BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S APPLICATION REQUESTING: (1) ACCEPTANCE OF ITS 2014 ANNUAL ENERGY EFFICENCY AND LOAD MANAGEMENT ("EE/LM") REPORT; (2) APPROVAL OF ITS 2016 EE/LM PLAN AND ASSOCIATED PROGRAMS; (3) APPROVAL OF A FINANCIAL INCENTIVE FOR 2016; (4) APPROVAL OF ITS COST RECOVERY TARIFF RIDER; AND (5) A DETERMINATION WHETHER A SEPARATE PROCESS SHOULD BE ESTABLISHED TO ANALYZE A SMART-METER PILOT PROGRAM,	**)**	**CASE NO. 15-_________-UT**
SOUTHWESTERN PUBLIC SERVICE COMPANY,	**)**	
APPLICANT	**)**	

DIRECT TESTIMONY

of

WILLIAM T. CONRAD

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

TABLE OF CONTENTS

GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
2016 Plan	SPS's 2016 Energy Efficiency and Load Management Plan
ADM	ADM Associates, Inc.
CFL	Compact Fluorescent Light
Commission	New Mexico Public Regulation Commission
DSM	Demand-Side Management
EE/LM	Energy Efficiency and Load Management
EE Rule	Energy Efficiency Rule, 17.7.2 NMAC
EUEA	Efficient Use of Energy Act (NMSA 1978, §§62-17-1 through 62-17-11, amended effective July 1, 2013)
GWh	Gigawatt-hour
ICO	Interruptible Credit Option
June 25th Order	Final Order Adopting Certification of Stipulation in Case No. 13-00286-UT
kWh	Kilowatt-hour
LED	Light-emitting diode
LIA	Low-Income Adjustment
Low-Income HES	Low-Income Home Energy Services
LISS	Low-Income Spending Shortfall

Acronym/Defined Term	Meaning
M&V	Measurement and Verification
MWh	Megawatt-hour
NEBs	Non-energy benefits
NPV	Net present value
PBIF	Performance-Based Incentive Factor
PSCo	Public Service Company of Colorado, a Colorado corporation
PY	Program Year
SF	Spending Factor
SPS	Southwestern Public Service Company, a New Mexico corporation
Staff	Utility Division Staff of the Commission
UCT	Utility Cost Test
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

LIST OF ATTACHMENTS

Case No. 15-_____-UT
Direct Testimony
of
William T. Conrad

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is William T. Conrad. My business address is 1800 Larimer Street, Suite 1500, Denver, Colorado, 80202.

Q. On whose behalf are you testifying in this proceeding?

A. I am filing testimony on behalf of Southwestern Public Service Company, a New Mexico corporation ("SPS") and wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"). Xcel Energy is a registered holding company that owns several electric and natural gas utility operating companies and a regulated natural gas pipeline company.[1]

Q. By whom are you employed and in what position?

A. I am employed by Xcel Energy Services Inc. ("XES"), the service company subsidiary of Xcel Energy, as Consumer and Commercial Energy Efficiency Marketing Manager.

---

[1] Xcel Energy is the parent company of four electric and gas utility operating companies: Northern States Power Company, a Minnesota corporation; Northern States Power Company, a Wisconsin corporation; Public Service Company of Colorado ("PSCo"), a Colorado corporation; and SPS. Xcel Energy's gas pipeline subsidiary is WestGas InterState, Inc. SPS also has two transmission-only operating companies, Xcel Energy Southwest Transmission Company, LLC, and Xcel Energy Transmission Development Company, both of which are regulated by the Federal Energy Regulatory Commission.

Q. Please briefly outline your responsibilities as Consumer and Commercial Energy Efficiency Marketing Manager.

A. I manage a group whose primary responsibilities are to manage a portfolio of energy efficiency programs in Xcel Energy's New Mexico, Colorado, and Texas service territories in response to various regulatory energy efficiency requirements. The group of Product Portfolio Managers, Channel Managers, and Marketing Assistants develop and execute marketing plans and budgets while integrating efforts with sales organizations, trade allies, program evaluators, and technical support in an effort to meet or exceed regulatory energy efficiency goals.

Q. Please describe your educational background.

A. I graduated from Minnesota State University with a Bachelor of Science degree in Political Science and Economics.

Q. Please describe your professional experience.

A. I have been employed by Xcel Energy for 16 years. I have been in my current position as Consumer and Commercial Energy Efficiency Marketing Manager since June of 2013, and am responsible for energy efficiency and load management program delivery in New Mexico, Colorado, and Texas. I have held several positions within Xcel Energy and its operating companies, including Manager of the Key Accounts Group for PSCo from 2008-2013, as well as positions at Northern States Power Company in Demand-Side Management ("DSM") Marketing and Account Management.

Q. Have you testified before any regulatory authorities?

A. Yes. I have testified before the Colorado Public Utilities Commission regarding, among other things, the topics discussed in this direct testimony.

II. ASSIGNMENT AND RECOMMENDATIONS

Q. What is the purpose of your testimony?

A. My testimony provides an overview and support for SPS's 2016 Energy Efficiency and Load Management ("EE/LM") Plan ("2016 Plan") and associated programs (the programs are collectively referred to as EE/LM Programs), which are designed to maximize energy and demand savings in the most cost-effective manner, consistent with the requirements of the Efficient Use of Energy Act (NMSA 1978, §62-17-1 through 62-17-11, "EUEA") and the New Mexico Public Regulation Commission's ("Commission") Energy Efficiency Rule (17.7.2 NMAC, "EE Rule"). The 2016 Plan is provided as Attachment WTC-1 to my direct testimony.

Specifically, my testimony will address:

(1) how SPS's proposed savings goals for the 2016 Plan are achievable and reasonable;

(2) the process used by SPS to evaluate, select, and design its proposed portfolio of Residential and Business energy efficiency and load management programs to meet its proposed 2016 Plan goals;

(3) the Utility Cost Test ("UCT") assumptions and calculations used to evaluate the cost-effectiveness of each program;

(4) the reasonableness and necessity of the Planning and Research Segment costs to achieve the goals of the EUEA; and,

(5) the background and justification for the measurement and verification ("M&V") of SPS's EE/LM programs.

In addition, I present SPS's proposal for an incentive mechanism for SPS EE/LM for program year ("PY") 2016, which is nearly identical to the incentive mechanism approved for SPS's previous energy efficiency plan in Case No. 13-00286-UT.[2] In particular, I describe the proposed incentive mechanism and help support the reasonableness of the incentive for PY 2016. SPS witness Ruth Sakya provides the primary support for the proposed incentive mechanism and resulting incentive, and SPS witness Jeffrey Comer incorporates the incentive into the 2016 EE Rider.

Finally, I present as Attachment WTC-2, SPS's 2014 Annual Report included in compliance with 17.7.2.8.A NMAC.

Q. Do you sponsor any sections of the 2016 Plan?

A. Yes, I sponsor the Executive Summary; Section I: (A)-(J); Section II: (A)-(C), (D)(II), and (D)(III); Section III: (A)-(C); Section IV; Appendix A; and Appendix B.

[2] Case No. 13-00286-UT, *In the Matter of Southwestern Public Service Company's Application for Approval of its (A) 2014 Energy Efficiency and Load Management Plan and Associated Programs, (B) Request for Financial Incentives for 2013-2015; (C) Cost Recovery Tariff Rider, and (D) Request to Establish Lower Minimum Savings Requirements for 2014 under the Efficient Use of Energy Act,* Final Order Adopting Certification of Stipulation (Jun. 25, 2014)("June 25th Order").

Q. Do you sponsor SPS's 2014 Annual Report?

A. Yes. In accordance with 17.7.2.8.A NMAC, SPS's 2014 Annual Report which includes the 2014 M&V report authored by the Commission-approved Independent Program Evaluator (ADM Associates, Inc. or "ADM") is included with this filing (see Attachment WTC-2). In this filing, SPS demonstrates that its 2014 performance and achievements satisfy the EUEA requirements. For 2015, SPS is on target to meet the 5 percent of 2005 sales reduction for which SPS received a variance from in its 2014 Plan in Case No. 13-00286-UT.

Q. Please summarize the recommendations presented in your testimony.

A. The Commission should approve SPS's 2016 EE/LM Plan, without modification. SPS has designed a portfolio of cost-effective EE/LM programs to maximize the potential energy savings for 2016 as required by the EUEA and the EE Rule. On an annual basis, SPS projects that implementation of the 2016 Plan will result in savings of 32.928 gigawatt hour ("GWh") (net generator) or 29.471 GWh (net customer)[3], with a budget of approximately $11.49 million. SPS's proposed savings goals for the 2016 Plan are achievable and reasonable as they are based

[3] SPS reports its achievements at the generator level, which includes losses. However, other information is presented at the customer level, and thus, SPS provides its goals at both the generator and customer levels.

on SPS's historic program performance and knowledge of the market conditions in SPS's service territory.

SPS has leveraged experience in New Mexico and other Xcel Energy jurisdictions to develop a set of programs which: (i) are cost-effective, consistent with the EUEA, thus providing overall benefits to all SPS customers, including non-participants; and (ii) provide opportunities for all of SPS's customer classes to participate, thus enabling all customers the opportunity to receive direct benefits. While developing its programs, SPS paid particular attention to minimizing costs for non-incentive and non-promotional activities as incentive and promotional costs directly benefit customers, allocating costs to the most cost-effective programs wherever possible, and balancing the need for short-term achievement with a long-term strategy. Accordingly, SPS's 2016 Plan is reasonable and necessary, as well as cost-effective. Thus, the Commission should approve SPS's 2016 Plan, including the proposed Residential and Business programs, and the associated proposed program budgets.

In addition, the incentive mechanism proposed by SPS for program year 2016 is reasonable as it meets the EUEA and Commission's EE Rule criteria for approval. In particular, the incentive mechanism is based on the utility's costs and requires satisfactory performance. Furthermore, the mechanism is based on the incentive mechanism that was most recently approved by the Commission for SPS for program years 2014 and 2015 in Case No. 13-00286-UT and, accordingly, should be approved for PY 2016.

Finally, the Commission should accept SPS's 2014 Report, which demonstrates SPS's compliance with the EUEA and EE Rule.

III. SPS's 2016 PLAN AND ASSOCIATED PROGRAMS

A. Overview

Q. Please provide an overview of SPS's 2016 Plan.

A. SPS's 2016 Plan presents a portfolio of cost-effective EE/LM programs to maximize the potential energy savings under the program constraints experienced by SPS in the past, as well as spending and cost recovery limitations imposed under the EUEA. SPS's 2016 Plan is based heavily upon SPS's Commission-approved 2014 Plan. Similar to 2014, SPS's 2016 Plan presents ten programs that target customers in the Residential (including low-income) and Business Segments. Additionally, SPS's 2016 Plan includes a Planning and Research Segment, which is necessary for the successful implementation of the EE/LM programs. No programs were eliminated in the development of the 2016 Plan compared to the 2014 Plan. However, some programs were expanded, such as the Energy Feedback – Residential and Evaporative Cooling programs. Further details on the modifications made to these programs and other programs are detailed in Section III of Attachment WTC-1.

For 2016, SPS proposes an energy savings goal of 32.928 GWh (net generator) or 29.471 GWh (net customer) at a budget of approximately $11.49

million. Please refer to Section I of Attachment WTC-1 for the methodology and breakdown of how SPS calculated its goal. The portfolio of programs is expected to produce lifetime net benefits by avoiding generation, capacity, and transmission and distribution costs of greater than $22.439 million, which accrue to all of SPS's New Mexico customers. Table WTC-1 provides a summary of the budgets, demand and energy savings at the net customer and net generator levels, as well as the UCT results at the program level.

Table WTC-1

2016	Electric Participants	Electric Budget	Net Customer kW	Net Customer kWh	Net Generator kW	Net Generator kWh	Utility Cost Test Ratio
Residential Segment							
Home Lighting	148,500	$ 2,514,815	1,298	9,667,432	1,549	10,960,807	2.53
Refrigerator Recycling	450	$ 89,138	18	283,214	21	321,105	1.08
School Education Kits	2,500	$ 158,186	22	824,100	26	934,353	1.97
Residential Energy Feedback	16,714	$ 184,890	379	3,151,742	453	3,573,404	1.06
Home Energy Services	1,850	$ 2,561,997	618	5,658,676	738	6,415,732	1.95
Residential Cooling	192	$ 230,448	74	231,102	88	262,020	1.02
Residential Savers Switch	5,352	$ 638,260	741	7,148	884	8,104	1.63
Residential Segment Total	175557	$ 6,377,735	3,150	19,823,413	3,758	22,475,525	2.08
Business Segment							
Business Comprehensive	134	$ 3,662,551	1,386	9,633,404	1,547	10,437,057	2.10
ICO	2	$ 49,069	789	7,000	881	7,584	6.00
Business Savers Switch	561	$ 569,104	871	7,023	973	7,609	2.12
Business Segment Total	697	$ 4,280,724	3,047	9,647,427	3,400	10,452,250	2.15
Indirect Segment							
Consumer Education		$ 193,146					
Market Research		$ 42,650					
Measurement & Verification		$ 28,808					
Planning & Administration		$ 318,656					
Product Development		$ 247,381					
Indirect Segment Total		$ 830,642					
Portfolio Total	176,254	$ 11,489,101	6,196	29,470,840	7,159	32,927,775	1.95

Q. Does SPS propose to operate any programs while it awaits a Commission decision on its proposed 2016 Plan?

A. Yes. Consistent with prior practice, if the Commission has not made a final decision on SPS's 2016 Plan by December 31, 2015, SPS proposes to continue operating its 2015 suite of programs in the interim. This approach is reasonable as temporary program stoppage creates customer confusion, can hinder customers' ability to complete energy efficiency projects, and prevents customers from accessing programs designed to reduce their energy bills. Furthermore, temporary program stoppage is administratively inefficient, decreases program cost-effectiveness, and impedes SPS's ability to achieve its 2020 minimum requirements. This interim measure would continue the 2015 programs that were most recently approved by the Commission in Case No. 13-00286-UT.

Q. Does SPS propose to operate its programs in 2016 under the 2016 budget?

A. Yes. Consistent with prior practice, SPS proposes to apply the approval of its 2016 budget to the entirety of 2016, even if the Commission has not made a final decision by December 31, 2015. Such an approach is consistent with the 3% funding level required under the EUEA and the Commission's EE Rule (*i.e.*, the lower of three percent of customers' bills or $75,000 per year per customer per calendar year) (also referred to herein as the "3% funding level").

Q. Please explain how SPS determined its 2016 Plan goal.

A. SPS's goal was developed using a top down approach informed by historic portfolio performance. SPS first calculated its 2016 funding level of $11.49 million and adjusted its 2014 Plan to accommodate a similar spending level. This resulted in a forecasted savings of 29.471 GWh (net customer). This savings level was adjusted for any known or expected changes in SPS's service territory and the wider energy efficiency marketplace. When adjusting savings forecasts for market conditions, SPS similarly adjusted its program budgets for these changes. For example, SPS increased promotional and advertising budgets in the 2016 Plan to improve its education and awareness efforts to drive participation.

In developing its plan in this manner, SPS ensured that it met the requirements of the EUEA, namely the 3% funding level while providing a diverse and impactful portfolio at a cost-effective level that keeps SPS on pace to meet the 2020 requirement.

B. Program Selection Process

Q. Please generally describe the process used by SPS in the development of the 2016 Plan.

A. SPS was guided in its selection by five over-arching principles: (i) design an energy efficiency and load management portfolio to maximize energy savings; (ii) ensure that the portfolio meets the EUEA's funding requirements; (iii) ensure a cost-effective portfolio; (iv) minimize, to the greatest extent practical, the administrative costs of developing and implementing the programs; and (v) offer a sufficient menu of programs to allow all customers the opportunity to participate. SPS balanced each of these principles in its selection of programs for the 2016 Plan.

Q. How did SPS determine which Residential and Business Segment programs to offer as part of its 2016 Plan?

A. Using the above-listed principles, SPS began with an evaluation of its existing portfolio of programs, which are a continuation of the products approved by the Commission in Case No. 13-00286-UT. Each program was reviewed with a critical eye to ensure that it was cost-effective and that the entire portfolio provided an opportunity for all customers to participate in programs. Further, SPS carefully reviewed: (i) the current programs' historical performance from mid-2008 through 2014 with specific focus on the most recent program years; (ii) programs offered in other Xcel Energy jurisdictions, as well as other New Mexico energy efficiency portfolios; (iii) comments received at the public participation meeting; and (iv) recommendations made by the Commission's independent M&V evaluator. As a result of this analysis, SPS determined that its existing programs, with a few modifications, will best accomplish SPS's objectives. Later in my testimony, I provide a brief summary of each program and describe its contribution to the overall portfolio of programs.

Q. As a result of the evaluation process described above, has SPS included any new measures or programs in its 2016 Plan?

A. Yes. SPS has included the following measures[4] under existing programs[5]:

- seven lighting measures (Business Comprehensive: Lighting Efficiency);
- eight refrigeration measures (Business Comprehensive: Cooling Efficiency); and
- Server Power Supplies (Business Comprehensive: Computer Efficiency)

Additional detail on these new measures can be found in the program sections of Attachment WTC-1 (the 2016 Plan).

Q. Is SPS including any new measures or programs that were reviewed as part of the Stipulation in Case No. 13-00286-UT?

A. Yes. SPS has included the framework for upstream and midstream[6] lighting incentives in the Business Comprehensive program in 2016. SPS is still in the process of identifying the best way to introduce upstream and midstream

[4] A measure is an individual piece of equipment, technology, or practice.

[5] A program is the complete product offering of like (similar) measures.

