Lower energy cost than air conditioning/refrigerated air
- ☐ Contractor recommended
- ☐ First Evap Cooler
- ☐ Replacing Broken Unit
- ☐ Other (Specify: ____________________**)**

Q.3 What type of cooling system did you have before this unit?
- ☐ Window Evap cooler
- ☐ Window Air Conditioner (Refrigerated Air)
- ☐ None

Q.4 Did you have specific plans to install the Evap Cooler <u>before</u> you talked with anyone about the Residential Evaporative Cooler Rebate Program?
- ☐ Yes
- ☐ No
- ☐ Don't know

Q.5 What factors motivated you to install the evap cooler through the program in 2010?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Rebate / Incentive payment that program provided
- ☐ Recommendation of a friend/relative
- ☐ Recommendation of retailer/dealer
- ☐ Utility sponsorship of the program
- ☐ First Evap Cooler
- ☐ Replacing Broken Unit
- ☐ Other (Describe: ____________________)
- ☐ Don't know

Q.6 When did you become aware of the rebate SPS offered for purchasing an evap coolers?

- ☐ Before deciding to buy the equipment
- ☐ After already deciding to buy the equipment
- ☐ Same time as made decision to buy the equipment
- ☐ Don't know

Q.7 In your decision to purchase your evap cooler, how important in your decision was information, advice and / or recommendations from SPS?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.8 How important was SPS's rebate in your decision to buy the evap cooler?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.9 How important was the effect on your cooling costs in your decision to buy the evap cooler?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don't Know

Q.10 Did you have to change the efficiency level of the evap cooler you installed in order to qualify for the program incentive/rebate?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.11 If you had not been able to receive the rebate through the Residential Evaporative Cooler Rebate Program, how likely is it that you would have installed an evap cooler anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed

☐ Don't know (DON'T READ)

Q.12 Would you have been able to purchase the high efficiency evap cooler if the rebates offered through the program were not available?

☐ Yes
☐ No
☐ Don't know

Q.13 If you had not been able to receive the rebate through the Residential Evaporative Cooler Rebate Program, would you have purchased a window air conditioning unit instead?

☐ Yes
☐ No
☐ Don't know

Q.14 Please think about your <u>overall</u> experience with the Residential Evaporative Cooler Rebate Program. Considering all aspects of your experience with the program, how would you rate your overall satisfaction with the program? Would you say you were:
Very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?

Very Satisfied	*Somewhat Satisfied*	*Somewhat Dissatisfied*	*Very Dissatisfied*	*Would not answer*
☐	☐	☐	☐	☐

Ask only if person answers that he/she was somewhat dissatisfied or very dissatisfied:

Why were you dissatisfied with the service?

____
____

Q.15 Do you have any comments about the Residential Evaporative Cooler Rebate Program, or any suggestions with regard to how it might be improved?

Comments (if any): ____
____
____
____

Thank you for your help! SPS will use your ideas to improve its programs for its residential customers.

Southwestern Public Service Company
Residential Home Energy Services Program
Verification & Net-to-Gross Survey Questionnaire

16.____

17.____ ID No.

Customer Name: ____________________________________

Date of interview: __________________________________

Date data entered ___________________________________

....

Hello, my name is _________________. I am calling on behalf of Southwestern Public Service Company (SPS), your electric service provider.

May I please speak to __________________________ *(Contact Person)?*

Address: ____ ZIP: _________________

Phone: (   ) ____________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is ________________________. I am calling from ADM Associates, Inc. on behalf of Southwestern Public Service Company (SPS). Through the Residential Home Energy Services Program, contractors provided discounted installation of insulation, weatherization, and low-flow showerheads. Because you received energy efficiency improvements through the program, we would appreciate your taking about 4-5 minutes to answer some questions about your participation in the program. The information you provide will help SPS to improve the program.

(IF TRACKING DATA INDICATES WEATHERIZATION)

Did you have a contractor weatherize your home in 2010?

- ❑ No. Thank you for your time in assisting with this survey.
- ❑ Yes. *Continue interview with this person.*

(IF TRACKING DATA INDICATES SHOWERHEADS, ASK THIS AS WELL)

Did you have a contractor install low-flow showerheads in your home?

- ❑ No.
- ❑ Yes.

(If respondent indicates "NO" to both, end the call. If they indicate "YES", ask the appropriate subset of questions to follow)

(Q1 – Q11, IF YES TO WEATHERIZATION)

Q1. Were you aware that the cost of weatherization improvements was discounted through an SPS program?
- ☐ Yes (ask Q1A)
- ☐ No (Skip to Q2)
- ☐ Don't know

Q.1A How did you first hear about SPS's Residential Home Energy Services Program and the available discounted installation of weatherization improvements?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Received information in mail
- ☐ Read newspaper or magazine article
- ☐ Was contacted by an HVAC contractor
- ☐ SPS bill message
- ☐ SPS web site
- ☐ Other *(Specify)* ______________________________
- ☐ Don't know (*DO NOT READ)*

Q.2 How did you choose the contractor you used to install the weatherization improvements?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Contractor contacted me first
- ☐ Found contractor through SPS web site or by calling SPS
- ☐ Word of mouth
- ☐ Took competitive bids
- ☐ Recommendation of friend/relative
- ☐ Recommendation from a retailer
- ☐ Other *(Specify)* ______________________________
- ☐ Don't know (*DO NOT READ)*

Q.3 Did you have specific plans to weatherize your home <u>before</u> you talked with anyone about the Residential Home Energy Services Program?
- ☐ Yes
- ☐ No
- ☐ Don't know

Q.4 What factors motivated you to weatherize your home through the program in 2010?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)
- ☐ Discount / Incentive payment that program provided
- ☐ Wanted to improve home comfort
- ☐ Wanted to reduce my monthly electric bill
- ☐ Wanted to reduce my monthly gas bill
- ☐ Wanted to make my home more energy efficient because it is good for environment
- ☐ Recommendation of a friend/relative

- ☐ Recommendation of retailer/dealer
- ☐ Utility sponsorship of the program
- ☐ Other (Describe: ____)
- ☐ Don't know

Q.5 When did you become aware of the discount SPS offered for home weatherization services?

- ☐ Before deciding to weatherize my home
- ☐ After already deciding to weatherize my home
- ☐ Same time as made decision to weatherize my home
- ☐ Don’t know

Q.6 In your decision to weatherize your home, how important was information, advice and / or recommendations from your contractor?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don’t Know

Q.7 How important in your decision was information, advice and / or recommendations from SPS?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don’t Know

Q.8 How important was SPS’ discounted for weatherization services in your decision-making?

- ☐ Very important
- ☐ Somewhat important
- ☐ Only slightly important
- ☐ Not important at all
- ☐ Don’t Know

Q.9 If the weatherization improvements for your home were not discounted through the SPS Home Energy Services program, how likely would you have had similar work performed anyway?

- ☐ Definitely would not have weatherized
- ☐ Probably would not have weatherized
- ☐ Probably would have weatherized
- ☐ Definitely would have weatherized
- ☐ Don’t know (DON’T READ)

Q.10 Would you have been able to purchase the weatherization improvements if the discounts offered through the program were not available?

- ☐ Yes
- ☐ No
- ☐ Don't know (DON'T READ)

Q.11 If SPS had not paid a portion of the installation cost, would you have had similar work performed on your home <u>within one year of when it was installed</u>?

- ☐ Yes
- ☐ No
- ☐ Don't know (DON'T READ)

(Q12 – Q15 IF YES TO SHOWERHEAD)

Q.12 Prior to having this work done, did you have any low-flow showerheads in your home?

- ☐ Yes (ASK Q12A)
- ☐ No
- ☐ Don't know (DON'T READ)

Q12A

How many low-flow showerheads did you have in your home?

#:____

Q.13 If the contractor had not provided low-flow showerheads, how likely would you have been to install similar equipment anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed
- ☐ Don't know (DON'T READ)

Q.14 How is the water in your home heated? Is your water heater…

- ☐ Gas
- ☐ Electric
- ☐ Other (Don't read as an option, but record type of water heating if indicated): ___________
- ☐ Don't Know (DON"T READ)

Q.15 After participating in the Home Energy Services Program, have you since taken any extra steps to save energy at home?

☐ Yes (Ask Q15A)
☐ No (Skip to Q16)

15A. What have you done to reduce energy use in your home?

Record Open-Ended Response: ____

____
____
____

Q.16 I'm going to read off some factors about the program, and for each of these factors, please rate it on a scale of 1-5, where 1 is "Very Dissatisfied" and 5 is "Very Satisfied":

(a. – c., IF WEATHERIZATION = "YES")

a. The improvement in comfort in your home after weatherization

b. The savings on your utility bills

c. The quality of work by your contractor

(d – e, IF SHOWERHEAD = "YES")

g. The quality of the showerhead installed

h. The performance of the low-flow showerhead in providing comfortable bathing

(f – H, ALL PARTICIPANTS)

f. The information provided by your contractor

g. Information provided by SPS

h. Overall program experience

For any area scored at less than 3:

Why were you dissatisfied with (component scored at less than 3)?

____
____

Q17. Have you participated in any other utility company energy efficiency programs?

- ☐ Yes (Ask Q17A)
- ☐ No (Skip to Q18)

17A. What other programs have you participated in?

List all indicated:____

Q.18 Do you have any comments about the Home Energy Services Program, or any suggestions with regard to how it might be improved?

Comments (if any): ____

____

____

____

Thank you for your help! SPS will use your feedback to improve its programs for its residential customers.

Southwestern Public Service Company (CONTRACTOR SURVEY)
Residential Home Energy Service Rebate Program
Verification & Net-to-Gross Survey Questionnaire

18.____

19.____ ID No.

Customer Name: ____________________________________

Date of interview: __________________________________

Date data entered ___________________________________

....

Hello, my name is _________________. I am calling on behalf of Southwestern Public Service Company (SPS), your electric service provider.

May I please speak to _________________________ *(Contact Person)?*

Address: ____ ZIP: _________________

Phone: ( ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling from ADM Associates, Inc. on behalf of Southwestern Public Service Company (SPS). Through the Residential Home Energy Service Rebate Program, SPS offered rebates for the installation ceiling insulation, infiltration control, and duct sealing measures. Because you installed these measures through the program, we would appreciate you taking about 5 minutes to answer some questions about your participation in the program. The information you provide will help SPS to improve the program.

Did you help install either ceiling insulation, infiltration control, or duct sealing measure through SPS's Residential Home Energy Service Rebate Program?

- ❑ No. Thank you for your time in assisting with this survey. (END CALL)
- ❑ Yes. *Continue interview with this person.*

Q.1 How did you first hear about SPS's Home Energy Services Program?
- ☐ Received information in mail
- ☐ Read newspaper or magazine article
- ☐ Was contacted by an SPS representative
- ☐ SPS web site
- ☐ Was contacted by another contractor
- ☐ Trade show or contractor magazine
- ☐ Other *(Specify)* ____

Q.2 Have you performed duct sealing and/or infiltration control in New Mexico homes before participating in the SPS Home Energy Services program?
- ☐ Yes
- ☐ No

Q.3. How long have you been performing duct sealing and/or infiltration control?
- ☐ 0-6 months
- ☐ 6-12 months
- ☐ 1-3 years
- ☐ 3+ years

Q.4. Have you provided these services at commercial buildings or residential homes?
- ☐ Commercial
- ☐ Residential
- ☐ Both

Q.5 Did you have specific plans to become certified in performing duct sealing and infiltration control before hearing about the SPS Home Energy Service Program?
- ☐ Yes
- ☐ No

Q. 6 If SPS had not offered the training courses, would you still have completed the training <u>within one year</u>?
- ☐ Yes
- ☐ No

Q 7. Why did you decide to become licensed in performing of duct sealing and infiltrations control? (Prompt only if necessary)
- ☐ To participate in the program
- ☐ There is a large need for contractors with this license to perform these services
- ☐ Utility sponsorship of the program
- ☐ Other (Specify: ____**)**

Q.8. Did you actively market the SPS Home Energy Service Program to your customers?

Q.9. Through what means did you actively market the SPS Home Energy Service Program to your customers? (Prompt if necessary)

- ☐ Door to door to residences
- ☐ Mailers
- ☐ Phone calls
- ☐ Word of mouth
- ☐ Flyers
- ☐ TV Ads
- ☐ Newspapers
- ☐ Other (Specify: ____**)**

Q9A. Which of these methods was the most effective?

Q.10 Are there any aspects of the SPS Home Energy Program that you would recommend be modified?

- ☐ Yes
- ☐ No

Explain:

Q.11.A. Are the incentive levels adequate to encourage customers to select energy efficient equipment options?

Q.11.B In what ways would you recommend incentive levels be changed?

Q.12 Did any customers raise any concerns regarding the program?

Q.13 Are there any energy saving technologies that you would recommend adding to the program?

Q.14 Are there any energy saving technologies that customers have asked for that aren't in the program?

Q.15 Prior to your licensing, had any of your customers asked for duct sealing and/or infiltration control improvements?

Q.16 Were any of the customers aware of the program before you contacted them?

Q.17. Has the SPS Home Energy Program increased your business?

- ☐ Yes
- ☐ No

Q.18 Has your involvement in the SPS Home Energy Program affected the types of equipment or services that you offer?

- ☐ Yes
- ☐ No

Explain:

Q.19 How active do you expect to be in the SPS Home Energy Service Program over the next year?