[6] Upstream and midstream refer to where the application of the incentive or rebate occurs. Midstream incentives occur when the distributor or trade ally receives the incentive. Subsequently the price the distributor charges a trade ally or that the trade ally charges the end-use customer is marked down to reflect the incentive. Upstream incentives occur at the manufacturer level. The incentive received at this level is intended to reduce the cost to retailers and end use customers.

evaporative cooling rebates in its service territory. At this time, additional education and coordination with trade allies is necessary to introduce these types of rebates for evaporative cooling.

Q. Please discuss further what types of evaluations SPS is undertaking for upstream and midstream evaporative cooling rebates in its service territory.

A. To ascertain if evaporative cooling and commercial lighting rebates are both cost-effective and operationally-effective, SPS is currently meeting with distributors and contractors to determine the potential size of the market for these types of rebates, as well as the administrative costs associated with implementing them.

For example, SPS is reviewing the progress that PSCo is making with midstream lighting rebates for its business programs to determine what, if any, implementation strategies can be transferred to New Mexico. SPS is also determining if the distributor base in New Mexico is sufficient to incentivize both customers and contractors to adopt measures at a greater rate. In comparison to PSCo's service territory, SPS's New Mexico service area is much more diffuse and lacks many of the major distributors such as Lowe's or Home Depot. However, SPS has identified at least one potential distributor in the New Mexico service area and is working with that vendor to develop an implementation plan for midstream rebates.

Q. Is the 2016 Plan reasonable in its assumptions and projections?

A. Yes. The 2016 Plan is reasonable in its assumptions and projections in that SPS's technical assumptions are based on ADM's most recent version of the Technical Resource Manual, as well as ADM's most recent M&V reports.[7] By using the assumptions generated or approved by ADM, SPS is basing its assumptions on inputs that have been vetted through a rigorous review process and that are specific to its territory and its present conditions. Due to the timing of SPS's filing and the timing of ADM's report, additional updates to technical assumptions need to be made after SPS's filing to improve the accuracy of SPS's projected savings.

C. Budgeting Process

Q. Please describe SPS's budgeting process.

A. SPS began by establishing the projected program funding it would receive in 2016 consistent with the three percent funding methodology outlined in the EUEA. As

[7] Due to the timing of the 2014 M&V report, some updates may not be included at the time of filing. Therefore, SPS utilized the assumptions from a previous M&V report and will update once the final assumptions are available.

discussed further by SPS witness Jeffrey L. Comer, this process results in an overall estimated EE/LM funding level of approximately $11.49 million.

Starting from the funding level estimate, SPS then refined the budget at the program level. In doing so, SPS sought to minimize program delivery costs, while maintaining the ability to effectively deliver its programs. In general, the proposed budgets were developed by determining forecasted energy savings goals by program and the associated rebate levels that were necessary to encourage participation, while maintaining the cost-effectiveness of the program. Other budget components, such as promotion and materials, were developed based on past experience and discussions with industry personnel. Prior to filing, SPS reviewed the budget for reasonableness given the historical and projected performance of each program. In particular, SPS evaluated its costs and made adjustments where possible, without sacrificing necessary expenditures to maximize energy savings.

Table 1 of Attachment WTC-1, includes specific budgeting information for each program description.

Q. Has SPS calculated its overage or underage for PY 2014 pursuant to 17.7.2.8.D?

A. Yes. In a compliance filing made on March 11, 2015, SPS calculated its 2014 plan year underage consistent with 17.7.2.8.D using the methodology established in 17.7.2.7.I. The 2014 plan year underage was $74,170.

Q. Does the EE Rule require that SPS file budgets for each of its specific programs?

A. Yes. 17.7.2.8.H(12) NMAC requires that a "detailed separate measure or program budget that identifies the estimated monetary program costs to be incurred" be provided in the utility's application. SPS has met this requirement in its application.

Q. Does SPS seek flexibility in the management of the program budgets?

A. Yes. SPS presents forecasted budgets for its 2016 programs; however, it may adjust those budgets throughout the year and will explain in its annual report when variances from the budgets occur. This flexibility allows SPS to adjust its annual program spending to accommodate its most successful and cost-effective programs, which in turn provides increased benefits to customers.[8] In adjusting its budgets, SPS is still subject to the requirements of both the EUEA and EE Rule, specifically the requirements to fund energy efficiency programs at three percent funding level and that no less than five percent of spending be directed towards low-income programs. SPS will also provide an explanation of any such budget adjustments in its Annual Report.

Q. For purposes of managing its programs budgets, will SPS adjust incentives as needed to reflect market conditions?

A. Yes. SPS proposed a rebate or incentive for each of the measures offered in its portfolio, but SPS will adjust these incentives based on market conditions.

For example, if the cost for LED lighting measures decreases, SPS could reduce the incentive it pays for these measures and thereby increase the cost-effectiveness of the program. Alternatively, if SPS determines that a measure is not gaining traction in the marketplace and that additional incentives

---

[8] *See* the approved Stipulation in Case No. 14-00310-UT, which allows PNM to increase the budget for any program that is reasonably anticipated to exceed the stipulated budget due to an increase in program participation costs, and reduce the stipulated budget for any program that is reasonably anticipated to be less than the stipulated budget due to a decrease in program participation costs.

or rebates are necessary, it could increase these rates to help promote customer interest.

Q. Please discuss further how SPS evaluates and minimizes the administrative costs related to its programs.

A. SPS minimizes delivery costs by determining whether it is more efficient to deliver the programs using internal resources or contracting with third-parties. SPS self-administers its programs where it is more cost or operationally effective, meaning that internal staff, supplemented with consultants on an as-needed basis, handle product development, program planning, technical analyses, sales and marketing, rebate processing, and regulatory support.

While SPS administers the EE/LM programs where possible, the actual sale and delivery of energy efficiency technologies to end-use customers is conducted by market suppliers and vendors such as retailers and contractors. In addition to SPS-provided messages, training, and education, SPS relies upon retail suppliers and vendors to educate customers about energy efficiency and market equipment or services. SPS has generally found this approach to be the most effective and efficient method for operating energy efficiency and load management programs.

SPS uses third-party providers to assist in implementing certain programs including School Education Kits, Business Comprehensive, Refrigerator Recycling, Home Energy Services, Energy Feedback Pilot, Home Lighting, and Computer Efficiency.

Q. What efforts has SPS undertaken to control costs?

A. Based in large part on SPS's experiences in offering programs over the past five years, SPS:

- Reduced administrative costs for the School Energy Kits program – SPS has negotiated lower prices for the kits, which are considered an administrative cost.
- Implemented Pay for Performance in the Business Comprehensive program – SPS has negotiated its current contract with its third-party implementer to be a pay for performance contract rather than a fixed fee contract. This benefits customers by only incurring costs when savings are achieved.
- Reduced Rebates and Incentives – SPS has reduced rebates and incentives for measures that have become more mainstream to ensure cost-effectiveness within the programs.

D. Program Summaries

1. Residential Segment Programs

Q. Please provide a summary of the residential programs included in the 2016 Plan.

A. SPS proposes seven residential programs, all of which are continuing from SPS's 2014 Plan[9], including:

- <u>Energy Feedback – Residential Program</u> – The Energy Feedback – Residential program is designed to quantify the effects of informational feedback on energy consumption in approximately 15,000 households, consistent with the Commission's Final Order in Case No. 09-00352-UT.[10] This program provides educational materials and communication strategies to create a persistent change in energy usage behavior. The purpose of the program is to measure when, how, and why customers change their behavior when provided with feedback on their energy using habits.

---

9 *See* Case No. 13-00286-UT, Direct Testimony of Shawn M. White at Attachment SMW-1.

10 *In the Matter of Southwestern Public Service Company's Application for Approval of its 2010/2011 Energy Efficiency and Load Management Plan and Associated Programs, Requested Variances, and Cost Recovery Tariff Rider*, Case No. 09-00352-UT, Final Order Adopting Certification of Stipulation (Mar. 15, 2011).

- Residential Cooling Program – This program offers rebates for the purchase of high efficiency evaporative cooling, air conditioning, and heat pump units. Rebates for evaporative coolers are paid for purchase of new units with an efficiency greater than 85%, installed in new or existing construction, regardless of whether or not the customer is replacing an existing unit. Evaporative cooling technology is well-suited to SPS's service territory, creating an opportunity to drive customers to higher levels of efficiency within this air conditioning category. Air conditioning and heat pump rebates are paid to registered contractors who perform a quality installation. Customers may also receive a rebate for the purchase of a system using an electronically commutated motor, which significantly reduces a system's electric consumption.
- Home Energy Services Program – Under this program, SPS provides incentives for the installation of a wide range of energy savings measures that reduce customer energy costs. The incentives are paid to energy efficiency service providers on the basis of deemed (*i.e.,* pre-determined) energy savings. The program includes attic insulation, air infiltration reduction, refrigerators (for low-income participants), duct leakage repairs, and high efficiency central air conditioners. The program is delivered via third-party providers interacting directly with customers to perform the home improvements. This program includes the Low-Income Home Energy Services ("Low-Income HES") product, which cost-effectively ensures that all customer segments

have the ability to participate in SPS programs. Multifamily buildings are also eligible to participate in the program. The residential portions of these buildings are serviced through the HES program while the non-residential spaces are serviced through the Business Comprehensive program.

- Home Lighting & Recycling Program – This program provides incentives for the customers to purchase energy efficient compact fluorescent light ("CFL") bulbs and light-emitting diodes ("LED") through participating retailers. Participating retailers may include home improvement, mass merchandisers, hardware, and grocery store locations. Customers will be able to recycle used CFLs at select retail partner locations. Going forward, SPS will increasingly focus on LED bulbs as CFLs have become more widely adopted in the marketplace.
- Refrigerator Recycling Program – This program provides cash rebates to customers who agree to have their refrigerator and/or freezer removed, recycled, and disposed of in an environmentally-safe manner. Qualifying refrigerators are removed at no cost to customers by SPS's third-party contractor.
- Saver's Switch – 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. Saver's Switch is popular with customers due to the bill savings they

receive for little or no effort other than a reduction in AC use during peak periods.

- <u>School Education Kits Program</u> – The School Education Kits Program provides free kits to fifth grade classrooms in SPS's New Mexico service area. These kits include energy efficiency educational materials and products including, three CFLs, one LED, one low-flow showerhead, a kitchen and bathroom aerator, and an LED nightlight, which are distributed along with curriculum. This program provides value beyond the direct installation of measures included in the kits by creating awareness of energy efficiency with students, teachers, and parents.

Q. As part of its 2016 Plan, does SPS propose any additions, modifications, or terminations to the Residential Segment programs or products that were offered during 2015?

A. Yes. SPS proposes to modify the Home Energy Services program to expand the opportunity for multifamily buildings to participate in the program. Historically, while multifamily buildings have been *eligible* to participate in the program, SPS has not *targeted* multifamily buildings for participation. However, SPS sees this as an untapped sector given the ability for these buildings to provide comprehensive savings through the residential and non-residential portions of the building. SPS also proposes to add air conditioning and heat pump measures as stand-alone rebate items through the Residential Cooling program. SPS is not proposing to terminate or add any programs or products at this time.

Q. How does SPS plan to address the requirement under the EUEA that at least five percent of total spending be directed towards low-income customers?

A. SPS plans to meet this requirement primarily through its Low-Income HES program. SPS projects to spend no less than $574,455 in 2016 on this program, which accounts for five percent of total portfolio program costs.

Q. Are the proposed programs included in the Residential Segment cost-effective?

A. Yes, all of the proposed programs pass the UCT at the program level, with an overall UCT of 2.05. Please refer to Section IV of my testimony, which addresses the UCT in more detail. Table 1 in the 2016 Plan provides the UCT results for each program and Appendix A of the 2016 Plan provides detailed calculations and methodologies for each UCT calculation.

2. Business Segment Programs

Q. Please summarize the Business Segment programs presented in the 2014 Plan.

A. SPS proposes three programs in the Business Segment.

- <u>Business Comprehensive Program</u> – This program includes the bundling of the following products: Cooling Efficiency, Custom Efficiency, Computer Efficiency, Large Customer Self-Direct, Lighting Efficiency, Motor & Drive Efficiency, and Building Tune-Up.
    - Cooling Efficiency: Provides rebates for purchasing air conditioning equipment that exceeds standard efficiency equipment.
    - Custom Efficiency: Offers customized rebates based on an engineering analysis of specific customer projects. This product is for technologies and strategies that are either too new or too complex for SPS to have a prescriptive rebate.
    - Computer Efficiency: Under this product, incentives are offered to manufacturers who provide energy efficient power supplies to qualified customers purchasing new computer units and to customers who implement virtual systems in lieu of traditional desktops.
    - Large Customer Self-Direct: Customers using over 7,000 megawatt hours ("MWh") per year may choose to administer their own energy efficiency projects to receive either a bill credit or exemption from a portion of the charges under the Energy Efficiency Rider.
    - Lighting Efficiency: This product provides prescriptive rebates for the most common energy efficiency upgrades to lighting systems.

- Motor & Drive Efficiency: This product offers prescriptive rebates for the most common energy efficiency upgrades for motors and variable speed drives. This product also includes rebates for pump-off controllers used in oil and gas operations.
- Building Tune-Up: This product features a scaled-down recommissioning-style offering aimed at lower-cost efficiency improvements for small- to mid-sized business customers.

- Interruptible Credit Option ("ICO") Program – This load management program offers incentives to larger business customers who allow SPS to interrupt their load. Customers are notified to interrupt loads during periods of high demand, such as hot summer days. As compensation, participants receive a monthly bill credit, which varies depending on the amount of interruptible load and how far in advance they receive notification.
- Saver's Switch – Saver's Switch is another load management 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. Similar to the Residential Saver's Switch program, participating customers receive an annual bill credit.

Q. Is SPS modifying the Business Segment programs included in the 2016 Plan?

A. Yes. SPS proposes to add new measures to the Cooling Efficiency, Computer Efficiency, and Lighting Efficiency products. These changes are intended to expand the energy efficiency options for customers as market conditions change and new market opportunities become available. Details of these measures are included in Section III of the 2016 Plan. SPS is not planning to terminate or add any new programs or products at this time.

Q. Has SPS proposed to add or terminate any products from its Business Segment programs?

A. No. SPS is not proposing to add or eliminate any programs from the Business Segment.

Q. Are the proposed programs included in the Business Segment cost-effective?

A. Yes. All of the proposed programs pass the UCT at the program level, with an overall UCT of 2.15. Cost-effectiveness testing is discussed in Section IV of my testimony.

Q. Did SPS have any participants in the Large Customer Self-Direct program in 2014 or 2015 and does SPS forecast any participants in 2016?

A. No. SPS has not had participation in the Large Customer Self-Direct program in 2014 or 2015 and currently has not had discussions are future participation. However, if a large customer chooses to participate under 17.7.2.10 or 17.7.2.11

NMAC, SPS will comply with the requirements under those portions of the EE Rule.

3. Planning and Research Segment

Q. What is the purpose of SPS's Planning and Research Segment?

A. The Planning and Research Segment consists of internal company activities, which provide the support needed to develop, implement, and maintain SPS's portfolio of EE/LM programs. In addition, the activities provide direct support to program operations. The Planning and Research Segment includes the following essential activities: Consumer Education, Market Research, Measurement & Verification, Planning & Administration, and Product Development. I provide a brief summary of each activity below, with a more detailed discussion included in the 2016 Plan.

Q. Why is the Planning and Research Segment necessary?

A. The Planning and Research Segment is necessary because it provides the backbone support for the portfolio, unifying the development of programs with underlying technical assumptions and providing program managers with the research needed for them to target the markets and segments that are most likely to participate in their programs, as well as providing the education to increase customers' awareness of energy efficiency and load management. This segment is also necessary for maintaining the integrity of the portfolio by carefully tracking program participation and achievements and applying for and receiving Commission endorsement and approval of the programs. Once approved, these functions are necessary for maintaining compliance with the regulatory requirements, such as cost-effectiveness standards and requirement that programs receive M&V at least once every three years.

Q. Please provide a brief description of each component within the Planning and Research Segment.

A. The following components are included within the Planning and Research Segment:

- <u>Consumer Education</u>: This program includes activities to increase residential customer awareness of the benefits of energy efficiency and conservation. Example of activities include advertising through local newspapers, third-party websites[11], newsletters, bill inserts, and radio. The messaging includes targeted communications to address seasonal energy usage challenges.

[11] Third-party websites may include websites for community organizations, program sponsors, or partner contractors.

- Market Research: This activity focuses on market research to provide information for SPS to use in its decision-making process concerning energy efficiency and load management program design, planning, and delivery.
- Measurement and Verification: This activity is responsible for managing and coordinating the overall M&V Plan for SPS and working with the Commission's Independent Program Evaluator, ADM, to ensure compliance with the EUEA and the EE Rule. In addition, each direct savings program budget includes ADM's estimated budget that will be needed to conduct program-specific M&V.
- Planning & Administration: This function ensures compliance with all EUEA and EE Rule requirements. Specifically, this group is responsible for the coordination and preparation of the various New Mexico energy efficiency and load management regulatory filings. These activities include the preparation of testimony, the annual plans and reports, discovery responses, rulemaking comments, benefit-cost analyses for every program, and tracking and reporting of energy efficiency and load management expenditures and savings achievements. Additionally, any outside consultants and external legal service fees related to energy efficiency and load management regulatory activities are included in this budget.
- Product Development: This activity identifies, assesses, and develops new energy efficiency and load management programs, including engineering

support and technical assumptions, and also supports the modification of current programs.