Q.20 Please rate the following factors 1 – 5, where 1 is "Very Dissatisfied" and 5 is "Very Satisfied". How would you rate:

a. Information provided by SPS to customers

b. Information provided by SPS to your company

c. Ease of first applying for the training courses

d. Ease of the application process per home

e. Time elapsed until rebates are paid

f. Incentive amounts

G. Overall program experience

Ask only if person answers that he/she was somewhat dissatisfied or very dissatisfied:
Why were you dissatisfied with the service?

____

____

Q.21 Do you have any comments about the SPS Home Energy Service Rebate Program, or any suggestions with regard to how it might be improved?
Comments (if any): ____

____

____

____

Thank you for your help! SPS will use your ideas to improve its programs for its residential customers.

Southwestern Public Service Company
Residential Low Income Program
Verification & Net-to-Gross Survey Questionnaire

20.____ID No.
Customer Name: ____________________________________
Date of interview: __________________________________
Date data entered ___________________________________

Hello, my name is ________________. I am calling on behalf of the Southwestern Public Service Company (SPS), your electric service provider.

May I please speak to _______________________ *(Contact Person)?*

Address: _____________________________________ ZIP: ________________

Phone: ( ) ______________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:4

Hello, my name is ______________________. I am calling from ADM Associates, Inc. on behalf of the Southwestern Public Service Company (SPS). Through the Residential Weatherization Assistance Program, SPS offered home-weatherization improvements and installation of high efficiency lighting and showerheads. Because you received energy efficiency improvements through the program, we would appreciate your taking about 4-5 minutes to answer some questions about your participation in the program. The information you provide will help SPS to improve the program.

Did you receive weatherization improvements through SPS' Weatherization Assistance Program?

- ❑ No. Thank you for your time in assisting with this survey. (END CALL)
- ❑ Yes. *Continue interview with this person.*

(IF TRACKING DATA INDICATES CFLs, ASK THIS AS WELL)

Did you receive installation of CFLs through the SPS Program?

- ❑ No.
- ❑ Yes.

(IF TRACKING DATA INDICATES SHOWERHEADS, ASK THIS AS WELL)

Did you receive low-flow showerheads through the SPS program?

- ❑ No.
- ❑ Yes.

(If respondent says no to the CFLs or Showerhead but yes to the lighting, still continue the survey, omitting questions that specifically reference either of these two measures)

Q.1 How did you first hear about SPS's Weatherization Assistance Program?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)

- ☐ Received information in mail
- ☐ Read newspaper or magazine article
- ☐ Was contacted by program implementer
- ☐ SPS bill message
- ☐ SPS web site
- ☐ Through government assistance agency *(Even if prompting, do not read)*
- ☐ Through non-profit assistance agency *(Even if prompting, do not read)*
- ☐ Other *(Specify)* ______________________________
- ☐ Don't know (*DO NOT READ)*

Q.2 (IF RESPONDENT RECEIVED CFLS) Did you have any CFLs in your home <u>before</u> you talked with anyone about the Weatherization Assistance Program?

- ☐ Yes (ask 2A)
- ☐ No (Go to Q3)
- ☐ Don't know

2A. How many CFLs did you have in your home before participating in the program?

Quantity:

Q.3 What factors motivated you to participate in the Weatherization Assistance program in 2010?
(DO NOT READ. Check all mentioned. Prompt only if necessary.)

- ☐ Reducing electric bill
- ☐ Lighting was burnt out and needed replacement
- ☐ Recommendation of a friend/relative
- ☐ Utility sponsorship of the program
- ☐ Other (Describe: ______________________________)
- ☐ Don't know

Q.4 How was the decision to apply for the program made? (Don't Read)

- ☐ We (participant) made the decision.
- ☐ Decision made by retirement community management
- ☐ Decision made by landlord
- ☐ Decision made family member
- ☐ Other ____________________
- ☐ Don't Know

Q.5 If you had not received weatherization assistance through the program, how likely is it that you would have installed similar work performed anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed
- ☐ Don't know (DON'T READ)

If Respondent has received CFLs, ask Q5A:

5A. If you had not received CFLs through the program, how likely is it that you would have installed similar equipment anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed
- ☐ Don't know (DON'T READ)

If Respondent has received a showerhead, ask Q5B:

Q5B: If you had not received the low-flow showerhead through the program, how likely is it that you would have installed a similar unit anyway?

- ☐ Definitely would not have installed
- ☐ Probably would not have installed
- ☐ Probably would have installed
- ☐ Definitely would have installed
- ☐ Don't know (DON'T READ)

Q.6 Would you have been able to purchase the home efficiency upgrades if the program were not available?

- ☐ Yes
- ☐ No
- ☐ Don't know

Q.7 After participating in the Weatherization Assistance Program, have you since taken any extra steps to save energy at home?

- ☐ Yes (Ask Q7A)
- ☐ No (Skip to Q8)

7A. What have you done to reduce energy use in your home?

Record Open-Ended Response: ____
____
____
____

Q.8 I'm going to read off some factors about the program, and for each of these factors, please rate it on a scale of 1-5, where 1 is "Very Dissatisfied" and 5 is "Very Satisfied":

a. The improvement in comfort in your home after weatherization

b. The savings on your utility bills

c. The effort required for the application process

d. The service provided by the program staff when applying

e. The service provided by the crew that installed the equipment

f. The waiting period until installation

g. (IF CFLs INSTALLED) The quality of the lighting installed

h. (IF LOW-FLOW SHOWERHEAD INSTALLED) The quality of the showerhead installed

i. Overall program experience

For any area scored at less than 3:

Why were you dissatisfied with (component scored at less than 3)?

____
____

Q9. Have you participated in any other SPS Energy Efficiency Programs?

- ☐ Yes (Ask Q9A)
- ☐ No (Skip to Q10)

9A. What other SPS programs have you participated in?

List all indicated: ____

Q.10 Do you have any comments about the Weatherization Assistance Program, or any suggestions with regard to how it might be improved?

Comments (if any): ____

____

____

____

Thank you for your help! SPS will use your ideas to improve its programs for its residential customers.

SouthWestern Public Service Company (SPS)
Refrigerator Recycling

Interviewer: ______________________ Date of Interview: _____/_____/_____

Respondent: ____________________ Address: _________________________

Hello. My name is _____, and I am calling on behalf of SPS. I am conducting a brief survey regarding SPS' Refrigerator Recycling Program. May I ask you a few questions?

1. Do you recall having one of your old refrigerators picked up for recycling?

   ___ Yes
   ___ No (if no, thank the respondent and terminate the interview)

2. How did you first hear about the SPS Refrigerator Recycling Program?

   a. Retailer
   b. Newspaper or magazine ad/article
   c. TV ad
   d. Friend or relative
   e. SPS website
   f. SPS brochure
   g. SPS bill insert
   h. Don't Know (Don't Read)
   i. Other (Specify)

3. When was the old refrigerator picked up?

________________ (month and year)

4. Was the old refrigerator still in working condition when it was picked up?

___ Yes
___ No (skip to #6)

5. Was the old refrigerator still being used when it was picked up? (If respondent says no, ask probing question, i.e., "Was it in use prior to calling SPS for recycling?", "When did you stop using the refrigerator (month/yr)?"

___ Yes, all of the time
___ Yes, some of the time
___ No

5b. If "Some of the time" – Approximately how many months out of the year was the refrigerator in use?

6. When did you learn about the SPS Refrigerator Recycling program and the available rebate to remove your old refrigerator? Was it…

   a. Before deciding to recycle the refrigerator
   b. After deciding to recycle the refrigerator
   c. At the same time as deciding to recycle the refrigerator
   d. Don't Know (Don't read)

7. What factors motivated you to recycle your refrigerator through the program in 2010 (Do not read options)?

   a. The SPS rebate
   b. Energy cost savings
   c. Good for the environment
   d. Refrigerator no longer worked properly

e. Purchased new refrigerator

f. Unit was broken and I needed it removed

g. Convenience of free pickup

h. Don't Know (Don't read)

i. Other (Specify)

8. Did you have specific plans to dispose of the refrigerator prior to learning of the SPS Refrigerator Recycling Program?

___ Yes
___ No

9. When the refrigerator was in use, where in the house was it set up? (Prompt only if necessary)

a. Kitchen

b. Den/Lounge

c. Garage

d. Basement

e. Outdoors

f. Other (specify) ________________

10. Have you ever needed to replace a major appliance before?

___ Yes
___ No (skip to #12)

11. When replacing a major appliance, what do you typically do with the old unit (Prompt only if necessary)?

a. Take for recycling

b. Dispose at a dump

c. Give to friend/family

d. Donate to Charity

e. Sell the appliance

f. Other (Explain)

12. If SPS had not offered a rebate for recycling the refrigerator, how likely would you have been to dispose the refrigerator anyway?

a. Definitely would have recycled

b. Probably would have recycled

c. Definitely would not have recycled

d. Definitely would not have recycled

e. Don't know

13. How important was the rebate in your decision to recycle the refrigerator?

a. Very Important

b. Somewhat Important

c. Slightly Important

d. Not at All Important

e. Don't Know (Don't Read)

14. What would you have done with your old refrigerator if you had not recycled it thru SPS?

(Do Not Prompt)

a. Continued to use it

b. Sold it

c. Unplugged and stored it

d. Disposed of it

e. Given it away

Other: ____

15. I'm going to list some factors about the Refrigerator Recycling program, and please rate them on a scale of 1 to 5, where 1 is "Very Dissatisfied" and 5 is "Very Satisfied". How satisfied were you with:

    a. The scheduling process for recycling
    b. The work performed by the staff that picked up your refrigerator
    c. The wait time between scheduling and pick-up of the refrigerator
    d. The wait time to receive the rebate
    e. The rebate amount
    f. Overall program experience

For any component scored < 3:

15A. Why were you unsatisfied with (COMPONENT SCORED < 3)

16. Do you have any specific comments or suggestions about how to improve the Refrigerator Recycling Program?

Southwestern Public Service Company

2010 Business Cooling Efficiency Program
DECISION-MAKER SURVEY QUESTIONNAIRE

ID No. ____

Customer Name: ___________________________________

Date of interview: __________________________________

Date data entered __________________________________

....

Hello, my name is _________________. I am calling on behalf of **Southwestern Public Service Company**

.
May I please speak to _________________________ *(Contact Person)?*

Title: ________________________ Company: ______________________________

Address: ____ ZIP: _________________

Phone: ( ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling on behalf of Southwestern Public Service Company. Through its Cooling Efficiency Program, SPS has been working with firms and building owners to help them improve the energy efficiency of their operations. Because your company participated in the Cooling Efficiency Program during 2010, we are interested in receiving feedback from you regarding your experience with the program.

SECTION ONE - INTERVIEWEE SCREENING

SCRN-Q.1 According to our records your company participated in the Cooling Efficiency for one or more projects at the following facility:

(Name of facility ____

You are shown as the contact person for that facility. Is that correct?

(If contact seems confused, ask if they remember the Cooling Efficiency Program.
If necessary, describe program and distinguish from other programs.)

- ❑ Yes (GO TO SCRN-Q.2)
- ❑ No (GO TO SCRN-Q.2)

SCRN-Q.2 Many of our questions focus on your company's decision to participate in the program and on your decisions to purchase and install energy efficient equipment for your facility. Are you the best person to talk to?

- ❑ No. Is there someone else who would be better for us to contact?

Who is that?

Name: ____

Title: ____

Phone Number: ________________________________

(You are finished with this person.)
Thank you very much for your time

(START SHEET FOR NEW CONTACT PERSON ABOVE)
CALL THIS PERSON AND GO TO BEGINNING OF INTRODUCTION.

- ❑ Yes. "I am the best person to talk to". *Continue interview.*

*SCRN-Q.*3. Our records give the following as the address for the facility(s) where you installed equipment for which you received financial incentives through the Cooling Efficiency Program.

(Address(es) from cover sheet)

Is this/Are these address(es) correct?

- ❑ Yes
- ❑ No

If No: Could you please give us the correct address?

TO BEGIN, I HAVE SOME QUESTIONS REGARDING HOW ***DECISIONS ABOUT ENERGY EFFICIENCY*** *IMPROVEMENTS ARE MADE FOR YOUR FACILITY.*

1. Compared to all other factors, how important is energy efficiency as a factor in planning your operations for this facility? (READ) Is it…
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know

2. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (READ) Is it.. (*Check all that are mentioned.)*
   - ❑ An energy management plan
     2a. (If YES), Does your energy management plan have numerical goals?
     - ❑ Yes ➔ 2b. (IF YES) What are the goals?__________________________________
     - ❑ No
     - ❑ Don't know
   - ❑ A Staff member responsible for energy and energy efficiency
   - ❑ Corporate Policies that incorporate energy efficiency in operations and procurement
   - ❑ Any Others, such as active training of staff or something else.

3. How does your organization decide to make energy efficiency improvements for this facility? Is the decision (READ ALL. CAN BE MULTIPLE RESPONSE):
   - ❑ Made by one or two key people?
     3a. What are their titles? ____
   - ❑ Based on staff recommendations to a decision maker?
     3b. What is that decision maker's title? ______________________________________
   - ❑ Made by a group or committee?
     3c. What is the group or committee name? ___________________________________
   - ❑ Made in some other way?

     3d. How are energy efficiency improvement decisions made? _________________
     ____
     ____

4. What are the **sources** your organization relies on for **information** about energy efficient equipment, materials and design features? Please answer yes or no for each one. (READ EACH; YES, NO, OR DK FOR EACH)

- ❑ An SPS Energy Specialist
- ❑ An SPS Account Representative
- ❑ The SPS website
- ❑ Brochures or advertisements
- ❑ Trade associations or business groups you belong to
- ❑ Trade journals or magazines
- ❑ Friends and colleagues
- ❑ An architect, engineer or energy consultant
- ❑ Equipment vendors or building contractors
- ❑ Any others IF YES: What other sources? ____________________________________

4a. Which sources are your top three? (READ LIST AGAIN ONLY IF NEEDED TO PROMPT. OK IF FEWER THAN THREE)

For each of the following, tell me if it is "very important," "somewhat important," "only slightly important," or "not important at all" for your decision making regarding energy efficiency improvements.