Q. Has SPS proposed to terminate any programs from its Planning and Research Segment?

A. No.

Q. How does SPS allocate the Planning and Administration costs?

A. SPS does not directly allocate the Planning and Administration costs to specific programs. As first approved by the Commission in SPS's 2008 filing (Case No. 07-00376-UT),[12] and utilized and approved since, indirect costs such as Consumer Education or Market Research are separated from the individual program budgets. Allocating these costs directly would not be appropriate for the following reasons:

- Inaccuracy: Because these indirect costs do not directly benefit a program and are not associated with the direct operation of a program, it would be inappropriate to allocate these costs in a similar manner as, for example, allocating the cost of developing a new product to an unrelated existing product.

[12] Case No. 07-00376-UT, *In the Matter of Southwestern Public Service Company's Application for Approval of Electric Energy Efficiency and Load Management Programs and Program Cost Tariff Riders Pursuant to the New Mexico Public Utility Act and Efficient Use of Energy Act,* Final Order (Apr. 17, 2008).

- Irregularity: Because these indirect costs are not consistent in their accrual, direct allocation could result in significant year-to-year changes in the budgeting and reporting process that would inaccurately reflect when the benefits of these indirect programs are received.
- Management: Because of the irregularity of these indirect costs, direct allocation would require additional and unwarranted administrative efforts to account for these costs and would require a change in the SPS accounting process.

Q. Are the Planning and Research Segment costs incorporated into the UCT ratio?

A. Yes. Consistent with the Commission's approval in Case No. 07-00376-UT, and each successive annual plan filing (Case Nos. 08-00333-UT,[13] 09-00352-UT, 11-00400-UT, and 13-00286-UT), the Planning and Research Segment costs are placed into their own segment and therefore, impact the overall portfolio UCT ratio, but not the individual programs' UCT ratios.

---

[13] Case No. 08-00333-UT, *In the Matter of Southwestern Public Service Company's Application for Approval of its 2009 Energy Efficiency and Load Management Plan and Associated Programs and its Program Cost Tariff Riders,* Final Order Adopting Recommended Decision (Mar. 31, 2009).

Q. How was the Planning and Research Segment budget developed?

A. Each group within the Planning and Research Segment budgets for 2016 is based on past history of spending for internal labor and expenses, as well as estimates and bids received from outside consultants, vendors, and outside legal services.

Q. Is the 2016 Planning and Research Segment budget reasonable?

A. Yes. The total budget for the Planning and Research Segment for 2016 is $830,642 which is approximately seven percent of the total portfolio budget of $11.49 million. The costs included in this segment are necessary to deliver the programs needed to meet the EUEA goals. As a percentage of the overall budget, this is less than SPS's 2014 and 2015 program years.

Q. When the Planning and Research Segment costs are included, does the total portfolio remain cost-effective?

A. Yes. When these reasonable and necessary costs are included, SPS's overall portfolio remains cost-effective with a UCT ratio of 1.95 Accordingly, these budgeted expenses should be approved.

IV. COST-EFFECTIVENESS TEST ASSUMPTIONS AND CALCULATIONS

A. General Description

Q. What is the New Mexico cost-effectiveness standard for EE/LM programs?

A. The EUEA requires the use of the UCT to evaluate the cost-effectiveness of EE/LM programs. The EUEA defines the UCT as follows:

> A standard that is met if the monetary costs that are borne by the public utility and that are incurred to develop, acquire and operate energy efficiency or load management resources on a life-cycle basis are less than the avoided monetary costs associated with developing, acquiring and operating the associated supply-side resources. In developing this test for energy efficiency and load management programs directed to low-income customers, the commission shall either quantify or assign a reasonable value to reductions in working capital, reduced collection costs, lower bad-debt expense, improved customer service effectiveness and other appropriate factors as utility system economic benefits.[14]

The UCT measures the effectiveness of the program in terms of avoided revenue requirements that are realized when customers utilize energy more efficiently in comparison to utility costs for delivery of energy efficiency projects. As a result, the UCT has these sensitivities:

- an increase in rebates has a negative impact on the test;

[14] NMSA 1978, § 62-17-4 (C).

- an increase in other project costs has a negative impact on the test; and
- an increase in avoided revenue requirements has a positive impact on the test.

In addition, 17.7.2.8(J) NMAC also requires that the public utility demonstrate that its portfolio of programs or measures be cost-effective – meaning a UCT of greater than one.

Q. Did SPS perform a UCT for each proposed 2016 program?

A. Yes. Each of SPS's proposed programs meets the cost-effectiveness standard (*i.e.*, each proposed program has a UCT ratio of 1.0 or greater), with a total projected portfolio UCT ratio for 2016 of 1.95. In other words, for every $1.00 spent by SPS and participating customers to implement the programs and to upgrade to energy efficient technologies, all SPS customers save $1.95 in lifetime avoided supply-side costs. The detailed cost-effectiveness test results for each program, as well as a summary table, are located in Appendix A of the 2016 Plan.

Q. Please discuss the program cost-effectiveness levels in 2016 versus 2014.

A. In 2016, the cost to acquire savings has increased compared to previous plans. The cost has increased as SPS seeks to achieve deeper savings in its programs.

Q. Explain further why the cost to acquire savings has increased.

A. First, SPS's proposed savings exceed the levels of achievement indicated in SPS's 2013 Potential Study which was sponsored and discussed by Mr. Shawn M. White in Case No. 13-00286-UT. In an effort to achieve these savings in 2016, SPS needs to incur a higher cost to penetrate further into the market and seek to acquire additional program participants. As SPS penetrates further into the market, it is common for acquisition costs to increase because early adopters of energy efficiency are exhausted and it is more costly to educate and motivate the next tier of participants.

The increase in costs is addressed in Section III of my testimony, in the discussion of the higher promotional and incentive costs SPS is proposing in 2016. However, as also discussed in Section III of my testimony, SPS makes every effort to minimize the cost to acquire savings in its portfolio.

Q. How do the higher acquisition costs impact cost effectiveness?

A. The higher costs result in a lower UCT compared to previous plans. In particular, as the cost to acquire savings increases, but the savings per participant remains constant or decreases, the cost-effectiveness of the programs will decrease.

B. Utility Cost Test Calculations

Q. Please describe how SPS calculates the UCT ratio for each program.

A. The UCT ratio is calculated as the net present value ("NPV") of the supply-side benefits (also known as system benefits or cost to serve) (numerator) divided by the NPV of the utility costs (denominator).

Q. What does SPS mean by "supply-side benefits"?

A. Supply-side benefits are system benefits which accrue to all customers by reducing or alleviating the need to build (or purchase) new generation, transmission, and/or distribution to meet growing customer demand. While the participants in energy efficiency and load management programs will reap the additional benefit of a decrease in their electricity consumption, all customers will benefit from the system reductions.

Q. What are the supply-side benefits and how are they calculated for each energy efficiency and load management program?

A. SPS avoids generation capacity, marginal energy including carbon dioxide emission reductions, and transmission and distribution costs associated with reduced electricity use. Supply-side benefits are calculated using the DSM Option Risk Evaluator (DSMore) software program, a modeling tool developed by Integral Analytics Inc. and licensed to XES. DSMore accounts for the present year avoided revenue requirements, as well as future escalation rates. The software compares SPS's hourly system load costs to demand reduction profiles for energy efficiency and load management measures. Using this process, DSMore calculates the technology-specific NPV of avoided marginal energy, generation, transmission and distribution, and emissions expenditures.

Q. What costs are included in the utility costs (*i.e.*, the denominator) in the UCT calculation?

A. Utility costs consist of all the program-related expenses associated with internal administration, third-party administration, promotional costs, rebates paid to customers, incentives paid to vendors, and M&V costs. SPS costs are found in the UCT results of Appendix A of the 2016 Plan. The utility costs are also shown in the above-listed categories in Table 10 of the 2016 Plan. Rebates paid directly to customers make up about 34 percent of the total portfolio costs. Promotions, the category which captures SPS's efforts to inform, educate, and market energy efficiency to customers makes up approximately another 15 percent of the budget. Internal administration, third-party delivery, and M&V make up the remaining 52 percent of the costs.

Q. Are non-energy benefits included in the UCT?

A. No. Non-energy benefits ("NEBs") are not included as part of the calculation as these benefits do not accrue to the utility.

Q. What are the estimated monetary program costs incurred by the utility for each year of the expected useful life of the measures or programs?

A. SPS only incurs costs for the measures or programs in the first-year of the measure or program. In other words, the estimated program budgets, presented in Table WTC-1, are equal to the lifetime program costs for each program. As an example, if SPS pays a rebate to a commercial customer that installs high efficiency lighting, that rebate is paid in the first year of the estimated useful life. SPS will not make any additional rebate payments nor incur any future costs for the customer's installation of that high efficiency lighting.

Q. Continuing your example, do benefits for the installed measure continue to accrue over the lifetime of the measure or are they incurred only in the first year?

A. Benefits for the installed measure continue to accrue for the life of the measure. In Appendix A to Attachment WTC-1, SPS has provided both the lifetime system benefits as well as the lifetime program costs (incurred only in the first year) as these are the primary factors used to determine the cost-effectiveness of a program.

Q. Has SPS incorporated into its Low-Income Program any of the NEBs values, as defined in the UCT definition in the EUEA (Section 62-17-4.K)?

A. No. However, consistent with Section 17.7.2.9.B(4) NMAC, SPS has assumed a 20 percent value of reductions in working capital, reduced collection costs, lower bad-debt expense, improved customer service, and effectiveness as utility system economic benefits.

C. Program-Level Technical Assumptions

Q. Has SPS provided the technical assumptions associated with its proposed programs in its 2016 Plan?

A. Yes. Appendix B, "Electric Planning Assumptions," to the 2016 Plan includes SPS's Forecasted Planning Assumptions by program for 2016. These assumptions include the technical assumptions used to calculate savings. The detailed methodology and algorithms used to calculate the energy and demand savings are reviewed by the Commission's M&V evaluator.

Q. Are the technical assumption values reasonable?

A. Yes. SPS has compiled the assumptions and calculated the savings using the latest available information relevant to the SPS service territory or from Xcel Energy's other service areas when SPS-specific information is unavailable. In addition, the technical assumptions have been updated according to the Technical Reference Manual or based on recommendations made by ADM as a result of M&V conducted in prior program years (2008-2014) on SPS's EE/LM programs.

Q. Is SPS seeking approval of its technical assumptions?

A. No. The Commission's Independent Program Evaluator is responsible for reviewing and recommending, if necessary, any changes to the deemed savings and forecasted technical assumptions in conjunction with the M&V for each program year. Accordingly, SPS is not seeking Commission approval of these assumptions in this proceeding, as they will be reviewed and modified, on an after-the-fact basis, by the Independent Program Evaluator.

V. MEASUREMENT AND VERIFICATION

Q. What is M&V?

A. M&V refers to an analysis performed by an independent evaluator that estimates reductions of energy usage or peak demand and determines any actual reduction of energy usage or peak demand that directly results from the utility's implementation of particular energy efficiency measures or programs or of particular load management measures or programs (17.7.2.7.F NMAC). M&V is designed to provide accountability, risk management, and improvement to a utility's programs. In other words, M&V seeks to answer the following questions: (i) did the program deliver its estimated savings; (ii) how certain are these savings; and (iii) what can be done to improve future program performance?

Q. What are the requirements of the EUEA regarding M&V?

A. Section 62-17-8(B) of the EUEA requires public utilities to submit a comprehensive measurement, verification, and program evaluation report prepared by an Independent Program Evaluator at least every three years.

Q. What are the Commission's M&V requirements?

A. 17.7.2.15.A NMAC requires public utilities to annually submit a comprehensive measurement, verification, and program evaluation report prepared by an

Independent Program Evaluator. It is also required that each program must be independently evaluated at least once every three years. 17.7.2.15.B NMAC requires that an Independent Program Evaluator be selected by the Commission to verify energy and demand savings. 17.7.2.8.H(15) NMAC requires supporting documentation, underlying data, calculations, estimates and other items shall be presented in a manner that facilitates the preparation of an M&V report by an independent program evaluator, along with compilation and preparation of the public utility's reporting requirements, and that facilitates a simple comparison of measure or program estimated results to actual results, including the public utility's cost of capital and discount rate.

Q. Has SPS met the requirements of the EUEA and the EE Rule?

A. Yes. Attachment WTC-2, SPS's 2014 Annual Report, includes the independent evaluator's 2014 M&V, which is Appendix A of that attachment.

Q. Has the Commission selected an Independent Program Evaluator?

A. Yes. ADM was selected in 2009 by the Commission's Evaluation Committee and approved by the Commission as the Independent Program Evaluator. ADM's contract was renewed in 2013 to cover the 2013 through 2015 program years.

Q. What is the status of the selection of an Independent Program Evaluator for 2016?

A. Currently, there is no contract in place for 2016. Pursuant to 17.7.2.15.C(1) NMAC, the Staff of the Commission will undertake a competitive bid process to identify the next independent evaluator. Because there is no contract in place for the 2016 program year, SPS has received from the independent evaluator program-specific estimates of EM&V costs for the program year based upon SPS's proposed portfolio of programs.

Q. How are the results of M&V used?

A. In each Annual Report, SPS reports savings that have been modified according to the results of M&V – they may be higher, lower, or the same as what SPS initially calculated depending upon the findings of the Independent Program Evaluator. These modified savings are then used for compliance in reaching the EUEA goals.

Q. What are the projected 2016 M&V costs?

A. The total, 2016 M&V costs are forecasted to be $363,519 and are included in SPS's total program costs. This includes $187,655 in costs forecasted by the independent evaluator for program year 2016 and $175,864 in costs forecasted by

SPS. The independent evaluators costs are directly allocated to programs based upon the evaluation plan for 2016. However, SPS's M&V costs include costs directly allocated to programs as well as general costs included in the Planning and Administration section. I discussed these costs further in Section III(C) of my testimony.

Q. Are the 2016 M&V costs reasonable and necessary?

A. Yes. The total budget for the 2016 M&V activities represents 3.2 percent of the total portfolio budget, which is less than the percentage of either 2014 or 2015 M&V costs. This is also very reasonable considering that a common guideline for M&V is three to six percent of total portfolio costs. Consequently, these costs should be approved by the Commission.

VI. PUBLIC PARTICIPATION PROCESS AND COMPLIANCE WITH COMMISSION ORDERS

Q. Please describe SPS's public participation process for its 2016 Plan.

A. In accordance with 17.7.2.8.B NMAC, SPS invited the Commission's Utility Division Staff ("Staff"), the New Mexico Attorney General, and the New Mexico Energy, Minerals, and Natural Resources Department, as well as environmental group representatives, consumer advocates, and large customers to a public meeting to solicit non-binding recommendations on the design and implementation of the proposed 2016 Plan. SPS held its Public Participation Meeting on March 9, 2015 via web conference and gave an overview of its 2016 Plan, proposed programs, goals, and budgets. Participating attendees included representatives from Staff, Southwest Energy Efficiency Project, the Energy, Minerals, and Natural Resources Department, and Occidental Petroleum, LLC. Most of the questions and comments focused on the structure and implementation of SPS's energy efficiency programs. The comprehensive list of feedback can be found in Section I(A) of SPS's 2016 Plan.

Q. Please discuss SPS's reliance on CFLs as referenced by SPS witness Ruth M. Sakya and required by Decretal Paragraph M in the Commission's Final Order Adopting Recommended Decision in Case No. 08-00333-UT.

A. As Table WTC-2 shows, in 2014 CFLs contributed 17 percent of total spending and 39 percent of total energy savings to the SPS portfolio. As currently forecasted, SPS will significantly reduce its reliance on CFLs to achieve energy savings from 39 percent in the 2014 Plan to 15 percent in the 2016 Plan. This is in part due to SPS's increased focus on the promotion of LED bulbs in the Home Lighting program, which are forecasted to be approximately 19 percent of the portfolio.

Table WTC-2: SPS's Reliance on CFLs

	Spending as Percentage of Total Budget	Customer kWh as a Percentage of Total kWh
2014 Verified	17%	39%
2016 Forecasted	4%	15%

Q. Please discuss how SPS considered programs offered in other jurisdictions as referenced by Ms. Sakya and required by Decretal Paragraph O in the Commission's Final Order Adopting Recommended Decision in Case No. 08-00333-UT.

A. Attachment WTC-3 is a cross-reference of programs between the various jurisdictions in which Xcel Energy operates. Furthermore, as discussed throughout my testimony as well as in the 2016 Plan, SPS has leveraged the experience of other Xcel Energy utilities in other jurisdictions to offer, where cost-effective, time-tested programs in its New Mexico portfolio.

Q. Please discuss SPS's non-firm, wholesale sales made during economic interruptions as referenced by Ms. Sakya and required by Decretal Paragraph L in the Commission's Final Order Adopting Recommended Decision in Case No. 08-00333-UT.

A. Decretal Paragraph L in the Commission's Final Order Adopting Recommended Decision in Case No. 08-00333-UT requires SPS to maintain data on short-term, non-firm wholesale sales made during economic interruptions. SPS had four economic interruptions during 2013 and two economic interruptions during 2014.

However, because SPS had no participants in the ICO program in 2013 or 2014 no response was provided by customers in SPS's New Mexico territory.

Q. How has SPS addressed the requirement in Section 1.2(k) from the Stipulation agreement in Case No. 13-00286-UT?

A. Yes. This agreement obligated SPS to investigate ways to improve coordination with gas utilities. SPS has addressed this requirement by developing a process in conjunction with New Mexico Gas Company to share information when either utility is aware of a residential or commercial project that presents the opportunity for incremental electric or gas savings. This process is streamlined in the business segment by the use of the same third-party contractor between both utilities.