5. **incentive payments from SPS**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

6. **past experience with energy efficient equipment**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

7. **your organization's policies**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

8. **advice and/or recommendations received from SPS**?
   - ❑ Very important
   - ❑ Somewhat important

- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

9. **advice and/or recommendations from equipment vendors**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

10. Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility? (READ ALL. YES, NO OR DK FOR EACH.) (CAN BE MULTIPLE RESPONSES)
    - ❑ Initial Cost
    - ❑ Simple payback *(Go to question 10.**a**)*
    - ❑ Internal rate of return *(Go to question 10.**b**)*
    - ❑ Life cycle cost *(Go to question 10.**c**)*
    - ❑ Other (Please Explain) ______________________________ *(Go to question 13)*
    - ❑ Don't know *(Go to question 11)*

    10.a What **payback** *length of time* do you normally require in order to consider an energy investment cost effective?
    ______ Years *(Go to question 11.)*

    10.b What **rate of return** do you normally require in order to consider an energy investment cost effective? ______%
    (Expect answers 10 to 30 %.) (Go to question 11.)

    10.c What **discount rate** do you normally use in determining the life-cycle costs of various equipment options?______%
    (Expect answers 3 to 30 %.) (Go to question 11.)

11. When you have to replace equipment at this facility, **how often** do you try to purchase and install **energy efficient equipment**? (READ) Would you say…
    - ❑ Always
    - ❑ Usually
    - ❑ Sometimes
    - ❑ Occasionally
    - ❑ Never
    - ❑ Don't know *(DON'T READ)*

12. Before you knew about the Business Cooling Efficiency Program, had you purchased and installed any energy efficient equipment at this facility?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

13. Has your organization purchased any energy efficient equipment in the last three years for which you did **not** apply for a financial incentive through the Cooling Efficiency Program? (IF RESPONDENT SAYS, "No" CLARIFY IF "No equipment purchased" OR IF "No, have applied for financial incentives.")
    - ❑ Yes, Purchased energy efficient equipment but did not apply for financial incentive.

      ↓

      IF YES: 13a. Why didn't you apply for a financial incentive on that equipment?
      (DO NOT READ LIST. PROMPT IF NECESSARY)
      - ❑ Didn't know whether equipment qualified for financial incentives
      - ❑ Didn't know about financial incentives until after equipment was purchased
      - ❑ Didn't have time to complete paperwork for financial incentive application
      - ❑ Paperwork for the financial incentive application was too much
      - ❑ Financial incentive wasn't enough to bother with
      - ❑ Other 1 (Specify) ____
      - ❑ Other 2 (Specify) ____
    - ❑ No, Applied for financial incentives on all of the energy efficient equipment purchased.

      IF NO: 13b. Did you receive all of your incentives?

      Yes

      No

      Don't know
    - ❑ Has NOT purchased equipment
    - ❑ Don't know (*DO NOT READ)*

QUESTIONS 14 through 22 ASKED FOR EACH TYPE OF END USE EQUIPMENT OR MEASURE FOR WHICH CUSTOMER RECEIVED A FINANCIAL INCENTIVE. LISTED FROM PROGRAM RECORDS.:

I now have some questions about particular types of equipment for which you received financial incentives.

According to EPEs records, you received incentives for (insert Equipment/Measure___________

14. Before participating in the Business Cooling Efficiency Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?
    - ❑ Yes
    - ❑ No

15. Did you have plans to install [Equipment/Measure] before participating in the program?
    - ❑ No
    - ❑ Yes

    If Yes:15a Would you have gone ahead with this planned installation even if you had not participated in the program?
    - ❑ Yes
    - ❑ No

16. How important was previous experience with the SPS Business Cooling Efficiency Program in making your decision to install [Equipment/Measure]? Is it… (READ LIST)
    - ❑ Very important
    - ❑ Somewhat important
    - ❑ Only slightly important
    - ❑ Not important at all
    - ❑ Or you did not have previous experience with the program
    - ❑ Don't know *(DON'T READ)*

17. Did an SPS Energy Specialist or Account Representative recommend that you install [Equipment/Measure]?
    - ❑ No
    - ❑ Yes

    If Yes:17a If the Cooling Efficiency Program representative had not recommended installing [Equipment/Measure], how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed
    - ❑ Definitely would not have installed
    - ❑ Don't know *(DON'T READ)*

18. Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Business Cooling Efficiency Program?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know

19. If the **financial incentive** from the Business Cooling Efficiency Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed

- ❑ Definitely would not have installed
- ❑ Don't know *(DON'T READ)*

20. How did the availability of information and financial incentives through the Cooling Efficiency Program affect the quantity (or number of units) of [Equipment/Measure] that you purchased and installed? Did you purchase and install more [equipment/measure] than you otherwise would have without the program?
    - ❑ Yes
      IF YES: 20b How much more? ______________________
    - ❑ No, Did not affect quantity purchased and installed

21. How did the availability of information and financial incentives through the Cooling Efficiency Program affect the level of energy efficiency you chose for [Equipment/Measure]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
    - ❑ Yes
      IF YES: 21b How much more efficient? (could be expressed in different ways. Ask for percentage: e.g., 10% more efficient) ______________________
    - ❑ No, program did not affect level of efficiency that we chose for equipment

22. How did the availability of information and financial incentives through the Business Cooling Efficiency Program affect the timing of your purchase and installation of [Equipment/Measure]? Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?
    - ❑ Yes
      ↓
      IF YES: 22a When would you otherwise have installed the equipment? (READ IF NEEDED)
      - ❑ In less than 6 months later
      - ❑ In 6-12 months later
      - ❑ In 1-2 years later
      - ❑ In 3-5 years later
      - ❑ In more than 5 years later
    - ❑ No, did not affect timing of purchase and installation

23. Was there an open bidding process for choosing a vendor who did your installation, or did you only offer it to one firm?
    - ❑ (1) Bidding process *(go to Q23a)*
    - ❑ (2) One firm *(go to Q23a)*
    - ❑ (3) Self installed/No vendor used *(go to Q24)*
    - ❑ (9) Don't know *(go to Q23a)*

23a. Did more then one vendor promote the program?

- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

23b. Did you select a firm that promoted the program?
- ❑ (0) No *(go to Q23c)*
- ❑ (1) Yes *(go to Q24)*
- ❑ (9) Don't know *(go to Q24)*

23c. Did you tell the firm about the program?
- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

24. Did the vendor/contractor you learned of the program from install the measures?
- ❑ (0) No *(go to Q25)*
- ❑ (1) Yes *(go to Q24a)*
- ❑ (9) Don't know *(go to Q25)*

24a. Had you previously worked with this vendor/contractor?
- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

24b. Did the fact that the energy efficiency program was part of the project influence your decision on what vendor/contractor to use?
- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

25. Did the implementation go smoothly?
- ❑ (0) No, Explain___________________________
- ❑ (1) For the most part, Explain_______________
- ❑ (2) Yes
- ❑ (9) Don't know

26. Did the energy efficiency measure meet your expectation?
- ❑ (0) No, Explain___________________________
- ❑ (1) For the most part, Explain_______________
- ❑ (2) Yes
- ❑ (3) Exceeded my expectations
- ❑ (9) Don't know

27. Do you feel you got a quality installation?
- ❑ (0) No, Explain___________________________

- ❑ (1) For the most part, Explain______________
- ❑ (2) Yes
- ❑ (9) Don't know

28. Did the incentive agreement that you received meet your expectations?
    - ❑ (0) No, Explain________________________
    - ❑ (1) Yes
    - ❑ (9) Don't know

29. Did anyone from SPS come to your facility to do a pre-inspection?
    - ❑ (0) No (go to Q30)
    - ❑ (1) Yes (go to Q29a)
    - ❑ (9) Don't know (go to Q30)

    29a. Who performed the inspection?
    29b. What did the pre-inspection consist of?
    29c. Did anything change in the design as a result of the pre-inspection?
    - ❑ (0) No
    - ❑ (1) Yes, Explain______________
    - ❑ (9) Don't know

30. Did anyone from SPS come to your facility to do a post-inspection?
    - ❑ (0) No (go to Q31)
    - ❑ (1) Yes (go to Q30a)
    - ❑ (9) Don't know (go to Q31)

    30a. Who performed the inspection?
    30b. What did the post-inspection consist of?
    30c. Did anything change in the incentive amount as a result of the post-inspection?
    - ❑ (0) No
    - ❑ (1) Yes, Explain______________
    - ❑ (9) Don't know

31. Did you provide SPS copies of purchase orders and invoices that document the final costs or did the vendor/contractor?
    - ❑ (1) Someone within firm
    - ❑ (2) Vendor/Contractor
    - ❑ (3) Someone else (specify)_______________
    - ❑ (9) Don't know

32. Were there any issues getting the paperwork approved?
    - ❑ (0) No
    - ❑ (1) Yes, Explain________________________
    - ❑ (9) Don't know

33. Were there any issues receiving the incentive check?
    - ❑ (0) No

❑ (1) Yes, Explain________________________
❑ (9) Don't know

34. Was the incentive check the amount you expected?
❑ (0) No, Explain________________________
❑ (1) Yes
❑ (9) Don't know

I now have some questions about your experience with the Business Cooling Efficiency Program overall.

35. How did you learn of the Business Cooling Efficiency Program? (READ. MULTIPLE OKAY)
❑ Approached directly by SPS Energy Specialist or Account Representative of Cooling Efficiency Program
❑ Received an information brochure on the Business Cooling Efficiency Program
❑ An SPS representative mentioned it
❑ The SPSwebsite
❑ Friends or colleagues (i.e., word of mouth)
❑ An architect, engineer or energy consultant
❑ An equipment vendor or building contractor
❑ Past experience with the program
❑ Or some other way (please explain) _________________________________

36. When did you learn of the Business Cooling Efficiency Program? (READ. ONE ONLY)
❑ You had participated in other energy efficiency incentive programs
❑ Before planning for replacing the equipment began
❑ During your planning to replace the equipment
❑ Once equipment had been specified but not yet installed
❑ After equipment was installed
❑ Some other time (When? _____)

❑ Don't know *(Don't Read)*

37. Has your experience with the Business Cooling Efficiency Program led you to buy any energy efficient equipment for which you did not apply for a financial incentive?
❑ Yes
🡇
If Yes: 37a What type of equipment? _____________________________________
❑ No
❑ Don’t know *(DON’T READ)*

38. Given your experience with the Business Cooling Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives for such equipment were not being offered through the Business Cooling Efficiency Program?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

39. On a scale of 1 to 5, where "5" is very satisfied and "1" is very dissatisfied, and a 3 is neither satisfied nor dissatisfied, how would you rate your satisfaction with the following? (ROTATE. H ALWAYS LAST)

	1 Very Dissatisfied	*2*	*3*	*4*	*5 Very Satisfied*	*Don't know or no answer*
A. Performance of the equipment installed	❑	❑	❑	❑	❑	❑
B. Savings on your monthly bill	❑	❑	❑	❑	❑	❑
C. Incentive amount	❑	❑	❑	❑	❑	❑
D. The effort required for the application process	❑	❑	❑	❑	❑	❑
E. Information provided by your contractor	❑	❑	❑	❑	❑	❑
F. Quality of the work conducted by your contractor	❑	❑	❑	❑	❑	❑
G. Information provided by SPS Account Representative	❑	❑	❑	❑	❑	❑
H. Overall program experience	❑	❑	❑	❑	❑	❑
I. The elapsed time until you received the incentive	❑	❑	❑	❑	❑	❑

40. *ASK FOR EACH IF ANSWERED 1 or 2 FOR ANY ASPECT IN QUESTION 28:*

    Why were you not satisfied with the (ASPECT)? ______________________________
    ____
    ____

41. That concludes my questions. Do you have any other comments that you would like me to relay to SPS about energy efficiency in commercial facilities or about their programs?

RECORD ANY CUSTOMER QUESTIONS OR CONCERNS:

____

____

____

Thanks for your help!
SPS will use your ideas to improve
its programs for commercial customers.

Southwestern Public Service Company

2010 Business Lighting Efficiency Program

DECISION-MAKER SURVEY QUESTIONNAIRE

ID No. ____

Customer Name: ________________________________

Date of interview: _____________________________

Date data entered _____________________________

....

Hello, my name is _________________. I am calling on behalf of Southwestern Public Service Company. May I please speak to _________________________ *(Contact Person)?*

Title: _________________________ Company: ______________________________

Address: ____ ZIP: _________________

Phone: ( ) ___________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is ________________________. I am calling on behalf of Southwestern Public Service Company. Through its Lighting Efficiency Program, SPS has been working with firms and building owners to help them improve the energy efficiency of their operations. Because your company participated in the Lighting Efficiency Program during 2010, we are interested in receiving feedback from you regarding your experience with the program.

SECTION ONE - INTERVIEWEE SCREENING

SCRN-Q.1 According to our records your company participated in the Lighting Efficiency Program for one or more projects at the following facility:

(Name of facility ____

You are shown as the contact person for that facility. Is that correct?

(If contact seems confused, ask if they remember the Lighting Efficiency Program. If necessary, describe program and distinguish from other programs.)

- ❑ Yes (GO TO SCRN-Q.2)
- ❑ No (GO TO SCRN-Q.2)

SCRN-Q.2 Many of our questions focus on your company's decision to participate in the program and on your decisions to purchase and install energy efficient equipment for your facility. Are you the best person to talk to?