VII. INCENTIVE MECHANISM FOR PROGRAM YEAR 2016

Q. What incentive mechanism is SPS proposing for PY 2016?

A. The proposed mechanism for 2016 is as follows:

$804,237 x Spending Factor ("SF") x Performance-Based Incentive Factor ("PBIF") - Low-Income Adjustment ("LIA")

The $804,237 maximum incentive is derived by multiplying the 3% funding level of $11,489,101 by 7 percent. This 7 percent value is the same value used in SPS's 2015 incentive mechanism.[15] "Spending Factor" is defined as SPS's actual EE/LM program spending in 2016 divided by the Commission-approved 3% funding level of $11,489,101. "Low-Income Adjustment" is $0, unless SPS spends less than 5 percent of its 2016 program year budget on low-income programs. If SPS spends less than 5 percent, then a proportionate offset is implemented as follows:

- LIA = $0, unless SPS spends less than 5% of its Commission approved estimate of the 2016 3% percent funding level of $11,489,101(*i.e.*, $574,455) or any other 2016 budget as approved by the Commission, on low-income programs, in which case, the LIA is calculated as:

[15] SPS's 2014 percentage was 6.31 which is 91 percent of 7 percent. The 7 percent was adjusted to reflect the forecasted achievement of 91 percent of the 2014 statuary goal of 5 percent of 2005 sales.

- Low-Income Spending Shortfall (“LISS”) (x) 7% (x) 2 where:
- LISS = $574,455 minus actual SPS spending in 2016 directed specifically to EE/LM programs for low-income customers.

“Performance-Based Incentive Factor” is defined as the independently evaluated or deemed annual net MWh savings for 2016 divided by the annual net customer savings goal of 29,470 MWh.

Q. What is the maximum incentive that can be earned and is it subject to reconciliation?

A. Under the 2016 incentive mechanism, SPS cannot recover more than $804,237, but must spend 100 percent of its 3% funding level, must direct 5 percent of this available funding to low-income programs, and must achieve its 2016 annual net customer savings goal to earn this maximum amount.

As described by SPS witness Jeffrey L. Comer, the 2016 incentive will be reconciled to ensure it reflects actual EE/LM program costs and spending, as well as any proportionate offset due to the level of low-income program spending.

Q. What witness explains how SPS's proposed 2016 incentive meets the criteria under the EUEA and EE Rule for approval?

A. Ms. Sakya addresses these points as a part of her Direct Testimony.

Q. Did the Commission approve an incentive mechanism in SPS's most recent energy efficiency proceeding?

A. Yes. In Case No. 13-00286-UT, the Commission approved incentive mechanisms for program years 2013 – 2015.

Q. Is SPS's proposal for an incentive mechanism for the 2016 program year similar to what the Commission approved previously in Case No. 13-00286-UT?

A. Yes. SPS's proposed incentive is again based upon a percentage of spend, adjusted for utility specific performance factors including spending, achievement, and low-income funding. However, SPS is proposing to reduce the punitive modifier it receives if it underspends its low-income funding requirement from 5 percent to 2 percent.

Q. Why is there an adjustment for low-income funding?

A. SPS did not meet its low-income funding requirement in 2013; therefore, the signatories to the Stipulation in Case No. 13-00286 agreed to a punitive modifier that reduced SPS's incentive for any underperformance of the programs approved in that case. The 2014 modifier included a multiplier of 2, while the 2015 multiplier included a multiplier of 5. These multipliers reflected the fact that SPS had proposed to make changes to its 2014 programs to help ensure compliance with this requirement and that these changes should be in full effect in 2015.

Q. Why is SPS proposing to reduce the Low-Income Adjustment modifier from 5 in 2015 to 2 in 2016?

A. SPS is proposing to reduce the multiplier in 2016 because unlike 2013, the changes made in 2014 resulted in significant program improvement and SPS exceeded the low-income funding requirement in 2014. Given the improvement, SPS believes that it is fair to reduce the multiplier, but it is still in the public interest to maintain a multiplier as a penalty if SPS cannot sustain the improvement.

Q. In what other ways does the proposed incentive encourage SPS to act in the best interest of customers and meet its requirements under the EUEA?

A. In addition to the Low-Income funding requirement, the incentive mechanism also incentivizes SPS to meet its requirement to spend the required 3% funding level and to meet or exceed its forecasted energy savings. If SPS does not meet either of these requirements, its incentive is reduced. This approach aligns SPS's financial concerns with the public interest.

Q. Did SPS's programs perform satisfactorily for 2014 and so far in 2015?

A. Yes. As I noted above, the 2014 Annual Report demonstrates that SPS met its 2014 performance and achievements as set forth in the EUEA. For 2014, SPS exceeded its energy savings by approximately 1 GWh and achieved a UCT ratio of 2.45 versus a forecast of 2.6. For 2015, SPS is on target to meet the 5 percent of 2005 sales reduction for which SPS received a variance from in its 2014 Plan in Case No. 13-00286-UT. Finally, for reasons discussed above, the 2016 portfolio of EE/LM programs is reasonable and expected to meet the requirements under the EUEA while achieving a UCT ratio of 1.95.

VIII. CONCLUSION

Q. Were Attachments WTC-1 and WTC-3 prepared by you or under your direct supervision and control?

A. Yes.

Q. Is Attachment WTC-2 a true and correct copy of the 2014 SPS Annual Report?

A. Yes.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

VERIFICATION

STATE OF COLORADO)
) ss.
COUNTY OF DENVER)

WILLIAM T. CONRAD, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachments and am familiar with their contents. Based upon my personal knowledge, the facts stated in the testimony are true. In addition, in my judgment and based upon my professional experience, the opinions and conclusions stated in the testimony are true, valid, and accurate.

____
WILLIAM T. CONRAD

SUBSCRIBED AND SWORN TO before me this ____ day of April, 2015.

____
Notary Public for the State of Colorado
My Commission Expires:_______________

Southwestern Public Service Company

2016 Energy Efficiency and Load Management Plan

Case No. 15-______-UT

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

May 1, 2015

Table of Contents

Glossary of Acronyms and Defined Terms

Acronym/Defined Term	Meaning
2016 Plan or Plan	SPS's 2016 Energy Efficiency and Load Management Plan
A/C	Air Conditioner
ADM	ADM Associates, Inc., the third-party selected as the Independent Program Evaluator for the measurement and verification of all New Mexico utility energy efficiency and load management programs
C&I	Commercial and Industrial
CFL	Compact Fluorescent Light
Commission	New Mexico Public Regulation Commission
Customer kW; Customer kWh or GWh	Demand and energy savings measured at the customer meter
Deemed Savings	Expected energy and demand savings attributed to well-known or commercially available energy efficiency and load management devices or measures based on standard engineering calculations, ratings, simulation models or field measurement studies, periodically adjusted as appropriate for New Mexico specific data, including building and household characteristics, and climate conditions in pertinent region(s) within the state
DSM	Demand-Side Management
ECM	Electronically Commutated Motor
EE	Energy Efficiency
EE Rider	Energy Efficiency Rider
EES	Energy Efficiency Specialist
EESP or contractors	Energy Efficiency Service Provider

Acronym/Defined Term	Meaning
EMNRD	New Mexico State Energy, Minerals, and Natural Resources Department
EUEA	New Mexico Efficient Use of Energy Act, as amended by Senate Bill 418 (2007), House Bill 305 (2008) and House Bill 267 (2013), NMSA 1978, §§62-17-1 through 62-17-11
Generator kW; Generator kWh	Demand and energy savings, respectively, measured at the generator, corrected for transmission line losses and free-rider/drivership
GWh	Gigawatt-hour, a measure of energy savings
Home Use Study	Study of appliance saturations performed periodically by Wiese Research Associates
HVAC	Heating, Ventilation, and Air Conditioning
Independent Program Evaluator or Evaluator	Person or group selected by a Commission-approved Evaluation Committee for the purpose of Measurement and Verification of the installation of cost-effective energy efficiency or load management projects
ICO	Interruptible Credit Option
kW	Kilowatt, a measure of demand
kWh	Kilowatt-hour, a measure of energy
Large Customer	A utility customer at a single, contiguous field, location or facility, regardless of the number of meters at that field, location or facility, with electricity consumption greater than seven thousand megawatt-hours per year
LED	Light Emitting Diode
LM	Load Management
M&V	Measurement and Verification

Acronym/Defined Term	Meaning
Measure	The components of a public utility program, and includes material, device, technology, educational program, practice, or facility alteration.
MW	Megawatt, a measure of demand
MWh	Megawatt-hour, a measure of energy savings
NEB	Non-Energy Benefits
NEMA	National Electrical Manufacturers Association, an organization that rates motor efficiency
NTG	Net-to-Gross
Portfolio	All programs which will continue to be offered, and those proposed to be offered, by the public utility
Program	One or more measures or may also be a bundled group of two or more products provided as part of a single offering to consumers
Rule	Commission's Energy Efficiency Rule, 17.7.2 NMAC
Self-Direct Administrator	Person or group selected by SPS to administer and manage cost-effective energy efficiency projects under the Large Customer Self-Direct program.
SOICO	Summer Only Interruptible Credit Option
SPS	Southwestern Public Service Company, a New Mexico corporation
Staff	Commission's Utility Division Staff
SWEEP	Southwest Energy Efficiency Project
UCT	Utility Cost Test
VFD	Variable Frequency Drive

Acronym/Defined Term	Meaning
VLRPO	Voluntary Load Reduction Purchase Option
VTA	Variation in Timing of Adoption
WACC	Weighted Average Cost of Capital
WCCD	Western Cooling Control Device
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

Executive Summary

In accordance with the Efficient Use of Energy Act, as amended by Senate Bill 418 (2007), and House Bill 305 (2008) (NMSA 1978, §62-17-1 through 62-17-11, "EUEA"), and House Bill 267 (2013) and the New Mexico Public Regulation Commission's ("Commission") 2014 version of the Energy Efficiency Rule (17.7.2 NMAC, "Rule"), Southwestern Public Service Company, a New Mexico corporation ("SPS") and electric utility operating company that is a wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"), respectfully submits for Commission review and approval SPS's 2016 Energy Efficiency and Load Management Plan ("2016 Plan" or "Plan").

The EUEA requires public utilities to obtain cost-effective and achievable energy efficiency and load management and a reduction of no less than five percent of 2005 retail sales by 2014 and eight percent by 2020. In 2005, SPS's retail sales were 3,750,469 megawatt-hours ("MWh"). Therefore, the EUEA requirements equate to targets of 187.5 gigawatt-hours ("GWh") of energy efficiency savings at the customer meter by 2014 and 300 GWh by 2020 at the customer meter.

The 2016 Plan provides SPS's proposed programs, budgets, and goals for its energy efficiency and load management programs for program year 2016. SPS proposes a portfolio of electric energy efficiency and load management direct impact programs in two main customer segments: Residential (including Low-Income) and Business (including Large Customer). In addition, the 2016 Plan includes a Planning & Research Segment, which provides support functions for the direct impact programs.

SPS proposes the following programs/products for 2016, designated by "EE" for energy efficiency and "LM" for load management:

Residential Segment

- Energy Feedback Pilot (EE);
- Residential Cooling (EE);
- Home Energy Services (includes low-income) (EE);
- Home Lighting & Recycling (EE);
- Refrigerator Recycling (EE);
- School Education Kits (EE); and
- Residential Saver's Switch (LM).

Business Segment

- Business Comprehensive (EE);
- Interruptible Credit Option ("ICO") (LM); and
- Saver's Switch for Business (LM);

Planning and Research Segment

- Consumer Education;
- Market Research;

- Measurement & Verification ("M&V");
- Planning & Administration; and
- Product Development.

For 2016, SPS is proposing an energy efficiency and load management budget of $11,489,101 and goals of 7,159 net generator kilowatts ("kW") and 32,927,775 first-year net generator kilowatt-hours ("kWh"), distributed among the programs and customer segments as shown in Table 1 below. The portfolio-level Utility Cost Test ("UCT") ratio is forecasted to be 1.95.

Table 1: SPS's 2016 Plan Budgets & Goals

2016	Electric Participants	Electric Budget	Net Customer kW	Net Customer kWh	Net Generator kW	Net Generator kWh	Utility Cost Test Ratio
Residential Segment							
Home Lighting	148,500	$ 2,514,815	1,298	9,667,432	1,549	10,960,807	2.40
Refrigerator Recycling	450	$ 89,138	18	283,214	21	321,105	1.08
School Education Kits	2,500	$ 158,186	22	824,100	26	934,353	1.97
Residential Energy Feedback	16,714	$ 184,890	379	3,151,742	453	3,573,404	1.06
Home Energy Services	1,850	$ 2,561,997	618	5,658,676	738	6,415,732	1.95
Residential Cooling	192	$ 230,448	74	231,102	88	262,020	1.02
Residential Savers Switch	5,352	$ 638,260	741	7,148	884	8,104	1.63
Residential Segment Total	175557	$ 6,377,735	3,150	19,823,413	3,758	22,475,525	2.05
Business Segment							
Business Comprehensive	134	$ 3,662,551	1,386	9,633,404	1,547	10,437,057	2.10
ICO	2	$ 49,069	789	7,000	881	7,584	6.00
Business Savers Switch	561	$ 569,104	871	7,023	973	7,609	2.12
Business Segment Total	697	$ 4,280,724	3,047	9,647,427	3,400	10,452,250	2.15
Indirect Segment							
Consumer Education		$ 193,146					
Market Research		$ 42,650					
Measurement & Verification		$ 28,808					
Planning & Administration		$ 318,656					
Product Development		$ 247,381					
Indirect Segment Total		$ 830,642					
Portfolio Total	176,254	$ 11,489,101	6,196	29,470,840	7,159	32,927,775	1.95

I. Portfolio Characteristics

SPS's energy savings obligations under the EUEA and the Rule are shown in the following table as a percent of 2005 sales, along with SPS's verified achievements (through 2014), forecasted savings (2015), and remaining gap to achieve the cumulative 2020 goal.

Table 2: SPS Progress to EUEA Goal as a Percent of 2005 Sales

Year	Net Generator Achievement or Forecast	Net Customer GWh Contribution	% of 2005 Retail Sales
2008	3.767	3.355	0.09%
2009	15.758	14.136	0.47%
2010	26.019	23.231	1.09%
2011	39.284	35.642	2.04%
2012	37.123	33.336	2.92%
2013	41.916	37.674	3.93%
2014	34.133	30.493	4.74%
2015	33.186	30.564	5.49%
2016	28.736	26.466	6.17%
2017	28.736	26.466	6.88%
2018	28.736	26.466	7.58%
2019	28.736	26.466	7.80%
2020	28.736	26.466	8.00%
Total to 2020 Milestone	377.755	340.759	8.00%

A. Public Participation

17.7.2.8.B NMAC requires utilities to solicit public input from the Commission's Utility Division Staff ("Staff"), the New Mexico Attorney General, the New Mexico State Energy, Minerals, and Natural Resources Department ("EMNRD"), and other interested parties on the design and implementation of its proposed programs prior to filing its Energy Efficiency and Load Management Plan. In compliance with this requirement, SPS invited representatives from Staff, the New Mexico Attorney General's office, Southwest Energy Efficiency Project ("SWEEP"), Coalition for Clean Affordable Energy, EMNRD, and Occidental Petroleum, LLC and held its Public Participation

Meeting on March 9, 2015 via web conference. Representatives of SWEEP, Staff, EMNRD, and Occidental Petroleum participated in the meeting. SPS representatives gave an overview of the 2016 Plan, the proposed tentative programs and products, goals, and budgets. Table 3, below, presents a summary of the feedback SPS received from the following participants and SPS's responses:

Table 3: SPS Response to Public Meeting Input

Category	Question/Suggestion	SPS Response
	SWEEP	
Program Implementation	Does Mortgage Finance Authority work only on the low-income side?	Yes.
Program Implementation	With 2015 being the final year of the Energy feedback Pilot, what are the future plans for the product?	Currently, SPS is considering including a full program in its 2016 Plan; however, it is undertaking a customer survey to determine satisfaction with the program.
Program Cost-Effectiveness	For programs that are currently forecasted as not cost-effective, what efforts are being taken to increase the cost-effectiveness?	Prior to filing its 2016 Plan, SPS anticipates additional rounds of cost-effectiveness testing that will incorporate recommended changes from M&V studies, changes to program budgets, and other modifications.
Program Implementation	Is Evaporative Pre-Cooling for business customers included as a measure?	No. SPS does not believe the trade is supportive of such a measure in New Mexico and our experience in Colorado indicates customer preference against this cooling option due to maintenance issues.
Rules Implementation	Can a customer receive a rebate for fuel switching?	No.
Rules Implementation	Is SPS considering a variance to request a multi-year plan?	Not at this time.

B. Broad Participation of all Classes

SPS recognizes that its customers represent a large variety of end-uses including, but not limited to: residential; irrigation; agricultural processing; oil well pumping; grain elevators; industrial; gas pipeline compression; federal installations; municipal street, guard, and flood lighting; public and parochial schools; and water pumping customers. For the purposes of this 2016 Plan, all end-uses have been divided into two customer segments: Residential and Business. Household and low-income customers fall into the Residential Segment. Commercial, agricultural, municipal, school, and industrial customers fall into the Business Segment. SPS has developed a portfolio that is well-balanced and designed to provide all customers the ability to participate. For business customers, SPS has a Custom product within the Business Comprehensive program that provides rebates for cost-effective energy efficiency measures that have not been included in a prescriptive product, ensuring that all business customers may participate in a program.

C. Estimated Energy and Demand Savings

SPS manages its energy efficiency and load management programs as cost-effectively as possible and maximizes its energy and demand savings at a reasonable cost. The 2016 estimated energy and demand savings of the individual programs are shown in Table 1 (above). SPS's proposed goals assume that all programs will operate for a full 12 months.