- ❑ No. Is there someone else who would be better for us to contact?

Who is that?

Name: ____

Title: ____

Phone Number: ________________________________

(You are finished with this person.)

Thank you very much for your time

(START SHEET FOR NEW CONTACT PERSON ABOVE)
CALL THIS PERSON AND GO TO BEGINNING OF INTRODUCTION.

- ❑ Yes. "I am the best person to talk to". *Continue interview.*

*SCRN-Q.*3. Our records give the following as the address for the facility(s) where you installed equipment for which you received financial incentives through the Lighting Efficiency Program.

(Address(es) from cover sheet)

Is this/Are these address(es) correct?

- ❑ Yes
- ❑ No

If No: Could you please give us the correct address?

TO BEGIN, I HAVE SOME QUESTIONS REGARDING HOW ***DECISIONS ABOUT ENERGY EFFICIENCY*** *IMPROVEMENTS ARE MADE FOR YOUR FACILITY.*

1. Compared to all other factors, how important is energy efficiency as a factor in planning your operations for this facility? (READ) Is it…
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know

2. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (READ) Is it.. (*Check all that are mentioned.)*
   - ❑ An energy management plan
     2a. (If YES), Does your energy management plan have numerical goals?
     - ❑ Yes ➔ 2b. (IF YES) What are the goals?________________________________
     - ❑ No
     - ❑ Don't know
   - ❑ A Staff member responsible for energy and energy efficiency
   - ❑ Corporate Policies that incorporate energy efficiency in operations and procurement
   - ❑ Any Others, such as active training of staff or something else.

3. How does your organization decide to make energy efficiency improvements for this facility? Is the decision (READ ALL. CAN BE MULTIPLE RESPONSE):
   - ❑ Made by one or two key people?
     3a. What are their titles? ____
   - ❑ Based on staff recommendations to a decision maker?
     3b. What is that decision maker's title? _____________________________________
   - ❑ Made by a group or committee?
     3c. What is the group or committee name? ___________________________________
   - ❑ Made in some other way?

     3d. How are energy efficiency improvement decisions made? ________________
     ____
     ____

4. What are the **sources** your organization relies on for **information** about energy efficient equipment, materials and design features? Please answer yes or no for each one. (READ EACH; YES, NO, OR DK FOR EACH)

- ❑ An SPS Energy Specialist
- ❑ An SPS Account Representative
- ❑ The SPS website
- ❑ Brochures or advertisements
- ❑ Trade associations or business groups you belong to
- ❑ Trade journals or magazines
- ❑ Friends and colleagues
- ❑ An architect, engineer or energy consultant
- ❑ Equipment vendors or building contractors
- ❑ Any others IF YES: What other sources? ________________________________

4a. Which sources are your top three? (READ LIST AGAIN ONLY IF NEEDED TO PROMPT. OK IF FEWER THAN THREE)

For each of the following, tell me if it is "very important," "somewhat important," "only slightly important," or "not important at all" for your decision making regarding energy efficiency improvements.

5. **incentive payments from SPS**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

6. **past experience with energy efficient equipment**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

7. **your organization's policies**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

8. **advice and/or recommendations received from SPS**?
- ❑ Very important
- ❑ Somewhat important

- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

9. **advice and/or recommendations from equipment vendors**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

10. Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility? (READ ALL. YES, NO OR DK FOR EACH.) (CAN BE MULTIPLE RESPONSES)
- ❑ Initial Cost
- ❑ Simple payback *(Go to question 10.**a**)*
- ❑ Internal rate of return *(Go to question 10.**b**)*
- ❑ Life cycle cost *(Go to question 10.**c**)*
- ❑ Other (Please Explain) ______________________________ *(Go to question 13)*
- ❑ Don't know *(Go to question 11)*

10.a What **payback** *length of time* do you normally require in order to consider an energy investment cost effective?
______ Years *(Go to question 11.)*

10.b What **rate of return** do you normally require in order to consider an energy investment cost effective? ______%
(Expect answers 10 to 30 %.) (Go to question 11.)

10.c What **discount rate** do you normally use in determining the life-cycle costs of various equipment options?______%
(Expect answers 3 to 30 %.) (Go to question 11.)

11. When you have to replace equipment at this facility, **how often** do you try to purchase and install **energy efficient equipment**? (READ) Would you say…
- ❑ Always
- ❑ Usually
- ❑ Sometimes
- ❑ Occasionally
- ❑ Never
- ❑ Don't know *(DON'T READ)*

12. Before you knew about the Lighting Efficiency Program, had you purchased and installed any energy efficient equipment at this facility?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

13. Has your organization purchased any energy efficient equipment in the last three years for which you did **not** apply for a financial incentive through the Lighting Efficiency Program? (IF RESPONDENT SAYS, "No" CLARIFY IF "No equipment purchased" OR IF "No, have applied for financial incentives.")
    - ❑ Yes, Purchased energy efficient equipment but did not apply for financial incentive.
      ↓
      IF YES: 13a. Why didn't you apply for a financial incentive on that equipment?
      (DO NOT READ LIST. PROMPT IF NECESSARY)
      - ❑ Didn't know whether equipment qualified for financial incentives
      - ❑ Didn't know about financial incentives until after equipment was purchased
      - ❑ Didn't have time to complete paperwork for financial incentive application
      - ❑ Paperwork for the financial incentive application was too much
      - ❑ Financial incentive wasn't enough to bother with
      - ❑ Other 1 (Specify) ____
      - ❑ Other 2 (Specify) ____
    - ❑ No, Applied for financial incentives on all of the energy efficient equipment purchased.
      IF NO: 13b. Did you receive all of your incentives?
      Yes
      No
      Don't know
    - ❑ Has NOT purchased equipment
    - ❑ Don't know (*DO NOT READ)*

QUESTIONS 14 through 22 ASKED FOR EACH TYPE OF END USE EQUIPMENT OR MEASURE FOR WHICH CUSTOMER RECEIVED A FINANCIAL INCENTIVE. LISTED FROM PROGRAM RECORDS.:

I now have some questions about particular types of equipment for which you received financial incentives.

According to EPEs records, you received incentives for (insert Equipment/Measure____________

14. <u>Before participating</u> in the Lighting Efficiency Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?
    - ❑ Yes
    - ❑ No

15. Did you have plans to install [Equipment/Measure] before participating in the program?
    - ❑ No
    - ❑ Yes

    If Yes:15a Would you have gone ahead with this planned installation even if you had not participated in the program?
    - ❑ Yes
    - ❑ No

16. How important was previous experience with the SPS Lighting Efficiency Program in making your decision to install [Equipment/Measure]? Is it… (READ LIST)
    - ❑ Very important
    - ❑ Somewhat important
    - ❑ Only slightly important
    - ❑ Not important at all
    - ❑ Or you did not have previous experience with the program
    - ❑ Don't know *(DON'T READ)*

17. Did an SPS Energy Specialist or Account Representative recommend that you install [Equipment/Measure]?
    - ❑ No
    - ❑ Yes

    If Yes:17a If the Lighting Efficiency Program representative had not recommended installing [Equipment/Measure], how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed
    - ❑ Definitely would not have installed
    - ❑ Don't know *(DON'T READ)*

18. Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Lighting Efficiency Program?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know

19. If the **financial incentive** from the Lighting Efficiency Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed

- ❑ Definitely would not have installed
- ❑ Don't know *(DON'T READ)*

20. How did the availability of information and financial incentives through the Lighting Efficiency Program affect the quantity (or number of units) of [Equipment/Measure] that you purchased and installed? Did you purchase and install more [equipment/measure] than you otherwise would have without the program?
    - ❑ Yes
      IF YES: 20b How much more? ______________________
    - ❑ No, Did not affect quantity purchased and installed

21. How did the availability of information and financial incentives through the Lighting Efficiency Program affect the level of energy efficiency you chose for [Equipment/Measure]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
    - ❑ Yes
      IF YES: 21b How much more efficient? (could be expressed in different ways. Ask for percentage: e.g., 10% more efficient) ______________________
    - ❑ No, program did not affect level of efficiency that we chose for equipment

22. How did the availability of information and financial incentives through the Lighting Efficiency Program affect the timing of your purchase and installation of [Equipment/Measure]? Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?
    - ❑ Yes
      ↓
      IF YES: 22a When would you otherwise have installed the equipment? (READ IF NEEDED)
        - ❑ In less than 6 months later
        - ❑ In 6-12 months later
        - ❑ In 1-2 years later
        - ❑ In 3-5 years later
        - ❑ In more than 5 years later
    - ❑ No, did not affect timing of purchase and installation

23. Was there an open bidding process for choosing a vendor who did your installation, or did you only offer it to one firm?
    - ❑ (1) Bidding process *(go to Q23a)*
    - ❑ (2) One firm *(go to Q23a)*
    - ❑ (3) Self installed/No vendor used *(go to Q24)*
    - ❑ (9) Don't know *(go to Q23a)*

23a. Did more then one vendor promote the program?

❑ (0) No
❑ (1) Yes
❑ (9) Don't know

23b. Did you select a firm that promoted the program?
❑ (0) No (*go to Q23c)*
❑ (1) Yes *(go to Q24)*
❑ (9) Don't know *(go to Q24)*

23c. Did you tell the firm about the program?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

24. Did the vendor/contractor you learned of the program from install the measures?
❑ (0) No (*go to Q25)*
❑ (1) Yes *(go to Q24a)*
❑ (9) Don't know *(go to Q25)*

24a. Had you previously worked with this vendor/contractor?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

24b. Did the fact that the energy efficiency program was part of the project influence your decision on what vendor/contractor to use?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

25. Did the implementation go smoothly?
❑ (0) No, Explain___________________________
❑ (1) For the most part, Explain_______________
❑ (2) Yes
❑ (9) Don't know

26. Did the energy efficiency measure meet your expectation?
❑ (0) No, Explain___________________________
❑ (1) For the most part, Explain_______________
❑ (2) Yes
❑ (3) Exceeded my expectations
❑ (9) Don't know

27. Do you feel you got a quality installation?
❑ (0) No, Explain___________________________

❑ (1) For the most part, Explain______________
❑ (2) Yes
❑ (9) Don't know

28. Did the incentive agreement that you received meet your expectations?
❑ (0) No, Explain_________________________
❑ (1) Yes
❑ (9) Don't know

29. Did anyone from SPS come to your facility to do a pre-inspection?
❑ (0) No (go to Q30)
❑ (1) Yes (go to Q29a)
❑ (9) Don't know (go to Q30)
29a. Who performed the inspection?
29b. What did the pre-inspection consist of?
29c. Did anything change in the design as a result of the pre-inspection?
❑ (0) No
❑ (1) Yes, Explain______________
❑ (9) Don't know

30. Did anyone from SPS come to your facility to do a post-inspection?
❑ (0) No (go to Q31)
❑ (1) Yes (go to Q30a)
❑ (9) Don't know (go to Q31)
30a. Who performed the inspection?
30b. What did the post-inspection consist of?
30c. Did anything change in the incentive amount as a result of the post-inspection?
❑ (0) No
❑ (1) Yes, Explain______________
❑ (9) Don't know

31. Did you provide SPS copies of purchase orders and invoices that document the final costs or did the vendor/contractor?
❑ (1) Someone within firm
❑ (2) Vendor/Contractor
❑ (3) Someone else (specify)_______________
❑ (9) Don't know

32. Were there any issues getting the paperwork approved?
❑ (0) No
❑ (1) Yes, Explain_________________________
❑ (9) Don't know

33. Were there any issues receiving the incentive check?
❑ (0) No

- ❑ (1) Yes, Explain_________________________
- ❑ (9) Don't know

34. Was the incentive check the amount you expected?
- ❑ (0) No, Explain_________________________
- ❑ (1) Yes
- ❑ (9) Don't know

I now have some questions about your experience with the Lighting Efficiency program overall.

35. How did you learn of the Lighting Efficiency Program? (READ. MULTIPLE OKAY)
- ❑ Approached directly by SPS Energy Specialist or Account Representative of Lighting Efficiency Program
- ❑ Received an information brochure on the Lighting Efficiency Program
- ❑ An SPS representative mentioned it
- ❑ The SPS website
- ❑ Friends or colleagues (i.e., word of mouth)
- ❑ An architect, engineer or energy consultant
- ❑ An equipment vendor or building contractor
- ❑ Past experience with the program
- ❑ Or some other way (please explain) __________________________________

36. When did you learn of the Lighting Efficiency Program? (READ. ONE ONLY)
- ❑ You had participated in other energy efficiency incentive programs
- ❑ Before planning for replacing the equipment began
- ❑ During your planning to replace the equipment
- ❑ Once equipment had been specified but not yet installed
- ❑ After equipment was installed
- ❑ Some other time (When? _____)
- ❑ Don't know *(Don't Read)*

37. Has your experience with the Lighting Efficiency Program led you to buy any energy efficient equipment for which you did not apply for a financial incentive?
- ❑ Yes

  ➔

  If Yes: 37a What type of equipment? ______________________________________
- ❑ No
- ❑ Don't know *(DON'T READ)*

38. Given your experience with the Lighting Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives for such equipment were not

being offered through the Lighting Efficiency Program?
- ❑ Yes
- ❑ No
- ❑ Don't know *(DON'T READ)*

39. On a scale of 1 to 5, where "5" is very satisfied and "1" is very dissatisfied, and a 3 is neither satisfied nor dissatisfied, how would you rate your satisfaction with the following? (ROTATE. H ALWAYS LAST)

	1 Very Dissatisfied	*2*	*3*	*4*	*5 Very Satisfied*	*Don't know or no answer*
A. Performance of the equipment installed	❑	❑	❑	❑	❑	❑
B. Savings on your monthly bill	❑	❑	❑	❑	❑	❑
C. Incentive amount	❑	❑	❑	❑	❑	❑
D. The effort required for the application process	❑	❑	❑	❑	❑	❑
E. Information provided by your contractor	❑	❑	❑	❑	❑	❑
F. Quality of the work conducted by your contractor	❑	❑	❑	❑	❑	❑
G. Information provided by SPS Account Representative	❑	❑	❑	❑	❑	❑
H. Overall program experience	❑	❑	❑	❑	❑	❑
I. The elapsed time until you received the incentive	❑	❑	❑	❑	❑	❑

40. ASK FOR EACH IF ANSWERED 1 or 2 FOR ANY ASPECT IN QUESTION 28:

Why were you not satisfied with the (ASPECT)? ______________________________

____

____

41. That concludes my questions. Do you have any other comments that you would like me to relay to SPS about energy efficiency in commercial facilities or about their programs? *RECORD ANY CUSTOMER QUESTIONS OR CONCERNS:*

____

____

____

(IF NEEDED OR CUSTOMER SEEMS TO HAVE AN ISSUE OR PROBLEM THAT SPS MIGHT ADDRESS) If you wish to speak with an SPS representative, Mr. Neil Cowen may be reached at: (303) 294-2115.