D. Ease of Program Deployment

SPS continues to leverage its large institutional infrastructure to bring its energy efficiency programs to the market. Specifically, through Xcel Energy Services ("XES"), SPS has internal capabilities in product development, program management, rebate processing, and regulatory administration, which it can rely on to develop, implement, and administer the energy efficiency and load management programs. SPS intends to administer the Business Comprehensive program in conjunction with a third-party contractor. The Business Comprehensive program includes: Computer Efficiency, Cooling Efficiency, Custom Efficiency, Large Customer Self-Direct, Lighting Efficiency and Small Business Lighting, Building Tune-Up, and Motor & Drive Efficiency. The Business segment also includes the ICO and Business Saver's Switch programs, which are administered internally.

Other programs, including Energy Feedback, Home Energy Services (including low-income), Home Lighting & Recycling, Refrigerator Recycling, and School Education Kits will be partially or completely administered by third-party providers. The portion of the Computer Efficiency program that provides incentives to manufacturers to design, install, and deliver efficient computers to business customers is administered by a third party as well.

E. Product Development Process

For over 20 years, XES has gained significant expertise in the design and development of energy efficiency and load management programs. XES and SPS use a comprehensive product development process to identify, analyze, prioritize, and select the programs to include in its energy efficiency and load management portfolio. The product development process utilizes traditional stage/gate methods in order to foster sound ideas that meet customer needs and company goals. The process begins by analyzing service territory characteristics (*e.g.*, number and types of customers, climate, and market potential) to develop a list of relevant programs that Xcel Energy's operating companies have successfully operated in other jurisdictions. The specific stages that the product development process then follows are: Opportunity Identification, Framing, Concept Evaluation, Development, Test, and Launch. Ideas are reviewed by management at the transition points between each stage, which allows for proper culling of less effective ideas early in the process before significant work is done. Descriptions of each stage are provided below.

<u>Opportunity Identification</u> - The objectives of this stage are to compile ideas for new programs/products from those who are closest to the customers, describe the program concept, and to filter the most viable ideas that will progress to the Framing Stage. This stage begins by asking: *"What idea do you have that will solve a customer concern?"* This stage solicits ideas from several sources and provides a brief explanation of the concept in the form of an Idea Napkin. To progress to Framing, new ideas must pass a prioritization screening process so that only the most promising ideas are worked on in the Framing Stage.

<u>Framing</u> - The objectives of this stage are to evaluate the market opportunity of new program/product ideas. This stage begins by asking: "*What is the opportunity for this idea?"* The ultimate deliverable of this stage will be a Framing Document, which is the due diligence needed to develop the program/product case. It will also define project boundaries and determine strategic fit from a business, technical, and market perspective. The primary gate decision here is, *"Does this concept merit spending more resources?"*

<u>Design</u> - Once it has been determined that a new concept is a viable opportunity upon which to spend more resources, the program/product idea moves to the Design Stage. The objectives of this stage are to refine and validate assumptions made in the Framing Stage, and to more clearly define the program/product and opportunity. The process to obtain any legal approvals or meet any regulations begins here. The deliverables of this stage are high-level requirements, a Product Case 1.0, and a high-level project plan. The primary gate decision is, "*Should we commit the resources/dollars to build this measure, product, or program?"*

<u>Development</u> - Once the program/product receives concept approval, the process moves to the Development Stage. All high-level requirements are broken down into detailed requirements, and the project plan is refined in order to accomplish physical development of the product and systems. Preliminary launch planning begins in this stage. The

deliverable from this stage is a testable product. The primary gate decision is, "*Is the measure, product, or program ready for test (if needed) or moved to launch?*"

Test - Once the measure, product, or program has passed the Development Stage, it is tested against user requirements and usage scenarios to verify desired performance. Operational processes are also tested for flow-through. Testing assesses the readiness for full deployment. Testing could take various forms such as laboratory testing or field trial (pilot testing). Any needed rework of the product before deployment is done in this stage. The deliverables of this stage are: end-to-end validation of test results, operational and product/program assessments for full deployment, and the complete marketing plan to bring the product/program to launch. The primary gate decision is, *"Are we ready to proceed with launch, or go back to design?"*

Launch - Upon successful testing, the process moves to the Launch Stage. The objectives of this phase are to stabilize all processes, transition the new product/program into a life cycle, and execute launching the product/program. The primary gate decision is, *"Is everything ready from beginning to end that will enable this product/program to be successful?"*

F. Risk of Technologies and Methods

As discussed above, SPS's affiliated operating companies have extensive experience designing, implementing, and administering energy efficiency and load management programs in a variety of jurisdictions. The Plan benefits from those years of experience and expertise and allows SPS to have greater confidence in its program proposals. The proposed programs have been offered successfully either in New Mexico or in other jurisdictions. The third-party partnerships are with reputable, long-standing organizations. Therefore, SPS does not perceive a great risk with the technologies or methods it has chosen. However, the New Mexico service area is a significantly different market than other jurisdictions where the Company offers demand-side management ("DSM") programs. The SPS jurisdiction has much lower population density and a more homogenous business sector with the largest local industries: oil and gas production, food and beverage establishments, and agriculture. In other jurisdictions, manufacturing, commercial real estate, education, and retail are more prevalent and more likely to participate. For its energy efficiency and load management programs, SPS is mindful of the challenges associated with its market on customer participation.

G. Under Review, Rejected, and Future Programs

SPS draws on the historical knowledge it has developed over the past seven years operating Energy Efficiency and Load Management programs in New Mexico. In addition, as part of the development process for the 2016 Plan, SPS referenced the comments from the Public Participation Meeting on March 9, 2015 (for the 2016 Plan), June 27, 2013 (for the 2014 Plan), and the Stipulation Agreement to the 2014 Plan for ideas on new measures, including midstream business lighting incentives and additional measures for the oil and gas industry, that would be added to enhance programs in the

2016 Plan. The new programs/products that were developed for the 2016 Plan are summarized in Section III of the Plan. The following programs/products were reviewed in the Product Development process, but are either still under review or excluded from the Plan.

1. Programs/Measures Under Review

a. Western Cooling Control Device ("WCCD")

SPS is currently investigating the market opportunity to add a prescriptive measure to encourage the installation of the WCCD on residential AC units. This device reduces energy demand by eliminating the dehumidification portion of an air conditioners operation. In dry climates, this dehumidification is unnecessary. Market response to this measure has been slow in our Colorado service territory.

b. Oil Field Measures

SPS continues to look for possible prescriptive measures for this market segment. One avenue for this research is to review Custom projects for repeatable measures. SPS will continue to pursue Custom projects with which to gain more insight into this technology.

2. Programs/Measures Rejected

None.

3. Future Programs

SPS believes its proposed 2016 Plan provides sufficient program opportunities to cover the most common electric end-uses operated in households and businesses. As new technologies become available, the Product Development team will evaluate them for inclusion in future programs. Furthermore, any party interested in submitting a new measure to SPS for consideration can do so at http://www.xcelenergy.com/productideas.

H. Goal Setting

SPS considered the following factors while developing its energy efficiency and load management program goals and budgets for the 2016 Plan:

- legislated goals;
- legislated budget parameters;
- historical and expected participation levels;
- settlement requirements;
- incremental cost of energy efficient equipment;
- results of market potential study;
- recent Commission decisions; and
- cost-effectiveness.

I. General Marketing

SPS proposes to market to both the residential and business customer segments based on the number of customers, relative size of each customer, and potential for conservation at the customer site. SPS uses a more personal sales approach for large commercial and industrial ("C&I") customers because they generally have larger and more complex energy efficiency and load management opportunities. Small business customers may work with XES's Business Solutions Center to learn more about program offerings. In contrast, because energy efficiency potential for individual residential customers is relatively small and costs per participant need to be strictly controlled, SPS relies most heavily on mass-market advertising and promotion for this segment as well as trade partners that have been trained to utilize the programs.

In addition to formal rebate and incentive programs, SPS maintains a large database of energy savings information on its website (xcelenergy.com). All currently rebated measures, as well as rebate amounts, can be found on the website. Customers and the general public are able to access information on the latest technologies and practices available for saving energy. Residential customers can access information on low/no-cost ways to save energy, performing an energy assessment, and calculating appliance energy consumption. Business customers can keep up-to-date on new technologies and access one of several energy advisor or energy assessment tools.

The 2016 proposed programs are designed to accommodate diverse customer lifestyles and provide convenient participation and information to assist customers in making wise energy choices. In addition to its direct impact program portfolio, SPS plans to provide consumer education, as well as conduct market research, product development, and planning and administration to support these programs. More detailed marketing approaches are available in the program description sections of the Plan.

J. Utility Cost Test and Avoided Costs

17.7.2.8.J NMAC requires that utility's portfolio of energy efficiency and load management programs be cost-effective, and Section 62-17-4(C) of the EUEA states the Utility Cost Test shall be used to determine cost-effectiveness. Programs are cost-effective if they achieve positive net benefits in the UCT (*i.e.*, the UCT is greater than 1.0). All of the programs proposed by SPS in the 2016 Plan are cost-effective (*i.e.*, achieve positive UCT net benefits) at the estimated budget and participation levels.

Individual program-level UCT results are provided in Table 1. The following sections describe the assumptions SPS has made in order to perform the cost-effectiveness and energy and demand savings estimates.

1. Avoided Costs

In order to determine the cost-effectiveness of its programs, SPS must first calculate the avoided generation, transmission, distribution, and marginal energy costs associated with the energy efficiency and load management savings.

a. Generation

Avoided generation represents the cost of supply-side generation resources displaced by energy efficiency and load management programs. The avoided generation values used in the 2016 Plan were derived by XES's Resource Planning group. SPS used a portfolio approach considering future resource needs and forecasted generation additions to the SPS system consistent with the final order in Case No. 07-00376-UT.[1] Resources were selected that most closely met resource needs based on an overall least-cost approach that balanced actual resource cost and the corresponding cost of energy. The analysis covered the entire 20-year planning period of this Plan. Table 4 below provides the annual values of avoided generation costs from 2016 to 2035.

Table 4: Estimated Annual Avoided Generation Capacity Costs for Energy Efficiency and Load Management Programs

Year	Energy Efficiency Generation Capacity ($/kW-year)	Load Management Generation Capacity ($/kW-year)
2016	$121.74	$92.38
2017	$123.51	$93.77
2018	$125.31	$95.19
2019	$127.13	$96.62
2020	$128.99	$98.08
2021	$130.88	$99.56
2022	$132.80	$101.07
2023	$134.76	$102.60
2024	$136.74	$104.16
2025	$138.76	$105.75
2026	$140.81	$107.36
2027	$142.90	$109.00
2028	$145.02	$110.66
2029	$147.18	$112.35
2030	$149.37	$114.07
2031	$151.60	$115.82
2032	$153.86	$117.60
2033	$156.17	$119.41
2034	$158.51	$121.25
2035	$160.89	$123.12

[1] Case No. 07-00376-UT; *In the Matter of Southwestern Public Service Company's Application for Approval of Electric Energy Efficiency and Load Management Programs and Program Cost Tariff Rider Pursuant to the New Mexico Public Utility Act and the Efficient Use of Energy Act;* Final Order (Apr. 17, 2008).

b. Transmission and Distribution

Avoided transmission and distribution refers to the costs avoided by saving electricity rather than having to extend or improve the existing transmission and distribution system to meet increased demand. The values in the table below were provided by XES Transmission and Resource Planning groups and represent the estimated annualized cost of transmission interconnection and delivery of the proposed supply-side generation resources.

Table 5: Estimated Avoided Transmission and Distribution Costs

Year	Transmission and Distribution Capacity ($/kW-year)
2016	$ 5.37
2017	$ 5.45
2018	$ 5.55
2019	$ 5.64
2020	$ 5.73
2021	$ 5.83
2022	$ 5.92
2023	$ 6.02
2024	$ 6.12
2025	$ 6.22
2026	$ 6.33
2027	$ 6.43
2028	$ 6.54
2029	$ 6.65
2030	$ 6.76
2031	$ 6.87
2032	$ 6.99
2033	$ 7.10
2034	$ 7.22
2035	$ 7.34

c. Marginal Energy

The hourly marginal energy costs represent the incremental fuel cost from owned and purchased power generation or the incremental cost of short-term market purchases, whichever are lower, after meeting SPS's load requirements. The hourly marginal costs are representative of the costs avoided by saving energy rather than generating or purchasing it. For the 2016 Plan, these costs were developed by XES's Resource Planning group. The marginal energy cost is representative of SPS generation resources, SPS contractual assets, future-planned asset additions, and electric markets. Two scenarios of marginal energy costs were run — a baseline version assuming that carbon emissions costs are not internalized by SPS, and a second scenario using the mid-range carbon emission costs ordered in Case No. 06-00448-UT (Notice of Inquiry into Adoption of Stage Standardized Carbon Emission Cost). Table 6 below provides annual average values for the marginal energy baseline and the incremental emissions costs. The sum of these two costs equals the total marginal cost of energy when carbon dioxide costs are internalized.

Table 6: Estimated Annual Avoided Marginal Energy Costs

Year	Marginal Energy Annual Average without Emissions ($/kWh)	Avoided Emission Annual Average ($/kWh)
2016	$0.0265	$0.0000
2017	$0.0302	$0.0000
2018	$0.0324	$0.0000
2019	$0.0358	$0.0016
2020	$0.0403	$0.0047
2021	$0.0410	$0.0044
2022	$0.0424	$0.0038
2023	$0.0409	$0.0040
2024	$0.0406	$0.0032
2025	$0.0399	$0.0024
2026	$0.0410	$0.0034
2027	$0.0423	$0.0035
2028	$0.0441	$0.0036
2029	$0.0460	$0.0028
2030	$0.0447	$0.0019
2031	$0.0460	$0.0022
2032	$0.0486	$0.0022
2033	$0.0498	$0.0022
2034	$0.0509	$0.0022
2035	$0.0521	$0.0022

2. Discount Rate/Cost of Capital

SPS used the after-tax weighted average cost of capital ("WACC") provided by XES's Finance department for the discount rate in its cost-effectiveness analysis. This rate was derived by applying the current tax rate to the before-tax, long-term debt WACC rate and adding it to the common equity WACC rate. SPS utilized the rate of return and capital structure as filed in Case No. 12-00350-UT[2], SPS's most recently approved rate case filing. The following table details the calculation of the resulting 7.11 percent after-tax WACC:

Table 7: After-Tax Weighted Average Cost of Capital

Component	Portion of Capital Structure	Allowed Return	Before-Tax Weighted Average Cost of Capital	Tax Rate	After-Tax Weighted Average Cost of Capital
Calculation Methodology	(A)	(B)	(C) = (A) * (B)	(D)	(E) = (C) * (1-(D))
Long-Term Debt	46.11%	6.27%	2.89%	39.75%	1.74%
Common Equity	53.89%	9.96%	5.37%		5.37%
Total	100.00%		8.26%		7.11%

3. Net-to-Gross

Net-to-Gross ("NTG") refers to the percent of customers who purchase energy efficient equipment or provide load control who would not have done so without the existence of the utility's energy efficiency and load management programs. NTG is used to determine the actual amount of energy and demand saved that can be attributed to the influence of SPS's energy efficiency and load management programs. The NTG ratio does not normally reflect the percent of customers who install the efficiency measure; instead, the "Installation Rate" is estimated through the measurement and verification process.

The following table provides the program-level NTG ratios as calculated by ADM in its 2014 M&V Report. SPS will utilize these NTG in the calculation of energy savings until updated values become available. Addition details on NTG factors, including product, channel, or measure level NTG ratios can be found in Appendix B: Planning Assumptions, of the 2016 Plan or in the 2014 M&V Report included as Appendix A to SPS's 2014 Annual Report.[3]

---

[2] Case No. 12-00350-UT; *In the Matter of Southwestern Public Service Company's Application for Revision of its Retail Rates Under Advice Notice No. 245;* Final Order Partially Adopting Recommended Decision (Mar. 26, 2014).

[3] Due to the timing of the 2014 M&V report and SPS's finalization of the 2016 Plan, NTG factors may differ between the M&V report and the Planning Assumptions. These variances will be updated prior to the beginning of the 2016 program year.

Table 8: Program Net-to-Gross Factors

Program	*Verified NTGR*
Home Energy Services (Res & LI)	93.0%
Home Lighting	81.5%
Business Comprehensive	88.8%
Energy Feedback Pilot	100.0%
Evaporative Cooling	66.8%
Refrigerator Recycling	100.0%
School Education Kits	67.8%
Residential Saver's Switch	100.0%
Business Saver's Switch	100.0%

4. Transmission Loss Factors

The Transmission Loss Factor accounts for the energy lost in the form of heat due to resistance while electricity is being transmitted from the generator to the customer. This value becomes important because energy and demand savings are typically measured at the customer meter and must be converted into generator savings to understand their impact on resource planning. SPS uses a weighted average loss factor of 7.7 percent for the annual energy saved, and a factor of 10.4 percent at the time of system peak for the annual capacity savings for all business programs. For residential programs, these factors are 11.8 percent for the annual energy saved, and 16.2 percent for the annual capacity savings. These factors are consistent with those used in SPS's most recently approved base rate case (Case No. 12-00350-UT).

5. Non-Energy Benefits

Non-energy benefits ("NEBs") are those savings to the customer or utility that result from participation in an energy efficiency or load management program but that are not directly related to the consumption of fuel served by SPS (electricity). Such NEBs may include savings from reduced outages, arrearages, savings, or costs related to the change in consumption of fuel not served by SPS (*e.g.*, natural gas, propane, wood, etc.), or incremental operation and maintenance savings of labor, maintenance, or materials. Since the UCT does not consider participant benefits and costs, SPS has not included NEBs in its benefit-cost analyses.

6. System Benefits

System benefits refer to the benefits received by everyone served by SPS's electrical system as a result of SPS offering energy efficiency and load management programs. By definition, cost-effective energy efficiency and load management programs deliver system benefits to all customers by reducing or alleviating the need to build new generation, transmission, or distribution to meet growing customer demand. While the participants in these programs will reap the additional benefit of a decrease in their electricity consumption, all customers will benefit from the system reductions. The total portfolio UCT for 2016 is projected to be 1.95, which demonstrates that the benefits (the avoided costs of generation, transmission, distribution of traditional power plants or purchases of power) outweigh the projected energy efficiency and load management programs' utility and customer costs by a ratio of nearly 2 to 1.