Thanks for your help!
SPS will use your ideas to improve
its programs for commercial customers.

Southwestern Public Service Company

2010 Business Custom Efficiency Program

DECISION-MAKER SURVEY QUESTIONNAIRE

ID No. ____

Customer Name: ________________________________

Date of interview: ______________________________

Date data entered ______________________________

....

Hello, my name is _________________. I am calling on behalf of **Southwestern Public Service Company**

.
May I please speak to __________________________ *(Contact Person)?*

Title: _________________________ Company: ______________________________

Address: ____ ZIP: __________________

Phone: ( ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling on behalf of Southwestern Public Service Company. Through its Custom Efficiency Program, SPS has been working with firms and building owners to help them improve the energy efficiency of their operations. Because your company participated in the Custom Efficiency Program during 2010, we are interested in receiving feedback from you regarding your experience with the program.

SECTION ONE - INTERVIEWEE SCREENING

SCRN-Q.1 According to our records your company participated in the Custom Efficiency for one or more projects at the following facility:

(Name of facility ____

You are shown as the contact person for that facility. Is that correct?

(If contact seems confused, ask if they remember the Custom Efficiency Program. If necessary, describe program and distinguish from other programs.)

- ❑ Yes (GO TO SCRN-Q.2)
- ❑ No (GO TO SCRN-Q.2)

SCRN-Q.2 Many of our questions focus on your company's decision to participate in the program and on your decisions to purchase and install energy efficient equipment for your facility. Are you the best person to talk to?

- ❑ No. Is there someone else who would be better for us to contact?

Who is that?

Name: ______________________________________

Title: ______________________________________

Phone Number: ______________________________________

(You are finished with this person.)

Thank you very much for your time

(START SHEET FOR NEW CONTACT PERSON ABOVE)
CALL THIS PERSON AND GO TO BEGINNING OF INTRODUCTION.

- ❑ Yes. "I am the best person to talk to". *Continue interview.*

*SCRN-Q.*3. Our records give the following as the address for the facility(s) where you installed equipment for which you received financial incentives through the Custom Efficiency Program.

(Address(es) from cover sheet)

Is this/Are these address(es) correct?

- ❑ Yes
- ❑ No

If No: Could you please give us the correct address?

*TO BEGIN, I HAVE SOME QUESTIONS REGARDING HOW **DECISIONS ABOUT ENERGY EFFICIENCY** IMPROVEMENTS ARE MADE FOR YOUR FACILITY.*

1. Compared to all other factors, how important is energy efficiency as a factor in planning your operations for this facility? (READ) Is it…
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know

2. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (READ) Is it.. (*Check all that are mentioned.)*
   - ❑ An energy management plan
     2a. (If YES), Does your energy management plan have numerical goals?
     - ❑ Yes ➔ 2b. (IF YES) What are the goals?________________________________
     - ❑ No
     - ❑ Don't know
   - ❑ A Staff member responsible for energy and energy efficiency
   - ❑ Corporate Policies that incorporate energy efficiency in operations and procurement
   - ❑ Any Others, such as active training of staff or something else.

3. How does your organization decide to make energy efficiency improvements for this facility? Is the decision (READ ALL. CAN BE MULTIPLE RESPONSE):
   - ❑ Made by one or two key people?
     3a. What are their titles? ____
   - ❑ Based on staff recommendations to a decision maker?
     3b. What is that decision maker's title? ____________________________________
   - ❑ Made by a group or committee?
     3c. What is the group or committee name? __________________________________
   - ❑ Made in some other way?

     3d. How are energy efficiency improvement decisions made? ________________
     ____
     ____

4. What are the **sources** your organization relies on for **information** about energy efficient equipment, materials and design features? Please answer yes or no for each one. (READ EACH; YES, NO, OR DK FOR EACH)

- ❑ An SPS Energy Specialist
- ❑ An SPS Account Representative
- ❑ The SPS website
- ❑ Brochures or advertisements
- ❑ Trade associations or business groups you belong to
- ❑ Trade journals or magazines
- ❑ Friends and colleagues
- ❑ An architect, engineer or energy consultant
- ❑ Equipment vendors or building contractors
- ❑ Any others IF YES: What other sources? ___________________________________

4a. Which sources are your top three? (READ LIST AGAIN ONLY IF NEEDED TO PROMPT. OK IF FEWER THAN THREE)

For each of the following, tell me if it is "very important," "somewhat important," "only slightly important," or "not important at all" for your decision making regarding energy efficiency improvements.

5. **incentive payments from SOS**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

6. **past experience with energy efficient equipment**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

7. **your organization's policies**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

8. **advice and/or recommendations received from SPS**?
   - ❑ Very important
   - ❑ Somewhat important

- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

9. **advice and/or recommendations from equipment vendors**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

10. Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility? (READ ALL. YES, NO OR DK FOR EACH.) (CAN BE MULTIPLE RESPONSES)
    - ❑ Initial Cost
    - ❑ Simple payback *(Go to question 10.**a**)*
    - ❑ Internal rate of return *(Go to question 10.**b**)*
    - ❑ Life cycle cost *(Go to question 10.**c**)*
    - ❑ Other (Please Explain) ______________________________ *(Go to question 13)*
    - ❑ Don't know *(Go to question 11)*

    10.a What **payback** *length of time* do you normally require in order to consider an energy investment cost effective?
    ______ Years *(Go to question 11.)*

    10.b What **rate of return** do you normally require in order to consider an energy investment cost effective? ______%
    (Expect answers 10 to 30 %.) (Go to question 11.)

    10.c What **discount rate** do you normally use in determining the life-cycle costs of various equipment options?______%
    (Expect answers 3 to 30 %.) (Go to question 11.)

11. When you have to replace equipment at this facility, **how often** do you try to purchase and install **energy efficient equipment**? (READ) Would you say…
    - ❑ Always
    - ❑ Usually
    - ❑ Sometimes
    - ❑ Occasionally
    - ❑ Never
    - ❑ Don't know *(DON'T READ)*

12. Before you knew about the Business Custom Efficiency Program, had you purchased and installed any energy efficient equipment at this facility?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

13. Has your organization purchased any energy efficient equipment in the last three years for which you did **not** apply for a financial incentive through the Custom Efficiency Program? (IF RESPONDENT SAYS, "No" CLARIFY IF "No equipment purchased" OR IF "No, have applied for financial incentives.")
    - ❑ Yes, Purchased energy efficient equipment but did not apply for financial incentive.

      ➔

      IF YES: 13a. Why didn't you apply for a financial incentive on that equipment?
      (DO NOT READ LIST. PROMPT IF NECESSARY)
      - ❑ Didn't know whether equipment qualified for financial incentives
      - ❑ Didn't know about financial incentives until after equipment was purchased
      - ❑ Didn't have time to complete paperwork for financial incentive application
      - ❑ Paperwork for the financial incentive application was too much
      - ❑ Financial incentive wasn't enough to bother with
      - ❑ Other 1 (Specify) ____
      - ❑ Other 2 (Specify) ____
    - ❑ No, Applied for financial incentives on all of the energy efficient equipment purchased.

      IF NO: 13b. Did you receive all of your incentives?

      Yes

      No

      Don't know
    - ❑ Has NOT purchased equipment
    - ❑ Don't know (*DO NOT READ)*

QUESTIONS 14 through 22 ASKED FOR EACH TYPE OF END USE EQUIPMENT OR MEASURE FOR WHICH CUSTOMER RECEIVED A FINANCIAL INCENTIVE. LISTED FROM PROGRAM RECORDS.:

I now have some questions about particular types of equipment for which you received financial incentives.

According to EPEs records, you received incentives for (insert Equipment/Measure____________

14. <u>Before participating</u> in the Business Custom Efficiency Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?
    - ❑ Yes
    - ❑ No

15. Did you have plans to install [Equipment/Measure] before participating in the program?
    - ❑ No
    - ❑ Yes

    If Yes:15a Would you have gone ahead with this planned installation even if you had not participated in the program?
    - ❑ Yes
    - ❑ No

16. How important was previous experience with the SPS Business Custom Efficiency Program in making your decision to install [Equipment/Measure]? Is it… (READ LIST)
    - ❑ Very important
    - ❑ Somewhat important
    - ❑ Only slightly important
    - ❑ Not important at all
    - ❑ Or you did not have previous experience with the program
    - ❑ Don't know *(DON'T READ)*

17. Did an SPS Energy Specialist or Account Representative recommend that you install [Equipment/Measure]?
    - ❑ No
    - ❑ Yes

    If Yes:17a If the Lighting Efficiency Program representative had not recommended installing [Equipment/Measure], how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed
    - ❑ Definitely would not have installed
    - ❑ Don't know *(DON'T READ)*

18. Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Business Custom Efficiency Program?
    - ❑ Yes
    - ❑ No
    - ❑ Don’t know

19. If the **financial incentive** from the Business Custom Efficiency Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed

- ❑ Definitely would not have installed
- ❑ Don't know *(DON'T READ)*

20. How did the availability of information and financial incentives through the Custom Efficiency Program affect the quantity (or number of units) of [Equipment/Measure] that you purchased and installed? Did you purchase and install more [equipment/measure] than you otherwise would have without the program?
    - ❑ Yes
      IF YES: 20b How much more? ____________________
    - ❑ No, Did not affect quantity purchased and installed

21. How did the availability of information and financial incentives through the Custom Efficiency Program affect the level of energy efficiency you chose for [Equipment/Measure]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
    - ❑ Yes
      IF YES: 21b How much more efficient? (could be expressed in different ways. Ask for percentage: e.g., 10% more efficient) ____________________
    - ❑ No, program did not affect level of efficiency that we chose for equipment

22. How did the availability of information and financial incentives through the Business Custom Efficiency Program affect the timing of your purchase and installation of [Equipment/Measure]? Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?
    - ❑ Yes
      ↓
      IF YES: 22a When would you otherwise have installed the equipment? (READ IF NEEDED)
      - ❑ In less than 6 months later
      - ❑ In 6-12 months later
      - ❑ In 1-2 years later
      - ❑ In 3-5 years later
      - ❑ In more than 5 years later
    - ❑ No, did not affect timing of purchase and installation

23. Was there an open bidding process for choosing a vendor who did your installation, or did you only offer it to one firm?
    - ❑ (1) Bidding process *(go to Q23a)*
    - ❑ (2) One firm *(go to Q23a)*
    - ❑ (3) Self installed/No vendor used *(go to Q24)*
    - ❑ (9) Don't know *(go to Q23a)*

23a. Did more then one vendor promote the program?

- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

23b. Did you select a firm that promoted the program?
- ❑ (0) No *(go to Q23c)*
- ❑ (1) Yes *(go to Q24)*
- ❑ (9) Don't know *(go to Q24)*

23c. Did you tell the firm about the program?
- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

24. Did the vendor/contractor you learned of the program from install the measures?
- ❑ (0) No *(go to Q25)*
- ❑ (1) Yes *(go to Q24a)*
- ❑ (9) Don't know *(go to Q25)*

24a. Had you previously worked with this vendor/contractor?
- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

24b. Did the fact that the energy efficiency program was part of the project influence your decision on what vendor/contractor to use?
- ❑ (0) No
- ❑ (1) Yes
- ❑ (9) Don't know

25. Did the implementation go smoothly?
- ❑ (0) No, Explain___________________________
- ❑ (1) For the most part, Explain_______________
- ❑ (2) Yes
- ❑ (9) Don't know

26. Did the energy efficiency measure meet your expectation?
- ❑ (0) No, Explain___________________________
- ❑ (1) For the most part, Explain_______________
- ❑ (2) Yes
- ❑ (3) Exceeded my expectations
- ❑ (9) Don't know

27. Do you feel you got a quality installation?
- ❑ (0) No, Explain___________________________

❑ (1) For the most part, Explain______________
❑ (2) Yes
❑ (9) Don't know

28. Did the incentive agreement that you received meet your expectations?
❑ (0) No, Explain_________________________
❑ (1) Yes
❑ (9) Don't know

29. Did anyone from SPS come to your facility to do a pre-inspection?
❑ (0) No (go to Q30)
❑ (1) Yes (go to Q29a)
❑ (9) Don't know (go to Q30)
29a. Who performed the inspection?
29b. What did the pre-inspection consist of?
29c. Did anything change in the design as a result of the pre-inspection?
❑ (0) No
❑ (1) Yes, Explain______________
❑ (9) Don't know

30. Did anyone from SPS come to your facility to do a post-inspection?
❑ (0) No (go to Q31)
❑ (1) Yes (go to Q30a)
❑ (9) Don't know (go to Q31)
30a. Who performed the inspection?
30b. What did the post-inspection consist of?
30c. Did anything change in the incentive amount as a result of the post-inspection?
❑ (0) No
❑ (1) Yes, Explain______________
❑ (9) Don't know

31. Did you provide SPS copies of purchase orders and invoices that document the final costs or did the vendor/contractor?
❑ (1) Someone within firm
❑ (2) Vendor/Contractor
❑ (3) Someone else (specify)_______________
❑ (9) Don't know

32. Were there any issues getting the paperwork approved?
❑ (0) No
❑ (1) Yes, Explain_________________________
❑ (9) Don't know

33. Were there any issues receiving the incentive check?
❑ (0) No

- ❑ (1) Yes, Explain__________________________
- ❑ (9) Don't know

34. Was the incentive check the amount you expected?
    - ❑ (0) No, Explain__________________________
    - ❑ (1) Yes
    - ❑ (9) Don't know

I now have some questions about your experience with the Business Custom Efficiency Program overall.

35. How did you learn of the Business Custom Efficiency Program? (READ. MULTIPLE OKAY)
    - ❑ Approached directly by SPS Energy Specialist or Account Representative of Lighting Efficiency Program
    - ❑ Received an information brochure on the Business Cooling Efficiency Program
    - ❑ An SPS representative mentioned it
    - ❑ The SPSwebsite
    - ❑ Friends or colleagues (i.e., word of mouth)
    - ❑ An architect, engineer or energy consultant
    - ❑ An equipment vendor or building contractor
    - ❑ Past experience with the program
    - ❑ Or some other way (please explain) ____________________________________

36. When did you learn of the Business Custom Efficiency Program? (READ. ONE ONLY)
    - ❑ You had participated in other energy efficiency incentive programs
    - ❑ Before planning for replacing the equipment began
    - ❑ During your planning to replace the equipment
    - ❑ Once equipment had been specified but not yet installed
    - ❑ After equipment was installed
    - ❑ Some other time (When? _____)
    - ❑ Don't know *(Don't Read)*

37. Has your experience with the Business Custom Efficiency Program led you to buy any energy efficient equipment for which you did not apply for a financial incentive?
    - ❑ Yes

      🡻

      If Yes: 37a What type of equipment? ____
    - ❑ No
    - ❑ Don’t know *(DON’T READ)*

38. Given your experience with the Business Custom Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives for such equipment were not being offered through the Business Cooling Efficiency Program?
- ❑ Yes
- ❑ No
- ❑ Don't know *(DON'T READ)*

39. On a scale of 1 to 5, where "5" is very satisfied and "1" is very dissatisfied, and a 3 is neither satisfied nor dissatisfied, how would you rate your satisfaction with the following? (ROTATE. H ALWAYS LAST)

	1 Very Dissatisfied	*2*	*3*	*4*	*5 Very Satisfied*	*Don't know or no answer*
A. Performance of the equipment installed	❑	❑	❑	❑	❑	❑
B. Savings on your monthly bill	❑	❑	❑	❑	❑	❑
C. Incentive amount	❑	❑	❑	❑	❑	❑
D. The effort required for the application process	❑	❑	❑	❑	❑	❑
E. Information provided by your contractor	❑	❑	❑	❑	❑	❑
F. Quality of the work conducted by your contractor	❑	❑	❑	❑	❑	❑
G. Information provided by EPE Account Representative	❑	❑	❑	❑	❑	❑
H. Overall program experience	❑	❑	❑	❑	❑	❑
I. The elapsed time until you received the incentive	❑	❑	❑	❑	❑	❑

40. ASK FOR EACH IF ANSWERED 1 or 2 FOR ANY ASPECT IN QUESTION 28:

Why were you not satisfied with the (ASPECT)? ________________________________

____

____

41. That concludes my questions. Do you have any other comments that you would like me to relay to EPE about energy efficiency in commercial facilities or about their programs?

RECORD ANY CUSTOMER QUESTIONS OR CONCERNS:

____
____
____

Thanks for your help!
SPS will use your ideas to improve
its programs for commercial customers.

Southwestern Public Service Company

2010 Business Motor Efficiency Program

DECISION-MAKER SURVEY QUESTIONNAIRE

ID No. ____

Customer Name: ________________________________

Date of interview: ______________________________

Date data entered ______________________________

....

Hello, my name is _________________. I am calling on behalf of **Southwestern Public Service Company**

.
May I please speak to __________________________ *(Contact Person)?*

Title: _________________________ Company: _______________________________

Address: ____ ZIP: __________________

Phone: ( ) ____________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is ________________________. I am calling on behalf of Southwestern Public Service Company. Through its Motor Efficiency Program, SPS has been working with firms and building owners to help them improve the energy efficiency of their operations. Because your company participated in the Custom Efficiency Program during 2009, we are interested in receiving feedback from you regarding your experience with the program.

Southwestern Public Service Company

2010 Small Business Lighting Program

DECISION-MAKER SURVEY QUESTIONNAIRE

ID No. ______________________________________

Customer Name: ______________________________

Date of interview: ___________________________

Date data entered ____________________________

....

Hello, my name is _________________. I am calling on behalf of **Southwestern Public Service Company**

.

May I please speak to _________________________ *(Contact Person)?*

Title: _________________________ Company: ______________________________

Address: ____ ZIP: _________________

Phone: ( ) __________________________________

Interviewer: If contact person is not available, schedule a callback.
If interview is successfully completed, confirm mailing address above for interviewee.
If contact person is available:

Hello, my name is _______________________. I am calling on behalf of Southwestern Public Service Company. Through its Small Business Lighting Program, SPS has been working with firms and building owners to help them improve the energy efficiency of their operations. Because your company participated in the Small Business Lighting Program during 2010, we are interested in receiving feedback from you regarding your experience with the program.

SECTION ONE - INTERVIEWEE SCREENING

SCRN-Q.1 According to our records your company participated in the Small Business Lighting Program for one or more projects at the following facility:

(Name of facility ____

You are shown as the contact person for that facility. Is that correct?

(If contact seems confused, ask if they remember the Small Business Lighting Program. If necessary, describe program and distinguish from other programs.)

- ❑ Yes (GO TO SCRN-Q.2)
- ❑ No (GO TO SCRN-Q.2)

SCRN-Q.2 Many of our questions focus on your company's decision to participate in the program and on your decisions to purchase and install energy efficient equipment for your facility. Are you the best person to talk to?

- ❑ No. Is there someone else who would be better for us to contact?

Who is that?

Name: ______________________________________

Title: ____

Phone Number: _________________________________

(You are finished with this person.)

Thank you very much for your time

(START SHEET FOR NEW CONTACT PERSON ABOVE)
CALL THIS PERSON AND GO TO BEGINNING OF INTRODUCTION.

- ❑ Yes. "I am the best person to talk to". *Continue interview.*

*SCRN-Q.*3. Our records give the following as the address for the facility(s) where you installed equipment for which you received financial incentives through the Small Business Lighting Program.

(Address(es) from cover sheet)

Is this/Are these address(es) correct?

- ❑ Yes
- ❑ No

If No: Could you please give us the correct address?

*TO BEGIN, I HAVE SOME QUESTIONS REGARDING HOW **DECISIONS ABOUT ENERGY EFFICIENCY** IMPROVEMENTS ARE MADE FOR YOUR FACILITY.*

1. Compared to all other factors, how important is energy efficiency as a factor in planning your operations for this facility? (READ) Is it…
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know

2. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (READ) Is it.. (*Check all that are mentioned.)*
   - ❑ An energy management plan

     2a. (If YES), Does your energy management plan have numerical goals?
     - ❑ Yes ➔ 2b. (IF YES) What are the goals?__________________________________
     - ❑ No
     - ❑ Don't know
   - ❑ A Staff member responsible for energy and energy efficiency
   - ❑ Corporate Policies that incorporate energy efficiency in operations and procurement
   - ❑ Any Others, such as active training of staff or something else.

3. How does your organization decide to make energy efficiency improvements for this facility? Is the decision (READ ALL. CAN BE MULTIPLE RESPONSE):
   - ❑ Made by one or two key people?

     3a. What are their titles? ____
   - ❑ Based on staff recommendations to a decision maker?

     3b. What is that decision maker's title? ______________________________________
   - ❑ Made by a group or committee?

     3c. What is the group or committee name? ___________________________________
   - ❑ Made in some other way?

     3d. How are energy efficiency improvement decisions made? _________________
     ____
     ____

4. What are the **sources** your organization relies on for **information** about energy efficient equipment, materials and design features? Please answer yes or no for each one. (READ EACH; YES, NO, OR DK FOR EACH)

- ❑ An SPS Energy Specialist
- ❑ An SPS Account Representative
- ❑ The SPS website
- ❑ Brochures or advertisements
- ❑ Trade associations or business groups you belong to
- ❑ Trade journals or magazines
- ❑ Friends and colleagues
- ❑ An architect, engineer or energy consultant
- ❑ Equipment vendors or building contractors
- ❑ Any others IF YES: What other sources? ___________________________________

4a. Which sources are your top three? (READ LIST AGAIN ONLY IF NEEDED TO PROMPT. OK IF FEWER THAN THREE)

For each of the following, tell me if it is "very important," "somewhat important," "only slightly important," or "not important at all" for your decision making regarding energy efficiency improvements.

5. **incentive payments from SPS**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

6. **past experience with energy efficient equipment**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

7. **your organization's policies**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

8. **advice and/or recommendations received from SPS**?
- ❑ Very important
- ❑ Somewhat important

- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

9. **advice and/or recommendations from equipment vendors**?
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

10. Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility? (READ ALL. YES, NO OR DK FOR EACH.) (CAN BE MULTIPLE RESPONSES)
- ❑ Initial Cost
- ❑ Simple payback *(Go to question 10.**a**)*
- ❑ Internal rate of return *(Go to question 10.**b**)*
- ❑ Life cycle cost *(Go to question 10.**c**)*
- ❑ Other (Please Explain) ______________________________ *(Go to question 13)*
- ❑ Don't know *(Go to question 11)*

10.a What **payback** *length of time* do you normally require in order to consider an energy investment cost effective?
______ Years *(Go to question 11.)*

10.b What **rate of return** do you normally require in order to consider an energy investment cost effective? ______%
(Expect answers 10 to 30 %.) (Go to question 11.)

10.c What **discount rate** do you normally use in determining the life-cycle costs of various equipment options?______%
(Expect answers 3 to 30 %.) (Go to question 11.)

11. When you have to replace equipment at this facility, **how often** do you try to purchase and install **energy efficient equipment**? (READ) Would you say…
- ❑ Always
- ❑ Usually
- ❑ Sometimes
- ❑ Occasionally
- ❑ Never
- ❑ Don't know *(DON'T READ)*

12. Before you knew about the Small Business Lighitng Program, had you purchased and installed any energy efficient equipment at this facility?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

13. Has your organization purchased any energy efficient equipment in the last three years for which you did **not** apply for a financial incentive through the Small Business Lighting Program? (IF RESPONDENT SAYS, "No" CLARIFY IF "No equipment purchased" OR IF "No, have applied for financial incentives.")
    - ❑ Yes, Purchased energy efficient equipment but did not apply for financial incentive.
      ↓
      IF YES: 13a. Why didn't you apply for a financial incentive on that equipment?
      (DO NOT READ LIST. PROMPT IF NECESSARY)
        - ❑ Didn't know whether equipment qualified for financial incentives
        - ❑ Didn't know about financial incentives until after equipment was purchased
        - ❑ Didn't have time to complete paperwork for financial incentive application
        - ❑ Paperwork for the financial incentive application was too much
        - ❑ Financial incentive wasn't enough to bother with
        - ❑ Other 1 (Specify) ____
        - ❑ Other 2 (Specify) ____
    - ❑ No, Applied for financial incentives on all of the energy efficient equipment purchased.
      IF NO: 13b. Did you receive all of your incentives?
      Yes
      No
      Don't know
    - ❑ Has NOT purchased equipment
    - ❑ Don't know (*DO NOT READ)*

QUESTIONS 14 through 22 ASKED FOR EACH TYPE OF END USE EQUIPMENT OR MEASURE FOR WHICH CUSTOMER RECEIVED A FINANCIAL INCENTIVE. LISTED FROM PROGRAM RECORDS.:

I now have some questions about particular types of equipment for which you received financial incentives.