II. Program Delivery and Administration

A. General Marketing and Outreach Plan

SPS has developed an extensive marketing and outreach plan to target residential (including low-income) and business customers throughout the service area. The following sections describe the plans specific to each customer segment.

1. Residential Segment

The focus during 2016 will be to increase awareness and interest in energy efficiency among homeowners and renters. Efficiency messages will be promoted through a variety of channels, including:

- efficient equipment distributors and installation contractors;
- advertising, bill inserts, newsletters, and direct mail campaigns;
- internet, email, and social media marketing;
- Xcel Energy's residential call center; and
- joint promotions with Consumer Education and SPS's other efficiency programs.

2. Business Segment

SPS will use a wide variety of channels and marketing tactics to reach its business customers and trade allies. The ultimate goal is to increase program awareness and knowledge with customers and trade partners, drive efficient equipment stocking practices, and increase program participation.

SPS will use the following channels to interact with customers:

- Account Managers – Account Managers will work with SPS's large, managed account customers to inform them of energy efficiency programs, help them identify qualifying energy efficiency opportunities, and walk them through the participation process. This channel is very important for the customized programs due to the participation requirements and complexities of analyzing energy savings.
- Energy Efficiency Specialists – The Energy Efficiency Specialists ("EES") from the Business Solutions Center will handle all interactions with SPS's small and mid-sized non-managed account customers. They will educate business customers about efficiency programs and cross-sell energy efficiency on incoming calls for utility issues. In addition, they will proactively reach out to customers to help promote energy efficiency programs, guide customers through the application process, and prepare paperwork for rebate submission.
- Trade Relations Manager – The Trade Relations Manager will conduct outreach to trade partners, including distributors, wholesalers, and installation contractors. This position educates local and regional trade partners about our efficiency

programs through personal meetings, workshops, and training sessions. They also provide valuable feedback on new technologies and program improvements.

- Third-Party Program Implementers – SPS will rely on a third-party program implementer to provide direct customer marketing, outreach, and trade training for specific program offerings. The implementer will perform energy efficiency audits and will recommend participation in all Business programs. The implementer will also perform a sales engineering role supporting both managed and non-managed customers. The implementer will also assist customers to complete rebate applications and process supporting documentation.

SPS will use the following marketing tactics to notify and educate business customers about the programs:

- program collateral including feature sheets, case studies, rebate applications, and engineering analysis worksheets;
- newsletters, newspaper advertising, radio advertising, and internet search advertising;
- presentations to Chambers of Commerce, trade organizations, and architectural and engineering firms; and
- targeted campaigns via direct mail or email to customers and trade allies.

SPS remains committed to delivering cost-effective projects in the future, and to that end, it is implementing strategies to accelerate customer acceptance going forward. SPS's efforts to improve business performance include:

- continuing to build general energy efficiency and program awareness with customers;
- expanding trade outreach to increase the number of energy efficiency proponents in its service territory;
- increasing large customer planning and sales efforts; and
- continuing to aggressively market all business programs.

SPS is confident that these activities will significantly augment the work already started in New Mexico and build a strong pipeline of energy efficiency projects for completion in future years.

B. Roles and Responsibilities

SPS typically uses resources from several different internal departments to administer its energy efficiency and load management programs. Specifically, the following employees contribute to the process:

- Market Research Analyst – performs and oversees research on the energy efficiency market to help guide program planning;
- Product Developer – identifies and develops the proposed programs and products;

- Program Manager – manages overall program marketing and performance tracking;
- Account Manager – interacts with large business customers to promote programs;
- Trade Relations Manager – works with the trade (vendors, contractors, and manufacturers) to educate them about the programs;
- Energy Efficiency Engineer – reviews Custom Efficiency and Large Customer Self-Direct applications, and helps to develop and refine product deemed savings and technical assumptions;
- Energy Efficiency Specialist – works with small and mid-sized account customers;
- Rebate Processor – reviews/approves applications and invoices and pays rebates; and
- Regulatory Analyst – performs benefit-cost analyses, drafts and manages program filings, and corresponds with regulators and other interested parties.

In addition, SPS works with outside groups such as equipment vendors and manufacturers, community agencies, third-party administrators, and contractors as noted in the individual program descriptions.

C. Reporting Process

SPS filed its first annual report reflecting its 2008 program year on August 1, 2009, and has filed its 2009, 2010, 2011, 2012, and 2013 annual reports each subsequent year. The 2014 Annual Report was filed on May 1, 2015. Listed below are the details provided in this report:

- actual expenditures and verified achievements of the preceding calendar year;
- reporting requirements as stated in 17.7.2.14 NMAC;
- program/project descriptions, including an explanation of deviations from goal and changes during 2014 organized into the Residential, Business, and Planning & Research Segments; and
- benefit-cost analyses for the Residential and Business programs, as well as the overall portfolio.

D. Cost Recovery

The EUEA authorizes utilities to receive cost recovery for Commission-approved energy efficiency and load management expenditures. Each customer is capped at $75,000 per year. To recover these expenditures, SPS proposes to continue collecting its costs through an Energy Efficiency Rider ("EE Rider") charge applied to the energy consumption adjusted for loss factor at each of four voltage-service levels. The EE Rider rates for these service levels are summarized in Table 9a below. The EE Rider will approximate contemporaneous cost recovery of the 2016 Plan expenditures. The EE Rider will be revised with each plan to recover the net balance of:

- forecasted expenditures - for 2016, expenditures are forecasted to be $11,489,101; and
- any approved incentive/disincentive compensation for the program year.

The proposed 2016 Plan costs would result in the EE Rider rates shown in Table 9a below.

Table 9a: 2016 Plan Energy Efficiency Rider

Rate Schedule	Rate (% of Bill)
Residential Service, Residential Heating Service, Residential Water Heating Service, Small General Service, Small Municipal and School Service, Municipal Street Lighting Service, Area Lighting Service	3.0%
Secondary General Service, Irrigation Power Service, Large Municipal and School Service	3.0%
Primary General Service	3.0%
Large General Service – Transmission	3.0%

1. Rate Impact and Customer Bill Impact

The following table shows the estimated average monthly bill impact of the proposed EE Rider:

Table 9b: Estimated Average Bill Impact of 2016 Plan Energy Efficiency Rider

Average Customer Impacts (assumes $11,489,101 recovery of estimated 2016 Plan costs)			
Rate Schedule	Monthly Bill excluding EER	Monthly EE Rider Charge	Charge as % of Bill
Residential Service Tariff 1018.15 -- 800 kWh	$83.43	$ 2.50	3.0%
Small General Service Tariff 3110.16 -- 1,500 kWh	$130.07	$ 3.90	3.0%
Secondary General Service Tariff 4060.2 -- 50 kW; 20,000 kWh	$1,535,43	$ 46.06	3.0%
Large General Service Transmission Tariff 4110.3 -- 4,000 kW; 800,000 kWh	$64,820.90	$ 1,944.63	3.0%

The bill impacts shown in this table do not include the effects of recoveries to compensate for disincentives or to provide incentives for SPS expenditures on energy efficiency programs, as authorized in Sections 62-17-5(F) and 62-17-6(A) of the EUEA.

2. Shared/Allocated Program Costs

SPS's plan includes indirect programs with associated costs. Since these costs cannot be directly attributed to a program SPS uses an allocation methodology approved by the Commission in the Final Order in Case No. 07-00376-UT. The Commission adopted the Recommended Decision of the Hearing Examiner in that case, which stated "SPS's filing demonstrates that its alternative method is appropriate and should be approved."

In accordance with its approved alternative method, SPS has allocated the projected direct program costs associated with M&V, marketing and promotion, rebates, labor, and utility administration to the individual program budgets. However, the indirect costs of Consumer Education, Market Research, M&V, Planning & Administration, and Product Development were kept out of the individual program budgets.

SPS believes that this is the most appropriate treatment of costs not specific to a particular program for several reasons:

- First, such costs are often not directly related to individual programs. Therefore, to use the direct costs of those particular programs as an allocation method would not be accurate.
- Second, these types of costs are often irregular, with large expenses in some years and almost no expenditures in other years. If SPS must allocate these charges to the programs, regardless of magnitude, it may result in certain programs becoming non-cost-effective.
- Third, given the variation in these costs from year-to-year, and the suggested method to allocate based on direct program costs, it would be very difficult for SPS to manage individual program budgets and insure their cost-effectiveness because program managers would not know how much to expect from these indirect programs.
- Finally, it is more administratively efficient for SPS to manage the indirect costs outside of the individual programs. SPS's internal accounting system uses individual accounting codes for each indirect program as well as for each direct-impact program. These indirect costs could not be allocated directly to the programs, but would first be charged to their subject area, and then allocated to the programs, creating a two-step accounting process instead of one.

3. Budget Categories

SPS intends to use the following five budget categories to track and report its annual expenditures for each energy efficiency and load management program:

- <u>Total Incentive</u> – The total dollars paid in rebates to customers.
- <u>Internal Administration</u> – This category includes the costs for:
  - Project Delivery – to deliver the program to the customer including Program Manager labor and costs;
  - Utility Administration – to administer the program internally, including Rebate Processing and Planning & Administration;

- o Other Project Administration – internal or external costs not covered in any other cost category. These costs may include outside contractors and consultants hired to perform installation, engineering, or other services for SPS to assist in delivery or administration of programs to customers; and
- o Research & Development – internal costs to develop the programs.

- Third-Party Delivery – Used only when a third party administers, implements, or delivers a major portion of the program to customers. This should include all costs that the third party incurs, minus the cost of the energy efficient equipment, which should be counted as a rebate.
- Promotion – Costs to market and promote the programs.
- M&V – Costs to perform M&V on the programs.

The following table describe SPS's proposed program expenditures split into the proposed budget categories listed above.

Table 10: SPS's 2016 Program Costs by Budget Category

2016	Participant Incentives	Internal Administration	Third Party Delivery	Promotion	M&V	Total Program Costs
Residential Segment						
Energy Feedback	$ -	$ 16,800	$ 150,890	$ 2,200	$ 15,000	$ 184,890
Residential Cooling	$ 27,696	$ 74,124	$ 14,537	$ 99,091	$ 15,000	$ 230,448
Home Energy Services	$ 732,997	$ 143,118	$ 1,571,462	$ 74,421	$ 40,000	$ 2,561,997
Home Lighting	$ 1,250,035	$ 141,918	$ 290,733	$ 832,128	$ -	$ 2,514,815
Refrigerator Recycling	$ 22,500	$ 20,138	$ 31,500	$ 15,000	$ -	$ 89,138
Residential Saver's Switch	$ 214,028	$ 17,124	$ 275,214	$ 17,684	$ 114,211	$ 638,260
School Education Kits	$ 50,350	$ 20,609	$ 81,503	$ 5,725	$ -	$ 158,186
						$ -
Residential Segment Total	$ 2,297,606	$ 433,831	$ 2,415,839	$ 1,046,249	$ 184,211	$ 6,377,735
Business Segment						
Business Comprehensive	$ 1,433,792	$ 587,395	$ 1,070,697	$ 482,668	$ 88,000	$ 3,662,551
ICO	$ 15,550	$ 23,112	$ -	$ 2,907	$ 7,500	$ 49,069
Saver's Switch for Business	$ 128,000	$ 19,528	$ 315,576	$ 51,000	$ 55,000	$ 569,104
						$ -
Business Segment Total	$ 1,577,341	$ 630,035	$ 1,386,273	$ 536,575	$ 150,500	$ 4,280,724
Indirect Segment						
Consumer Education	$ -	$ 9,657.30	$ -	$ 183,488.70	$ -	$ 193,146
Market Research	$ -	$ 42,650.00	$ -	$ -	$ -	$ 42,650
Measurement & Verification	$ -	$ -	$ -	$ -	$ 28,808.46	$ 28,808
Planning & Administration	$ -	$ 318,656.47	$ -	$ -	$ -	$ 318,656
Product Development	$ -	$ 83,282.90	$ 164,098.00	$ -	$ -	$ 247,381
Indirect Segment Total	$ -	$ 454,247	$ 164,098	$ 183,489	$ 28,808	$ 830,642
Portfolio Total	$ 3,874,947	$ 1,518,113	$ 3,966,210	$ 1,766,312	$ 363,519	$ 11,489,101

III. Program Details

A. Residential Segment

SPS will continue to offer a wide range of product offerings to serve the Residential Segment in 2016. These offerings will be available to over 94,000 customers residing in single family homes, multi-family homes, and apartments and condominiums in southeastern New Mexico.

The Residential Segment will focus on educating customers about energy efficiency, giving them simple ways to participate, and encouraging them to make long-term commitments to reduce their energy usage. The marketing strategy for the Residential Segment is to build awareness and provide consumers a variety of energy efficiency offerings, including direct impact measures, indirect impact services, and educational tools.

SPS will execute Residential Segment outreach and marketing efforts through the use of targeted advertising, statement messaging, community meetings, events at local retailers, as well as content and tools on Xcel Energy websites xcelenergy.com and responsiblebynature.com.

SPS proposes to offer residential customers seven energy efficiency programs in the 2016 Plan, including (i) Energy Feedback- -Residential, (ii) Evaporative Cooling, (iii) Home Energy Services (Residential and Low-Income), (iv) Home Lighting & Recycling, (v) Refrigerator Recycling, (vi) Residential Saver's Switch, and (vii) School Education Kits. The following sections detail each of the proposed programs.

1. Energy Feedback – Residential

a. Program Description

The Energy Feedback - Residential program is based on the successful conclusion of the Energy Feedback pilot, which has run in SPS since 2011. The product provides targeted communication of energy-use comparisons and information called the Home Energy Report to SPS's New Mexico residential customers, providing specific recommendations and incentives to motivate and to teach customers how to reduce their energy consumption. Customers receive new information with each Home Energy Report that is delivered by mail. An online version of this information along with supplemental energy-awareness and savings tools also is available for all SPS residential customers to support product objectives. Savings are quantified by comparing the energy consumption of the participating group to a non-participating control group. The third-party implementer along with a third-party evaluator will provide an analysis of the impact of the product each year.

The product's main offerings include the following two components:

<u>Personalized Home Energy Reports</u> – A targeted direct mailing and/or email that provides specific recommendations and incentives to motivate customers to reduce their energy consumption. The individualized reports provide:

- customers' energy use compared to the average of 100 neighbors in similar-sized homes with similar characteristics;
- targeted efficiency recommendations based on an analysis of the household's energy usage, demographics, and home characteristics; and
- advice on how report recipients can easily implement efficiency measures based on their individual circumstances.

The group of randomly assigned customers receiving the reports is referred to as the Treatment Group.

- A portion of customers receive a mailed print version of the report, a portion of customers receive an emailed report, and a portion of customers receive both print and email reports.

The group of randomly assigned customers who do not receive the reports is referred to as the Control Group.

- Energy savings of the Treatment Group is compared against this portion of customers.

<u>My Energy Tools</u> – An online suite of tools that gives customers greater insight into their energy consumption and actions they can take to become more energy efficient. These tools are available to all Xcel Energy residential customers in New Mexico, and provide the same information as customers receive in their Home Energy Reports, with a more robust set of customization options and energy-savings tools that can make future Home Energy Reports even more personalized and useful for customers. The online suite includes:

- customer-specific electricity consumption data;
- an efficiency recommendation database with community ratings and reviews, which provides customer feedback collected and analyzed regionally on which tips work best for customers in New Mexico;
- encouragement to set an energy goal and track ongoing progress toward that goal, and
- a Home Energy Assessment tool with progressive, simple, and straightforward questions that provide immediate value and feedback.

Similar to the Home Energy Reports, SPS will compare Treatment and Control Groups to determine energy savings from use of My Energy tools. Savings from customers who are part of the Home Energy Report Treatment Group who also use My Energy tools will have all savings measured as part of their Home Energy Report savings calculation. Only savings from customers who are not part of the Home Energy Report Treatment Groups will be counted as attributable to My Energy savings.

Participants will be given the opportunity to opt out of outbound communications at any time.

Budget

The budgets were developed based on third-party implementer input and internal administrative cost estimates for 2016.[4] The majority of the product's budget is allocated to third-party implementation, which includes preparing and mailing the Home Energy Reports, data analytics, marketing and conducting an ongoing regression analysis of participants and the control group to determine the electric savings, and continually improving data analytics models to drive participants to behave in ways that deliver deeper energy savings. Administrative costs for customer data extraction and product administration to be completed by Xcel Energy are based on costs derived from the pilot.

The budget for My Energy is largely fixed due to the information technology and delivery method, and does not change as more customers use the tools and services. A share of the multi-state My Energy online portal license fees are apportioned to this product's budget based on customer counts for each state and fuel type. M&V costs have also been budgeted for My Energy due to the complexity and unique challenges of measuring behavior savings from this service.

Changes for 2016

The pilot began with an initial population of 15,000 "legacy" participants in 2012. Since that time, participation has dropped due to participants opting out or moving. Based on this attrition rate, SPS expects carryover of approximately 11,100 participants from 2015 and will execute a refill of approximately 5,000 new participants, all of which will receive print reports in 2016. 5,000 is the minimum number of participants needed to accurately perform M&V for a given wave. Participation in the My Energy on-line version of the program is estimated to be 1,438 participants.