According to SPS' records, you received incentives for (insert Equipment/Measure ___________

14. <u>Before participating</u> in the Small Business Lighting Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?
    - ❑ Yes
    - ❑ No

15. Did you have plans to install [Equipment/Measure] before participating in the program?
- ❑ No
- ❑ Yes

If Yes:15a Would you have gone ahead with this planned installation even if you had not participated in the program?
- ❑ Yes
- ❑ No

16. How important was previous experience with the SPS Small Business Lighting Program in making your decision to install [Equipment/Measure]? Is it… (READ LIST)
- ❑ Very important
- ❑ Somewhat important
- ❑ Only slightly important
- ❑ Not important at all
- ❑ Or you did not have previous experience with the program
- ❑ Don't know *(DON'T READ)*

17. Did an SPS Energy Specialist or Account Representative recommend that you install [Equipment/Measure]?
- ❑ No
- ❑ Yes

If Yes:17a If the Lighting Efficiency Program representative had not recommended installing [Equipment/Measure], how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
- ❑ Definitely would have installed
- ❑ Probably would have installed
- ❑ Probably would not have installed
- ❑ Definitely would not have installed
- ❑ Don't know *(DON'T READ)*

18. Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Small Business Lighting Program?
- ❑ Yes
- ❑ No
- ❑ Don't know

19. If the **financial incentive** from the Small Business Lighting Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
- ❑ Definitely would have installed
- ❑ Probably would have installed
- ❑ Probably would not have installed

- ❑ Definitely would not have installed
- ❑ Don't know *(DON'T READ)*

20. How did the availability of information and financial incentives through the Small Business Lighting Program affect the <u>quantity</u> (or number of units) of [Equipment/Measure] that you purchased and installed? Did you purchase and install more [equipment/measure] than you otherwise would have without the program?
    - ❑ Yes
      IF YES: 20b How much more? ______________________
    - ❑ No, Did not affect quantity purchased and installed

21. How did the availability of information and financial incentives through the Small Business Lighting Program affect the <u>level</u> of energy efficiency you chose for [Equipment/Measure]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
    - ❑ Yes
      IF YES: 21b How much more efficient? (could be expressed in different ways. Ask for percentage: e.g., 10% more efficient) ______________________
    - ❑ No, program did not affect level of efficiency that we chose for equipment

22. How did the availability of information and financial incentives through the Small Business Lighting Program affect the <u>timing</u> of your purchase and installation of [Equipment/Measure]? Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?
    - ❑ Yes
      ↓
      IF YES: 22a When would you otherwise have installed the equipment? (READ IF NEEDED)
      - ❑ In less than 6 months later
      - ❑ In 6-12 months later
      - ❑ In 1-2 years later
      - ❑ In 3-5 years later
      - ❑ In more than 5 years later
    - ❑ No, did not affect timing of purchase and installation

23. Was there an open bidding process for choosing a vendor who did your installation, or did you only offer it to one firm?
    - ❑ (1) Bidding process *(go to Q23a)*
    - ❑ (2) One firm *(go to Q23a)*
    - ❑ (3) Self installed/No vendor used *(go to Q24)*
    - ❑ (9) Don't know *(go to Q23a)*

23a. Did more then one vendor promote the program?

❑ (0) No
❑ (1) Yes
❑ (9) Don't know

23b. Did you select a firm that promoted the program?
❑ (0) No (*go to Q23c)*
❑ (1) Yes *(go to Q24)*
❑ (9) Don't know *(go to Q24)*

23c. Did you tell the firm about the program?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

24. Did the vendor/contractor you learned of the program from install the measures?
❑ (0) No (*go to Q25)*
❑ (1) Yes *(go to Q24a)*
❑ (9) Don't know *(go to Q25)*

24a. Had you previously worked with this vendor/contractor?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

24b. Did the fact that the energy efficiency program was part of the project influence your decision on what vendor/contractor to use?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

25. Did the implementation go smoothly?
❑ (0) No, Explain__________________________
❑ (1) For the most part, Explain______________
❑ (2) Yes
❑ (9) Don't know

26. Did the energy efficiency measure meet your expectation?
❑ (0) No, Explain__________________________
❑ (1) For the most part, Explain______________
❑ (2) Yes
❑ (3) Exceeded my expectations
❑ (9) Don't know

27. Do you feel you got a quality installation?
❑ (0) No, Explain__________________________

- ❑ (1) For the most part, Explain______________
- ❑ (2) Yes
- ❑ (9) Don't know

28. Did the incentive agreement that you received meet your expectations?
    - ❑ (0) No, Explain_________________________
    - ❑ (1) Yes
    - ❑ (9) Don't know

29. Did anyone from SPS come to your facility to do a pre-inspection?
    - ❑ (0) No (go to Q30)
    - ❑ (1) Yes (go to Q29a)
    - ❑ (9) Don't know (go to Q30)

    29a. Who performed the inspection?
    29b. What did the pre-inspection consist of?
    29c. Did anything change in the design as a result of the pre-inspection?
    - ❑ (0) No
    - ❑ (1) Yes, Explain______________
    - ❑ (9) Don't know

30. Did anyone from SPS come to your facility to do a post-inspection?
    - ❑ (0) No (go to Q31)
    - ❑ (1) Yes (go to Q30a)
    - ❑ (9) Don't know (go to Q31)

    30a. Who performed the inspection?
    30b. What did the post-inspection consist of?
    30c. Did anything change in the incentive amount as a result of the post-inspection?
    - ❑ (0) No
    - ❑ (1) Yes, Explain______________
    - ❑ (9) Don't know

31. Did you provide SPS copies of purchase orders and invoices that document the final costs or did the vendor/contractor?
    - ❑ (1) Someone within firm
    - ❑ (2) Vendor/Contractor
    - ❑ (3) Someone else (specify)_______________
    - ❑ (9) Don't know

32. Were there any issues getting the paperwork approved?
    - ❑ (0) No
    - ❑ (1) Yes, Explain_________________________
    - ❑ (9) Don't know

33. Were there any issues receiving the incentive check?
    - ❑ (0) No

- ❑ (1) Yes, Explain________________________
- ❑ (9) Don't know

34. Was the incentive check the amount you expected?
- ❑ (0) No, Explain________________________
- ❑ (1) Yes
- ❑ (9) Don't know

I now have some questions about your experience with the Small Business Lighting Program overall.

35. How did you learn of the Small Business Lighting Program? (READ. MULTIPLE OKAY)
- ❑ Approached directly by SPS Energy Specialist or Account Representative of Lighting Efficiency Program
- ❑ Received an information brochure on the Small Business Lighting Program
- ❑ An SPS representative mentioned it
- ❑ The SPS website
- ❑ Friends or colleagues (i.e., word of mouth)
- ❑ An architect, engineer or energy consultant
- ❑ An equipment vendor or building contractor
- ❑ Past experience with the program
- ❑ Or some other way (please explain) ________________________________

36. When did you learn of the Small Business Lighting Program? (READ. ONE ONLY)
- ❑ You had participated in other energy efficiency incentive programs
- ❑ Before planning for replacing the equipment began
- ❑ During your planning to replace the equipment
- ❑ Once equipment had been specified but not yet installed
- ❑ After equipment was installed
- ❑ Some other time (When? _____)

- ❑ Don't know *(Don't Read)*

37. Has your experience with the Small Business Lighting Program led you to buy any energy efficient equipment for which you did not apply for a financial incentive?
- ❑ Yes

  ↓

  If Yes: 37a What type of equipment? ____________________________________
- ❑ No
- ❑ Don’t know *(DON’T READ)*

38. Given your experience with the Small Business Lighting Program, would you buy energy efficient equipment in the future even if financial incentives for such equipment were not

being offered through the Business Motor Efficiency Program?

- ❑ Yes
- ❑ No
- ❑ Don't know *(DON'T READ)*

39. On a scale of 1 to 5, where "5" is very satisfied and "1" is very dissatisfied, and a 3 is neither satisfied nor dissatisfied, how would you rate your satisfaction with the following? (ROTATE. H ALWAYS LAST)

	1 Very Dissatisfied	*2*	*3*	*4*	*5 Very Satisfied*	*Don't know or no answer*
A. Performance of the equipment installed	❑	❑	❑	❑	❑	❑
B. Savings on your monthly bill	❑	❑	❑	❑	❑	❑
C. Incentive amount	❑	❑	❑	❑	❑	❑
D. The effort required for the application process	❑	❑	❑	❑	❑	❑
E. Information provided by your contractor	❑	❑	❑	❑	❑	❑
F. Quality of the work conducted by your contractor	❑	❑	❑	❑	❑	❑
G. Information provided by EPE Account Representative	❑	❑	❑	❑	❑	❑
H. Overall program experience	❑	❑	❑	❑	❑	❑
I. The elapsed time until you received the incentive	❑	❑	❑	❑	❑	❑

40. ASK FOR EACH IF ANSWERED 1 or 2 FOR ANY ASPECT IN QUESTION 28:

Why were you not satisfied with the (ASPECT)? ______________________________

____

____

41. That concludes my questions. Do you have any other comments that you would like me to relay to EPE about energy efficiency in commercial facilities or about their programs? *RECORD ANY CUSTOMER QUESTIONS OR CONCERNS:*

____

____

____

(IF NEEDED OR CUSTOMER SEEMS TO HAVE AN ISSUE OR PROBLEM THAT EPE MIGHT ADDRESS) If you wish to speak with an SPS representative, Mr. Mark Schoenheider may be reached at: (303) 294-2866.

Thanks for your help! SPS will use your ideas to improve its programs for commercial customers.

SECTION ONE - INTERVIEWEE SCREENING

SCRN-Q.1 According to our records your company participated in the Cooling Efficiency for one or more projects at the following facility:

(Name of facility ____

You are shown as the contact person for that facility. Is that correct?

(If contact seems confused, ask if they remember the Motor Efficiency Program. If necessary, describe program and distinguish from other programs.)

- ❑ Yes (GO TO SCRN-Q.2)
- ❑ No (GO TO SCRN-Q.2)

SCRN-Q.2 Many of our questions focus on your company's decision to participate in the program and on your decisions to purchase and install energy efficient equipment for your facility. Are you the best person to talk to?

- ❑ No. Is there someone else who would be better for us to contact?

Who is that?

Name: ____

Title: ____

Phone Number: _______________________________________

(You are finished with this person.)

Thank you very much for your time

(START SHEET FOR NEW CONTACT PERSON ABOVE)
CALL THIS PERSON AND GO TO BEGINNING OF INTRODUCTION.

- ❑ Yes. "I am the best person to talk to". *Continue interview.*

SCRN-Q.3. Our records give the following as the address for the facility(s) where you installed equipment for which you received financial incentives through the Motor Efficiency Program.

(Address(es) from cover sheet)

Is this/Are these address(es) correct?

- ❑ Yes
- ❑ No

  If No: Could you please give us the correct address?

TO BEGIN, I HAVE SOME QUESTIONS REGARDING HOW ***DECISIONS ABOUT ENERGY EFFICIENCY*** *IMPROVEMENTS ARE MADE FOR YOUR FACILITY.*

1. Compared to all other factors, how important is energy efficiency as a factor in planning your operations for this facility? (READ) Is it…
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know

2. Which of the following policies or procedures does your organization have in place regarding energy efficiency improvements at this facility? (READ) Is it.. (*Check all that are mentioned.)*
   - ❑ An energy management plan
     2a. (If YES), Does your energy management plan have numerical goals?
     - ❑ Yes ➔ 2b. (IF YES) What are the goals?______________________________
     - ❑ No
     - ❑ Don't know
   - ❑ A Staff member responsible for energy and energy efficiency
   - ❑ Corporate Policies that incorporate energy efficiency in operations and procurement
   - ❑ Any Others, such as active training of staff or something else.

3. How does your organization decide to make energy efficiency improvements for this facility? Is the decision (READ ALL. CAN BE MULTIPLE RESPONSE):
   - ❑ Made by one or two key people?
     3a. What are their titles? ____
   - ❑ Based on staff recommendations to a decision maker?
     3b. What is that decision maker's title? ________________________________
   - ❑ Made by a group or committee?
     3c. What is the group or committee name? ____________________________
   - ❑ Made in some other way?

     3d. How are energy efficiency improvement decisions made? _______________
     ____
     ____

4. What are the **sources** your organization relies on for **information** about energy efficient equipment, materials and design features? Please answer yes or no for each one. (READ EACH; YES, NO, OR DK FOR EACH)

- ❑ An SPS Energy Specialist
- ❑ An SPS Account Representative
- ❑ The SPS website
- ❑ Brochures or advertisements
- ❑ Trade associations or business groups you belong to
- ❑ Trade journals or magazines
- ❑ Friends and colleagues
- ❑ An architect, engineer or energy consultant
- ❑ Equipment vendors or building contractors
- ❑ Any others IF YES: What other sources? ___________________________________

4a. Which sources are your top three? (READ LIST AGAIN ONLY IF NEEDED TO PROMPT. OK IF FEWER THAN THREE)

For each of the following, tell me if it is "very important," "somewhat important," "only slightly important," or "not important at all" for your decision making regarding energy efficiency improvements.

5. **incentive payments from SPS**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

6. **past experience with energy efficient equipment**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

7. **your organization's policies**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

8. **advice and/or recommendations received from SPS**?
   - ❑ Very important
   - ❑ Somewhat important

- ❑ Only slightly important
- ❑ Not important at all
- ❑ Don't know *(DON'T READ)*

9. **advice and/or recommendations from equipment vendors**?
   - ❑ Very important
   - ❑ Somewhat important
   - ❑ Only slightly important
   - ❑ Not important at all
   - ❑ Don't know *(DON'T READ)*

10. Which financial methods does your organization typically use to evaluate energy efficiency improvements for your facility? (READ ALL. YES, NO OR DK FOR EACH.) (CAN BE MULTIPLE RESPONSES)
    - ❑ Initial Cost
    - ❑ Simple payback *(Go to question 10.**a**)*
    - ❑ Internal rate of return *(Go to question 10.**b**)*
    - ❑ Life cycle cost *(Go to question 10.**c**)*
    - ❑ Other (Please Explain) ______________________________ *(Go to question 13)*
    - ❑ Don't know *(Go to question 11)*

    10.a What **payback** *length of time* do you normally require in order to consider an energy investment cost effective?
    ______ Years *(Go to question 11.)*

    10.b What **rate of return** do you normally require in order to consider an energy investment cost effective? ______%
    (Expect answers 10 to 30 %.) (Go to question 11.)

    10.c What **discount rate** do you normally use in determining the life-cycle costs of various equipment options?______%
    (Expect answers 3 to 30 %.) (Go to question 11.)

11. When you have to replace equipment at this facility, **how often** do you try to purchase and install **energy efficient equipment**? (READ) Would you say…
    - ❑ Always
    - ❑ Usually
    - ❑ Sometimes
    - ❑ Occasionally
    - ❑ Never
    - ❑ Don't know *(DON'T READ)*

12. Before you knew about the Business Motor Efficiency Program, had you purchased and installed any energy efficient equipment at this facility?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

13. Has your organization purchased any energy efficient equipment in the last three years for which you did **not** apply for a financial incentive through the Motor Efficiency Program? (IF RESPONDENT SAYS, "No" CLARIFY IF "No equipment purchased" OR IF "No, have applied for financial incentives.")
    - ❑ Yes, Purchased energy efficient equipment but did not apply for financial incentive.
      ↓
      IF YES: 13a. Why didn't you apply for a financial incentive on that equipment?
      (DO NOT READ LIST. PROMPT IF NECESSARY)
      - ❑ Didn't know whether equipment qualified for financial incentives
      - ❑ Didn't know about financial incentives until after equipment was purchased
      - ❑ Didn't have time to complete paperwork for financial incentive application
      - ❑ Paperwork for the financial incentive application was too much
      - ❑ Financial incentive wasn't enough to bother with
      - ❑ Other 1 (Specify) ____
      - ❑ Other 2 (Specify) ____
    - ❑ No, Applied for financial incentives on all of the energy efficient equipment purchased.
      IF NO: 13b. Did you receive all of your incentives?
      Yes
      No
      Don't know
    - ❑ Has NOT purchased equipment
    - ❑ Don't know (*DO NOT READ)*

QUESTIONS 14 through 22 ASKED FOR EACH TYPE OF END USE EQUIPMENT OR MEASURE FOR WHICH CUSTOMER RECEIVED A FINANCIAL INCENTIVE. LISTED FROM PROGRAM RECORDS.:

I now have some questions about particular types of equipment for which you received financial incentives.

According to EPEs records, you received incentives for (insert Equipment/Measure____________

14. <u>Before participating</u> in the Business Motor Efficiency Program, had you installed any equipment or measure similar to [Rebated Equipment/Measure] at your facility?
    - ❑ Yes
    - ❑ No

15. Did you have plans to install [Equipment/Measure] before participating in the program?
    - ❑ No
    - ❑ Yes

    If Yes:15a Would you have gone ahead with this planned installation even if you had not participated in the program?
    - ❑ Yes
    - ❑ No

16. How important was previous experience with the SPS Business Motor Efficiency Program in making your decision to install [Equipment/Measure]? Is it… (READ LIST)
    - ❑ Very important
    - ❑ Somewhat important
    - ❑ Only slightly important
    - ❑ Not important at all
    - ❑ Or you did not have previous experience with the program
    - ❑ Don't know *(DON'T READ)*

17. Did an SPS Energy Specialist or Account Representative recommend that you install [Equipment/Measure]?
    - ❑ No
    - ❑ Yes

    If Yes:17a If the Motors Efficiency Program representative had not recommended installing [Equipment/Measure], how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed
    - ❑ Definitely would not have installed
    - ❑ Don't know *(DON'T READ)*

18. Would you have been financially able to install [Equipment/Measure] without the financial incentive from the Business Motor Efficiency Program?
    - ❑ Yes
    - ❑ No
    - ❑ Don’t know

19. If the **financial incentive** from the Business Motor Efficiency Program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway? You… (READ LIST)
    - ❑ Definitely would have installed
    - ❑ Probably would have installed
    - ❑ Probably would not have installed

- ❑ Definitely would not have installed
- ❑ Don't know *(DON'T READ)*

20. How did the availability of information and financial incentives through the Motor Efficiency Program affect the quantity (or number of units) of [Equipment/Measure] that you purchased and installed? Did you purchase and install more [equipment/measure] than you otherwise would have without the program?
    - ❑ Yes
      IF YES: 20b How much more? ______________________
    - ❑ No, Did not affect quantity purchased and installed

21. How did the availability of information and financial incentives through the Motor Efficiency Program affect the level of energy efficiency you chose for [Equipment/Measure]? Did you choose equipment that was more energy efficient than you otherwise would have chosen because of the program?
    - ❑ Yes
      IF YES: 21b How much more efficient? (could be expressed in different ways. Ask for percentage: e.g., 10% more efficient) ______________________
    - ❑ No, program did not affect level of efficiency that we chose for equipment

22. How did the availability of information and financial incentives through the Business Motor Efficiency Program affect the timing of your purchase and installation of [Equipment/Measure]? Did you purchase and install [equipment/measure] earlier than you otherwise would have without the program?
    - ❑ Yes
      ↓
      IF YES: 22a When would you otherwise have installed the equipment? (READ IF NEEDED)
      - ❑ In less than 6 months later
      - ❑ In 6-12 months later
      - ❑ In 1-2 years later
      - ❑ In 3-5 years later
      - ❑ In more than 5 years later
    - ❑ No, did not affect timing of purchase and installation

23. Was there an open bidding process for choosing a vendor who did your installation, or did you only offer it to one firm?
    - ❑ (1) Bidding process *(go to Q23a)*
    - ❑ (2) One firm *(go to Q23a)*
    - ❑ (3) Self installed/No vendor used *(go to Q24)*
    - ❑ (9) Don't know *(go to Q23a)*

23a. Did more then one vendor promote the program?

❑ (0) No
❑ (1) Yes
❑ (9) Don't know

23b. Did you select a firm that promoted the program?
❑ (0) No (*go to Q23c)*
❑ (1) Yes *(go to Q24)*
❑ (9) Don't know *(go to Q24)*

23c. Did you tell the firm about the program?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

24. Did the vendor/contractor you learned of the program from install the measures?
❑ (0) No (*go to Q25)*
❑ (1) Yes *(go to Q24a)*
❑ (9) Don't know *(go to Q25)*

24a. Had you previously worked with this vendor/contractor?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

24b. Did the fact that the energy efficiency program was part of the project influence your decision on what vendor/contractor to use?
❑ (0) No
❑ (1) Yes
❑ (9) Don't know

25. Did the implementation go smoothly?
❑ (0) No, Explain___________________________
❑ (1) For the most part, Explain_______________
❑ (2) Yes
❑ (9) Don't know

26. Did the energy efficiency measure meet your expectation?
❑ (0) No, Explain___________________________
❑ (1) For the most part, Explain_______________
❑ (2) Yes
❑ (3) Exceeded my expectations
❑ (9) Don't know

27. Do you feel you got a quality installation?
❑ (0) No, Explain___________________________

- ❑ (1) For the most part, Explain______________
- ❑ (2) Yes
- ❑ (9) Don't know

28. Did the incentive agreement that you received meet your expectations?
    - ❑ (0) No, Explain_________________________
    - ❑ (1) Yes
    - ❑ (9) Don't know

29. Did anyone from SPS come to your facility to do a pre-inspection?
    - ❑ (0) No (go to Q30)
    - ❑ (1) Yes (go to Q29a)
    - ❑ (9) Don't know (go to Q30)

    29a. Who performed the inspection?
    29b. What did the pre-inspection consist of?
    29c. Did anything change in the design as a result of the pre-inspection?
    - ❑ (0) No
    - ❑ (1) Yes, Explain______________
    - ❑ (9) Don't know

30. Did anyone from SPS come to your facility to do a post-inspection?
    - ❑ (0) No (go to Q31)
    - ❑ (1) Yes (go to Q30a)
    - ❑ (9) Don't know (go to Q31)

    30a. Who performed the inspection?
    30b. What did the post-inspection consist of?
    30c. Did anything change in the incentive amount as a result of the post-inspection?
    - ❑ (0) No
    - ❑ (1) Yes, Explain______________
    - ❑ (9) Don't know

31. Did you provide SPS copies of purchase orders and invoices that document the final costs or did the vendor/contractor?
    - ❑ (1) Someone within firm
    - ❑ (2) Vendor/Contractor
    - ❑ (3) Someone else (specify)_______________
    - ❑ (9) Don't know

32. Were there any issues getting the paperwork approved?
    - ❑ (0) No
    - ❑ (1) Yes, Explain_________________________
    - ❑ (9) Don't know

33. Were there any issues receiving the incentive check?
    - ❑ (0) No

- ❑ (1) Yes, Explain_________________________
- ❑ (9) Don't know

34. Was the incentive check the amount you expected?
    - ❑ (0) No, Explain_________________________
    - ❑ (1) Yes
    - ❑ (9) Don't know

I now have some questions about your experience with the Business Motor Efficiency Program overall.

35. How did you learn of the Business Custom Efficiency Program? (READ. MULTIPLE OKAY)
    - ❑ Approached directly by SPS Energy Specialist or Account Representative of Motors Efficiency Program
    - ❑ Received an information brochure on the Business Cooling Efficiency Program
    - ❑ An SPS representative mentioned it
    - ❑ The SPSwebsite
    - ❑ Friends or colleagues (i.e., word of mouth)
    - ❑ An architect, engineer or energy consultant
    - ❑ An equipment vendor or building contractor
    - ❑ Past experience with the program
    - ❑ Or some other way (please explain) __________________________________

36. When did you learn of the Business Motor Efficiency Program? (READ. ONE ONLY)
    - ❑ You had participated in other energy efficiency incentive programs
    - ❑ Before planning for replacing the equipment began
    - ❑ During your planning to replace the equipment
    - ❑ Once equipment had been specified but not yet installed
    - ❑ After equipment was installed
    - ❑ Some other time (When? _____)
    - ❑ Don't know *(Don't Read)*

37. Has your experience with the Business Motor Efficiency Program led you to buy any energy efficient equipment for which you did not apply for a financial incentive?
    - ❑ Yes

      ↓

      If Yes: 37a What type of equipment? ______________________________________
    - ❑ No
    - ❑ Don’t know *(DON’T READ)*

38. Given your experience with the Business Motor Efficiency Program, would you buy energy efficient equipment in the future even if financial incentives for such equipment were not being offered through the Business Motor Efficiency Program?
    - ❑ Yes
    - ❑ No
    - ❑ Don't know *(DON'T READ)*

39. On a scale of 1 to 5, where "5" is very satisfied and "1" is very dissatisfied, and a 3 is neither satisfied nor dissatisfied, how would you rate your satisfaction with the following? (ROTATE. H ALWAYS LAST)

	1 Very Dissatisfied	*2*	*3*	*4*	*5 Very Satisfied*	*Don't know or no answer*
A. Performance of the equipment installed	❑	❑	❑	❑	❑	❑
B. Savings on your monthly bill	❑	❑	❑	❑	❑	❑
C. Incentive amount	❑	❑	❑	❑	❑	❑
D. The effort required for the application process	❑	❑	❑	❑	❑	❑
E. Information provided by your contractor	❑	❑	❑	❑	❑	❑
F. Quality of the work conducted by your contractor	❑	❑	❑	❑	❑	❑
G. Information provided by EPE Account Representative	❑	❑	❑	❑	❑	❑
H. Overall program experience	❑	❑	❑	❑	❑	❑
I. The elapsed time until you received the incentive	❑	❑	❑	❑	❑	❑

40. ASK FOR EACH IF ANSWERED 1 or 2 FOR ANY ASPECT IN QUESTION 28:

Why were you not satisfied with the (ASPECT)? ________________________________

____

____

41. That concludes my questions. Do you have any other comments that you would like me to relay to EPE about energy efficiency in commercial facilities or about their programs?

RECORD ANY CUSTOMER QUESTIONS OR CONCERNS:

____

____

____

Thanks for your help!
SPS will use your ideas to improve
its programs for commercial customers.

APPENDIX C: PROGRAM LEVEL TRC RESULTS

This appendix provides the program-level TRC results and the contributing components to program benefits and costs. These are summarized in the tables below.

Table C-1 TRC Inputs – Residential Sector

Program	Avoided MWH Production	Avoided Gas Consumption	Avoided kW Capacity Expansion	Net Customer Investment	Administrative Costs
Evaporative Cooling	$147,652	$0	$436,041	$7,858	$73,021
Home Energy Services	$4,874,972	$383,746	$5,598,144	$2,707,891	$682,547
Home Lighting & Recycling	$2,951,124	$0	$1,092,205	$295,305	$411,740
Low Income	$312,101	$18,983	$496,489	$145,300	$136,378
Refrigerator Recycling	$58,123	$0	$33,333	$0	$46,681
School Education Kits	$287,194	$69,617	$25,426	$32,250	$100,890
Electric Water Heating	$0	$0	$0	$0	$9,623
Residential Saver's Switch	$0	$0	$0	$0	$265,166
Total, Residential Sector:	$8,631,166	$472,346	7,681,638	$3,188,604	$1,726,046

Table C-2 TRC Inputs – Business Sector

Program	Avoided MWH Production	Avoided Gas Consumption	Avoided kW Capacity Expansion	Net Customer Investment	Administrative Costs
Cooling Efficiency	$280,943	$0	$514,766	$145,775	$59,470
Custom Efficiency	$94,666	$0	$46,857	$12,938	$100,886
Large Customer Self-Direct	$0	$0	$0	$0	$0
Lighting Efficiency	$786,842	$0	$602,866	$71,631	$101,412
Motor Efficiency	$446,638	$0	$423,170	$248,361	$64,602
Small Business Lighting	$795,090	$0	$775,314	$674,088	$739,719
Business Saver's Switch	$0	$0	$0	$0	$29,748
Interruptible Credit Option	$0	$0	$0	$0	$15,766
Total, Business Sector:	$2,404,179	$0	$2,362,973	$1,152,793	$1,111,603