In regards to the measurement of energy savings for the My Energy opt-in product, it has been determined that the Randomized Controlled Trial methodology cannot be used. SPS is still evaluating the "Variation in Timing of Adoption" ("VTA") methodology described in the M&V section. Additionally, if VTA cannot be used, SPS will look at a third method referred to as "Matching," which will attempt to match current My Energy users with those customers that have similar characteristics in order to measure any savings.

b. Program Administration

There is no customer application needed to participate in the Home Energy Reports as this is the opt-out portion of the program. Participants for the Treatment Group are secured using a random selection process administered by the third-party implementer. New participants will be informed of their selection at the beginning of treatment and will be given the opportunity to opt-out from receiving the Treatment Group communications

[4] The third-party implementer contract pricing was negotiated at the end of 2014, upon contract renewal.

at any time. Appropriately-sized Control Groups are identified by the third-party implementer and enable isolation of effects attributable to each Treatment Group. The Control Group customers have not and will not be directly contacted or influenced by SPS or the third-party implementer regarding this product.

The My Energy on-line version of the Energy Feedback - Residential program is opt-in. Customers become participants once they log onto My Account and go to the My Energy Feedback tab. To help drive this engagement, SPS plans to use low-cost/high-impact marketing outreach methods such as e-mail, promotion, and marketing alongside My Account communications and bill information. SPS will continue to test various marketing methods and messages to determine which have the highest impacts to drive the on-line program's success.

c. Marketing and Outreach Plan

Home Energy Report participants will continue from the original pilot, and thus, no additional marketing is needed to attract those customers. New participants, when required for expansion or needed for product attrition, are randomly selected by the third-party implementer and do not require any specific marketing tactics.

My Energy will be available to all New Mexico residential customers who engage in the My Account portal. Active engagement of those customers will be initiated through:

- Customer visits to the My Account portion of Xcel Energy's website, which features customized energy feedback results and a prominent button for customers to select to see more details and use the portal tools. My Account customers receive periodic reminders to visit My Account to view their bill, make payments, or track energy use (*i.e.,* using My Energy).
- General marketing and promotion of My Energy tools and services as part of Xcel Energy's company communications.
- Outbound marketing efforts to targeted customers within the My Energy Treatment Group may include email, on-bill messaging and promotion, social marketing, outreach event demos, special offers, and direct mail.

We will implement various marketing channels, methods and strategies within the Treatment Group only. However, the Control Group also will have access to the My Energy information and tools due to its prominence within the My Account page that is available to all residential customers.

There are no financial rewards or rebates at this time.

d. Measurement & Verification Plan

The Energy Feedback – Residential program provides targeted communication of energy-use comparisons and information to our residential customers, providing specific recommendations and incentives to motivate and educate customers how to reduce their energy consumption. Actual consumption in the form of meter data is used to M&V this program. Meter data for all participants, comparison homes, and control homes are provided to the third-party implementer for continuous analysis and performance reporting. The third-party implementer compares the consumption of participants (Treatment Group) to those of the Control Group to determine the savings resulting from the program.

Home Energy Report (opt-out) product
Savings for the Home Energy Report opt-out product will be compared to an appropriately-sized Control Group of non-participant customers that are uninformed by any direct action of this product. In addition to determining the savings resulting from the product, the third-party implementer will track and adjust for participant's incremental participation in other energy efficiency products. This M&V methodology is recommended by the State and Local Energy Efficiency Action Network (SEE Action).

Customers in the Home Energy Report product who opt-in to participate in the My Energy tools will remain in the Home Energy Report Treatment Group and their savings will be included in the calculation.

My Energy (opt-in) product
SPS is still studying methods to measure the energy savings and participation attributable to the My Energy portal. At this time, two methods have been attempted without success: "Randomized Controlled Trial with Encouragement Design (RED)" and VTA.

A third method is now being investigated called "Matching". This approach matches My Energy users with similar non-users based on average daily energy consumption. A panel regression analysis of consumption of matched users and non-users is then performed to estimate the savings.

Regarding both the Home Energy Reports and My Energy measures, energy savings will have a one-year life, with ongoing treatment and information exposure necessary to continue the full energy-savings benefits. SPS will track rebates by customer and account for other SPS energy efficiency products and will subtract any energy saved from the Energy Feedback saving results to prevent double counting.

The independent evaluator expects to provide M&V on the program in 2016.[5]

e. Cost Effectiveness Tests

See Appendix A for the 2016 Energy Feedback - Residential program benefit-cost analyses and Appendix B for the forecast planning assumptions. The planning assumptions are based on the actual savings percentages achieved for the pilot in 2014.

[5] All references to M&V by the independent evaluator assumes no change in the contractor providing services in 2016 nor change in the scope of the evaluation agreement. Currently, there is no contracted evaluator for 2016.

2. Residential Cooling

a. Program Description

The Residential Cooling program provides a rebate to SPS customers who purchase qualifying evaporative cooling and HVAC equipment for residential use. This program strives to increase energy efficiency in residential homes by encouraging consumers to purchase high efficiency evaporative coolers, central air conditioning and other HVAC equipment. Because not all local retailers and contractors stock high efficiency cooling units, the overall goals of the 2016 program are to educate customers on the benefits of using high efficiency units and to encourage retailers and contractors to stock high efficiency units.

Rebates are available for premium evaporative cooling systems, which include equipment with media saturation effectiveness of 85 percent or higher. Only new, permanently installed direct, indirect, or two-stage evaporative cooling units qualify for the program. Customers must select their model from the pre-qualified equipment list. Portable coolers or systems with vapor compression backup are not eligible, nor are used or reconditioned equipment. Rebates are also available for qualifying air conditioning and air source heat pump systems by registered contractors who perform a quality installation, which includes proper sizing and testing. SPS will also provide incentives to customers who purchase a residential furnace, or matched furnace/air conditioning system, with an electronically commutated motor ("ECM"). Using an ECM blower motor significantly reduces a system's electric consumption.

Budget

The budget for the Residential Cooling program is based on historical experience. The majority of the funds will go toward customer rebates, contractor/retailer incentives, and program promotions. Residential Cooling promotions include: an advertising campaign, retailer in-store signage, program applications, educational information about high efficiency units such as brochures for customers and contractors, bill inserts along with update articles, and possible contractor training if needed.

Changes for 2016

In 2016, SPS will include air conditioning, heat pump, and ECM motors in the Residential Cooling program.

b. Program Administration

SPS will administer the Residential Cooling program internally. Customers will purchase the qualifying equipment and have it installed by the contractor of their choice. SPS will maintain a list of preferred contractors who will assist the customer to determine eligible equipment, complete rebate applications, and answer technical questions.

c. Marketing and Outreach Plan

The Residential Cooling program will include the following strategic marketing efforts:

- advertising through local radio, print, and internet ads have historically yielded increased awareness and participation in the mid-summer;
- contractor/retailer incentives to increase contractor support of the program;
- customer e-mail newsletters;
- bill inserts during the cooling season; and
- contractor packets to contractors in the SPS New Mexico area detailing the program and its benefits.

SPS will target local retailers and contractors in SPS's New Mexico service area to receive program literature and promote the program. Retailers and contractors in New Mexico will be an essential part of customer awareness efforts and will receive information on program changes regularly.

d. Measurement & Verification Plan

It is expected that the program will receive full M&V analysis in 2016.

e. Cost Effectiveness Tests

See Appendix A for the 2016 program benefit-cost analyses and Appendix B for the forecast planning assumptions.

3. Home Energy Services (Residential and Low-Income)

a. Program Description

The Home Energy Services offering will be provided to both residential and low-income customers with differing requirements and parameters for each customer group. The following sections describe these requirements by group.

The Home Energy Services program provides incentives to Energy Efficiency Service Providers ("EESPs" or "contractors") for the installation of a range of upgrades that save energy and reduce costs for existing residential and low-income households. Qualifying residential customers can receive any combination of attic insulation, air infiltration reduction, duct leakage repairs, radiant barriers, energy efficient showerheads, programmable thermostats, evaporative cooling, air source heat pumps, and high efficiency central air conditioners with a quality installation.

The air conditioner quality installation process is based on standards developed by the Air Conditioning Contractors of America which define the steps a contractor must take to ensure that customer's equipment is installed appropriately to achieve energy savings and proper operation. The Quality Installation process requires a load calculation to determine proper size of the equipment to be installed, which helps ensure that the total energy savings potential of newly installed A/C equipment is realized. SPS is focused on four quality installation elements:

- load calculation and equipment sizing;
- refrigeration charging, testing, and performance;
- air flow testing, adjustment, and performance; and
- duct sealing and repairs where feasible.

SPS also requires contractors to have at least one North American Technician Excellence certified technician on staff.

The Low-Income product is designed similarly to the Residential Home Energy Services product and is frequently referred to as Low-Income Home Energy Services. Income-qualified customers will receive attic insulation, air infiltration reduction, duct leakage repairs, showerheads, evaporative cooling, CFLs, refrigerator upgrades, radiant barriers, and thermostats at reduced cost. Additionally, income-qualified customers may receive an offer to receive a free energy savings kit. The kits provide customers with the following measures:

- two (2) 13-Watt CFL bulbs;
- two (2) 20-Watt CFL bulbs;
- high efficiency showerhead;
- kitchen aerator (1.5 gpm); and
- bathroom aerator (1.0 gpm)

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; and
- significantly reduce barriers to participation by streamlining program procedures and M&V requirements.

SPS will partner with qualifying EESPs to deliver these services and will make any customers with ability to pay problems aware of the program. EESPs must apply to the program and be approved in order to participate. SPS will require EESPs to receive pre-approval for targeted multi-family sites prior to installation of any energy efficiency measures for which an incentive will be requested.

Note that the Home Energy Services offering will be provided to both residential and low-income customers. The low-income offering will use the same qualified contractors and offer similar services as the residential offering.

Budget

In 2016, the Residential and Low-Income Home Energy Services budgets will be combined, as they were in 2013, specified in the 2012 Stipulation and adopted in Case No. 11-00400-UT. Incentives are paid based on deemed energy savings that have been adjusted down on a per measure basis as a result of ADM's recommendations.

The budget is primarily calculated by reviewing historical costs per participant and applying those costs to the estimated 2016 participants. Participation rates were determined by considering a feasible number of energy efficiency projects and the most likely measures to be installed during the year. To estimate the number of projects for 2016, historical participation from 2011 and 2012 and feedback from the contractors were used. The Home Energy Services program devotes over 50 percent of its budget to contractor incentives and third-party administration, another 30 percent to customer incentives, and the remainder to administrative activities such as measurement and verification, data capture and analysis, processing for rebates, and communications/promotions.

Changes for 2016

In 2014, it became apparent that participation by customers in multi-family residences may have been impeded by program design and administration. In 2015, SPS has begun the process of placing more emphasis on the existing multi-family component of the Home Energy Services program in order to drive participation and savings. New contractors with past experience of working with low-income customers living in multi-family facilities will be brought into the program. In order to ensure high reliability in savings, SPS has worked with the independent evaluator to determine the proper strategies to utilize when weatherizing the residential portions of multi-family residences. Non-residential portions of the buildings will be rebated through the Business Comprehensive program.

In order to increase participation in the Home Energy Services program, SPS will work with contractors to defray some of the cost of advertising. Historically, SPS has relied on contractors to conduct the majority of program promotional activities; however, in 2016, SPS will offer to pay for a percentage of the advertising costs incurred in promotion of the program. In doing so, SPS believes that it will encourage contractors to expand their advertising to reach more customers.

b. Program Administration

Incentives are paid to contractors on the basis of deemed savings per measure performed. SPS will pay the approved EESPs an incentive for installing approved efficiency measures in customer homes. To determine the total rebate, each project will be evaluated individually based on the efficiency measures incorporated and the summer demand and annual energy savings achieved.

Applications for payment after measure installation must describe: the EESP; the scope and location of work; the number and type of measures installed; the time period for completion of work; the payment requested; and the energy demand and consumption savings expected by the installed measures.

Some of the measures offered in the Home Energy Services program are also rebated through other programs in SPS's portfolio. In these cases, SPS will offer a standardized rebate for that measure regardless of the program through which it comes.

SPS will administer the Home Energy Services program and will contract with third-party EESPs to perform all marketing and installations for this program. SPS will hold a series of workshops and contact experienced contractors to explain the program, its process, and participation requirements.

In order to be approved as a certified EESP, each contractor will be required to demonstrate a commitment to fulfilling program objectives and a competency in completing the proposed project. To do so, EESPs will be required to submit the following information as part of the application process:

- a description of the EESP's business, including relevant experience, areas of expertise, and references;
- a work plan that covers the design, implementation, project schedule, operation, and management of the project, including M&V of the project (the amount of detail required in this work plan will vary with project size);
- evidence of credit rating;
- proof of applicable insurance, licenses, and permits;
- a valid New Mexico Contractor's License (GB-2 or GB-98);
- a New Mexico tax number;
- a valid New Mexico business license; and
- SPS-approved certification for at least one person on each work crew.

The Low-Income Kits offering does not pay a rebate, but rather provides free energy efficiency measures to participating income-qualified customers. Identified incentive dollars are the estimated value of the measures of the kit.

c. Marketing and Outreach Plan

Historically, all marketing and promotion has been the responsibility of the third-party contractors participating in the program. However, as noted above, SPS will work with contractors to defray costs for marketing and advertising in order to reach a broader audience of customers and increase participation. Additionally, SPS will continue to conduct outreach for the program sponsors through a variety of marketing methods, including brochures, workshops, advertising, bill inserts, and other appropriate means. When and if possible, SPS will also contact and coordinate with community agencies such as the New Mexico Mortgage Finance Authority or Prosperity Works for the low-income portion of the program.

SPS will manage the marketing and outreach for the Low-Income Kits portion of the Low-Income Home Energy Services product. Income-qualified customers will receive direct mail offers for the free energy savings kits which include a pre-paid business reply card.

d. Measurement & Verification Plan

Auditing will be performed by Energy Matters LLC of Albuquerque prior to payment of contractor invoices to ensure that the Home Energy Services' contractors are performing the work they invoice and that the work is done correctly.

Phone surveys will be conducted by an independent third-party vendor to verify the installation of the measures provided in the Low-Income Kits.

The Evaluator will perform M&V on the program in 2016. The savings for this prescriptive program will be calculated using deemed savings algorithms provided directly to the Evaluator. The Evaluator reviews the technical assumptions, decides on M&V methods appropriate for each program or prescriptive measure, and makes recommendations to changes in technical assumptions based on review and M&V.

e. Cost Effectiveness Tests

See Appendix A for the 2016 Home Energy Services program benefit-cost analyses and Appendix B for the forecast planning assumptions.

4. Home Lighting & Recycling

a. Program Description

The Home Lighting & Recycling program provides resources for customers to purchase energy efficient light bulbs and dispose of them in an environmentally friendly manner. Energy efficient light bulbs are an economical and easy way for customers to save electricity. Through this program, customers may purchase compact fluorescent light ("CFL") and light emitting diode ("LED") bulbs at a discount at participating retailers. To encourage proper disposal of CFLs, SPS also provides recycling services. Customers may recycle CFLs free of charge at local retailers.

SPS promotes energy efficient lighting by offering in-store retail discount promotions. In these promotions, the bulb manufacturer, retailer, and SPS combine funds to offer instant rebates on a variety of bulb models enabling customers to purchase discounted CFLs and LEDs. SPS partners with retailers including Home Depot, Walmart, Ace Hardware, and Albertson's. Customers receive the discounted price at the register at the time of the purchase. There is no mail-in rebate form.

Bulb Recycling

The CFL Recycling component provides an environmentally friendly method for customers to dispose of CFLs. SPS created a partnership with retailers to serve as the retail arm for CFL recycling. Customers can bring spent CFLs to participating hardware stores and recycle them free of charge. The retailer stores the bulbs in a covered bin until it is full and ships the bulbs to the recycler in the postage paid bin. SPS covers the cost to ship and recycle the bulbs. The retailer calls to ask for a replacement bin to be shipped. Currently, there is no known health risk associated with LED disposal. Therefore, SPS will not offer LED recycling at this time.

Budget

The goal for this program was developed by reviewing market potential and logistics, including an analysis of historical sales data, retail store chains, and local promotional opportunities. This in turn helps in determining estimated costs for budget development. The Home Lighting budget has increased because LED bulbs are projected to make up a larger percentage of the lighting portfolio. LED bulbs have higher incentives, and require more marketing and education to increase sales.

The Home Lighting & Recycling program budget is based primarily on the number of program participants (bulbs sold). SPS developed the budget by combining costs for incentives, implementation, advertising, promotion, and labor. The advertising costs will be spent on TV, radio, online, and print advertising.

Changes in 2016

In 2016, SPS will focus on increasing the sales of LED bulbs, placing less emphasis on the CFL spiral bulbs that have higher saturation rates in the market. The following changes have been made to the portfolio to bring forth this change:

- increasing the number of models and retailers of LED bulbs;
- expanding and developing advertising specifically focused on LEDs;
- providing limited giveaways of LEDs to increase the awareness and acceptance of the bulbs;
- improving educational components to help customers find the right bulb.

b. Program Administration

The Home Lighting program is offered throughout the SPS service area and all of SPS's New Mexico residential customers are eligible to participate. SPS works with large retail chain stores in order to obtain maximum penetration of the product and reach as many people as possible. SPS obtains sales data from the participating retailers for the sales of energy efficient bulbs including the wattage, model of bulb, date of sale, and retailer/location of sale. SPS uses a third-party implementer, Wisconsin Energy Conservation Corporation, to oversee manufacturer and retailer relations, develop an RFP to select partners, create parameters and contracts with partners and implement the on-site field visits to educate partners, set sale signage, and verify inventory and prices of the discounted bulbs. SPS uses a variety of retail partners to ensure optimal pricing and help reduce free-ridership, including big box, mass merchandiser, hardware, and grocery outlets. SPS makes every effort to target retailers and events that serve the hard-to-reach market segment. SPS administers discounts year-round and uses limited-time advertising and promotions to create urgency.

c. Marketing and Outreach Plan

The objectives of the Home Lighting & Recycling program are to: motivate customers to purchase CFLs and LEDs; persuade them to try using the bulbs in different applications throughout their homes; and encourage them to recycle the CFL bulbs when they burn out.

SPS uses discount incentives to motivate customers to purchase bulbs. The value of the incentive varies by the type and cost of the bulb. The discounted bulbs are available at participating retailers. Customers can find a listing of participating retailers, locations, and the bulbs that are discounted on the Xcel Energy website. Xcel Energy creates awareness of the program and drives customers to the retailers and/or website with television, radio, print, point-of-purchase display, outdoor bill boards, and online advertising. SPS also uses local consumer events, education, and promotions to distribute free energy efficient bulbs.

d. Measurement & Verification Plan

The program is expected to receive M&V through the third-party implementer in 2016. The energy savings for this prescriptive program will be calculated using deemed savings algorithms provided directly to the Evaluator. The Evaluator will review the technical assumptions, apply M&V methods appropriate for the program, and make recommendations for change based on their technical review.

e. Cost-Effectiveness Tests

See Appendix A for the 2016 program benefit-cost analyses and Appendix B for the forecast planning assumptions.

5. Refrigerator Recycling

a. Program Description

The Refrigerator Recycling program is designed to decrease the number of inefficient refrigerators and freezers in residential households. The objective of the program is to reduce energy usage by allowing customers to dispose of their operable, inefficient primary refrigerators, secondary refrigerators, and freezer units in an environmentally safe and compliant manner. Customers with qualifying units will receive a rebate for their participation and will not be directly responsible for any costs associated with pick-up, transportation, disposal, or proper recycling of their refrigerator.

Qualifying Appliances:
All refrigerator/freezer units must meet the following requirements in order to participate in the program and be picked up for recycling:

- Must be an operational primary or secondary refrigerator unit or a standalone freezer. Operational is defined as in working order. Refrigerators and freezers must be capable of freezing water.
- Refrigerator/Freezer must be plugged in the night before the pick-up date (customer will receive a call from the vendor, reminding them to do this). This is to ensure full operation when inspected at the time of pick up; and
- Appliances must be no smaller than 10 cubic feet or no larger than 30 cubic feet.

Appliances will be categorized as follows for program reporting:

- Primary: used as the primary unit in the home at present time;
- Secondary: used as a secondary unit for at least two months prior to pick up;
- Freezer: used separately from the primary refrigerator and is a standalone unit.

There will be a limit of two freezers and/or refrigerators per household, per year, and must be picked up from the residential address listed on the billing account. Customers will be limited to a maximum rebate of $100 in a given program year per household.

Budget
The Refrigerator Recycling program budget was developed based on our participation goals. Recycling-related expenditures and rebates account for approximately 61 percent of the overall budget. Marketing and labor expenses were then determined and added as administrative expenses.

Changes for 2016
SPS will continue with offering the rebate amount at $50/unit in 2016 in order to remain cost effective under the UCT.

b. Program Administration

SPS will administer the Refrigerator Recycling program internally with the assistance of the third-party contractor. The third-party contractor will be responsible for receiving and processing customer requests. Marketing messages will direct customers to contact the third-party provider via a toll-free telephone number or online request form. The third-party will dispatch personnel, who have passed Xcel Energy's security screening process, to pick up the refrigerator. Customers will be scheduled for pick-up within 30 days of initial call, or whenever the customer's schedule time allows (preferably within 15 business days) and will receive their rebate check within four to six weeks after the unit is picked up.

The third-party will conduct tracking and reporting for this program, which is provided to the Evaluator that includes the following:

- weekly reports that identify program participation;
- model and serial numbers for all recycled units;
- participant information such as name, address, phone, and customer account number;
- total number of units collected or rejected by address;
- data on rejected participants; and
- provide any required reporting set forth by any federal, state, or local applicable regulatory agency.

c. Marketing and Outreach Plan

Customers will learn about this program through various marketing channels such as bill inserts, update newsletters to customers, direct mail, Xcel Energy's website or social media channels, radio, and/or local print media. The program will be available to customers year-round; however, the marketing strategy will utilize spring and fall campaigns to promote the program. The target market consists of customers who are disposing of their primary or secondary refrigerator or freezer unit. Customer interest in this type of product is seasonal, usually occurring in the spring, summer, and early fall seasons (prior to the Thanksgiving holiday). Product demand peaks in the summer months, which is associated with customer home improvement projects. Deployment of promotional tactics will coincide with seasonal interest. SPS will incorporate social marketing to identify potential participants and thereby drive program activity. In addition, SPS will cross-promote the benefits of recycling with the Consumer Education program.

d. Measurement & Verification Plan

The independent state-wide evaluator will not be evaluating the program in 2016.

e. Cost-Effectiveness Tests

See Appendix A for the 2016 program benefit-cost analyses and Appendix B for the forecasted planning assumptions.

6. Residential Saver's Switch®

a. Program Description

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 qualifying 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.

The program employs switches that receive a control signal to interrupt air conditioner compressors and electric water heaters during peak periods, typically in the afternoons on weekdays. When the program is activated, participating air conditioners are cycled off and on in 15 to 20-minute intervals determined by "adaptive algorithm" cycling strategy for the duration of the control period, usually three to five hours. This strategy allows the switches to "learn" how a customer's air conditioner is being operated in order to achieve a 50 percent reduction in load. For enrolled electric water heaters, the entire load is shed for the duration of the control period.

Due to the limitations of available communications technologies in the area, Saver's Switch is currently only available to customers in Roswell, Carlsbad, Clovis, Hobbs, Portales, and Artesia.

Budget

The primary costs associated with operating the Saver's Switch program are driven by the number of expected participants, and include:

- the cost of switches;
- the cost of installations;
- marketing expenses;
- M&V expenses for evaluating program performance; and
- bill credits to participating customers.

Relative to other programs offered in New Mexico, Saver's Switch expenses for monitoring are quite significant. Monitoring is conducted by installing data loggers at a sampling of customer premises. The loggers measure air conditioning activity over the course of the cooling season. Data gathered is used to determine the load impact from activating Saver's Switches. Installing and retrieving the loggers entails multiple visits to the customer premise. The cost is largely independent of the number of program participants. The Evaluator will use this data to verify the savings generated by the program.

Changes for 2016

None.

b. Program Administration

The Residential Saver's Switch program is promoted to customers using a variety of channels. Customers may sign up for the program via a mail-in form, phone, or the Xcel Energy website. Applications are generally processed and switches installed within six to eight weeks.

A contracted third party handles equipment installation, removal, and associated service calls. Due to variations in air conditioner age and location, the installer will make the final on-site determination as to whether the customer qualifies for the program.

The Saver's Switch program has the following additional requirements:

- The program does not offer customers the choice of opting out of individual control days. The one exception is in the case of medical emergencies where customers can be removed from the program on short notice.
- When a customer moves into a premise with a pre-existing switch, they are automatically enrolled in the program, but notified that they may opt-out.

Saver's Switch can be activated at the request of SPS's Commercial Operations or Transmission Operations under the following conditions:

- Commercial Operations will activate Saver's Switch along with other load management programs in order to maintain reserves on the system above 200 megawatts ("MW").
- SPS will consider activating the program when obligation loads are high (above 4,400 MW), or if the forecasted reserves fall below 200 MW. This would likely be during periods with temperatures above 100 degrees or when large SPS-owned generation units are off line.
- SPS's Transmission Operations would also expect to request program activation if a Load Serving Entity in the SPS Balancing Authority[6] is at North American Electric Reliability Corporation Energy Emergency Alert Level 2.

Activation of load management programs would take place prior to, or concurrent with, public appeals for conservation to reduce load to relieve a local transmission overload or unacceptably low transmission voltage. SPS is sensitive to the fact that participants in Saver's Switch may leave the program if they deem it overused. SPS will make every attempt to avoid activating the program multiple days in a row.

c. Marketing and Outreach Plan

SPS estimates that about 62,000 of its residential customers in New Mexico have central air conditioning. Where possible, SPS will direct its promotional efforts towards those customers identified as likely to have central air conditioning. SPS may use the following marketing channels to promote participation:

- bill inserts and newsletters to customers;
- direct mail, including e-mail marketing; and
- outbound telemarketing.

---

[6] A Balancing Authority is the responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority area, and supports interconnection frequency in real-time.

In addition, SPS will consider offering an up-front incentive to new participants, depending on customer interest.

d. Measurement & Verification Plan

The savings for this prescriptive program will be calculated using deemed savings algorithms based on data collected through SPS's load research department. Upon completion of field research, the raw data and tabulated results will be provided to the Evaluator for their input and final determination of estimated load relief.

In addition, SPS's load research organization will lead an annual research project to evaluate the load relief achieved from existing and new Saver's Switch units. SPS uses third parties specializing in load research projects to collect and analyze the data. A sample of each type of switch is included in the annual research project. This is done with a data logger installed on-site to monitor an air conditioner's energy use and how that use changes on a control day. The results are used to document the extent of load relief achieved during a control day.

It is expected that the program will undergo M&V by the independent evaluator in 2016.

e. Cost-Effectiveness Tests

See Appendix A for program benefit-cost analyses and Appendix B for the forecasted planning assumptions.

7. School Education Kits

a. Program Description

School Education Kits is a turnkey educational program that combines energy efficiency curriculum for teachers with easy-to-install energy efficient and water-saving measures for students to install at home. SPS intends to reach fifth grade students in its New Mexico service area with this annual program. SPS and the third-party contractor will monitor schools in the New Mexico service area to determine if the program should be moved to another grade level to meet individual school district standards. The same content and kit measures would be provided, and the program would remain at that specific grade level in subsequent years.

In 2016, the School Education Kits program will provide the following classroom materials to each student participant:

- one CFL (13 Watt – 60 Watt Equivalent);
- two CFL (18 Watt – 75 Watt Equivalent);
- one LED (11 Watt – 60 Watt Equivalent);
- high efficiency showerhead (1.5 gpm);
- kitchen aerator (1.5 gpm);
- bathroom aerator (1.0 gpm);

- furnace air filter alarm;
- LED nightlight;
- digital water/air thermometer;
- toilet leak detector tablets; and
- parent evaluation card.

The program provides direct-impact conservation as part of an education program, building awareness of energy conservation in children, and providing energy efficiency programs to customers of all income levels.

Budget

The School Education Kits budget was developed based on SPS's participation goals and historical budgets. About 52 percent of the School Education Kits program budget will be paid to the third-party contractor for administration of the program. The remainder of the budget is designated for the cost of the measures in the kits, as well as internal labor to provide direction and oversight to the implementer, prepare and analyze data for reporting, and manage program expenditures.

The School Education Kits program does not pay a rebate, but rather provides free energy efficiency curriculum and activity kits to participating classrooms. Identified incentive dollars are the estimated value of the measures of the kit.

Changes for 2016

SPS will include an LED bulb in the kits to increase awareness and acceptance of the bulbs.

b. Program Administration

The program will be marketed and administered by a third-party contractor. The third-party contractor assumes all responsibility for curriculum and kit development, outreach to teachers, delivery of materials, and participant survey. SPS pays a flat rate per kit to cover all of the services.

In addition, the third-party contractor will perform pre- and post-surveys to provide installation data on the program. These surveys will:

- Confirm installation of energy and water saving devices. These results will be used, along with deemed savings estimates, to determine the demand and energy savings from the kits based on students and teacher responses identifying the number of CFLs, low-flow showerheads, and faucet aerators that were installed.

c. Marketing and Outreach Plan

The third-party contractor will manage all aspects of the School Education Kits program marketing and outreach activities. They will identify the schools that are within SPS's New Mexico service area and determine the approximate number of eligible teachers and students. They will send out customized marketing materials to help enroll the classrooms. The materials explain the program, while providing teachers with helpful tips to teach the energy efficiency curriculum to their students. Kits will also provide teachers with information about how and why SPS sponsors this program offering and the importance of conservation as part of their curriculum. As in the past, SPS and the third-party contractor will continue to work together to determine the strategic approach for identifying schools.

d. Measurement & Verification Plan

The independent evaluator will not perform M&V on the program in 2016.

e. Cost-Effectiveness Tests

See Appendix A for the 2016 benefit-cost analyses and Appendix B for the forecasted planning assumptions.

B. Business Segment

SPS's Business Segment in New Mexico consists of approximately 25,000 active customers. This customer group consumes a substantial share of the total energy in the service area, and, as such, represents much of the energy efficiency and load management potential for the region.

SPS encourages business customers to reduce their energy use, offset energy peaks, and minimize environmental impacts through a variety of programs, offering prescriptive rebates, customized programs, and study-funding. Despite these efforts, SPS business customers experience a number of barriers to participation, including:

- business customers often have little or no capital to invest in projects;
- business customers require very short payback periods for their projects; and
- typical projects have very long lead times.

To combat these barriers, SPS's Account Managers, trade allies, EESPs, and Energy Efficiency Specialists ("EES") are trained to address the specific needs of business customers. SPS commonly assigns an Account Manager to its larger, more complex customers. EES (phone-based account managers) serve the mid-market and small business customers, prospect for and promote savings opportunities, and manage the application and project completion process. Awareness-building communication campaigns, community and trade outreach, site visits, and electronic communications are also key components of the strategy to penetrate the SPS market.

1. Business Comprehensive

a. Program Description

Business Comprehensive is the bundling of traditional prescriptive, custom, and study/implementation products to provide customers with less complexity as they evaluate participation in SPS programs. This program includes the Computer Efficiency, Cooling Efficiency, Custom Efficiency, Large Customer Self-Direct, Lighting Efficiency, Motor & Drive Efficiency, and Building Tune-Up products. Table 11 below shows each of the products that now will be administered within the Business Comprehensive program and provides estimates of the 2016 forecasted participants, budgets, and savings as well as the UCT ratio.

A description of each of the prescriptive products offered within the Business Comprehensive program follows:

Computer Efficiency
The Computer Efficiency product offers upstream incentives to computer manufacturers, and rebates directly to end-use business customers in SPS's service territory who install either Desktop PC Virtualization or PC Power Management software.

Cooling Efficiency
The Cooling Efficiency product encourages SPS business customers to choose the most efficient air conditioning equipment to meet their needs. The product offers rebates in both new construction and retrofit applications. Rebates reflect a significant portion of the cost of selecting high efficiency measures over standard efficiency measures.

Lighting Efficiency
The Lighting Efficiency product offers rebates to customers who purchase and install qualifying energy efficient lighting products in existing or new construction buildings. Rebates are offered to encourage customers to purchase energy efficient lighting by lowering the upfront premium costs associated with this equipment. Common lighting retrofit projects include replacing high intensity discharge fixtures in a warehouse with fluorescent high-bay fixtures and installing occupancy sensors.

Motor & Drive Efficiency
The Motor & Drive Efficiency product is designed to reduce the barriers that prevent customers from purchasing high efficiency motors, variable frequency drives ("VFDs"), or motor controls. To overcome these barriers, SPS offers rebates to customers who install:

- motors that exceed National Electrical Manufacturers Association ("NEMA") Premium Efficiency® standards;
- VFDs to vary the speed of motors;
- motor controllers to reduce the energy consumption of motors that must operate at a constant speed;

- Pump-Off Controllers on oil wells; or
- energy efficient compressed air equipment.

A description of each of the custom products offered within the Business Comprehensive program follows:

<u>Custom Efficiency</u>
The Custom Efficiency product is designed to provide SPS's business customers rebates on a wide variety of unique or unusual equipment and process improvements that are not covered by the prescriptive products, including combined heat and power projects. Rebates are offered for measures that exceed standard efficiency options. The rebate is intended to reduce the incremental project cost of the higher efficiency option, thereby encouraging customers to choose the more energy efficient option. Since energy applications and building system complexity can vary greatly by customer type, it is important for customers to have a customized energy efficiency option to help them implement cost-effective energy efficiency measures.

The Custom Efficiency product includes an optional evaluation component designed to introduce large commercial and industrial customers to energy efficiency opportunities and build the product pipeline for future years. This component of the Custom Efficiency product is modeled after the Process Efficiency program that Xcel Energy offers in other jurisdictions, but differs in that it is available to large commercial and industrial customers instead of being limited to manufacturing customers. The goals of this component, called the Large C&I Study, are to:

- increase customer awareness of energy consumption and opportunities to reduce consumption;
- identify and develop specific conservation opportunities;
- drive customers to implement identified measures through existing prescriptive and customized rebate programs; and
- drive customers to implement low capital and or short payback measures even though they may not qualify for an implementation rebate.

The Large C&I Study effort has several phases, which are customized and defined in a Memorandum of Understanding between SPS and each customer:

- Phase 1: Identification – Interested C&I customers will receive a free, one-day, on-site energy assessment performed by SPS staff and a contract vendor. At the end of the assessment, the customer will receive a detailed report identifying their energy consumption habits and conservation opportunities.
- Phase 2: Scoping – SPS will provide support and resources to further define and provide recommendations for energy savings opportunities identified in Phase 1. The customer will pay no more than $7,500 towards these efforts.
- Phase 3: Implementation – Implementation of measures scoped in Phase 2 will typically follow one of two paths:

- Customers implementing measures that qualify for rebates under one of the prescriptive rebate products (*i.e.*, Lighting Efficiency, Motor & Drive Efficiency, etc.) or the Custom Efficiency Product will receive rebates in accordance with the appropriate product.
- Customers who implement measures scoped in Phase 2 that do not meet program/product requirements will not receive a rebate; however, SPS will count the energy and demand savings resulting from implementation.

For participation in the Large C&I Study SPS is targeting customers with aggregated annual consumption greater than 7 GWh. These C&I customers typically offer the largest potential conservation opportunities per study dollar spent. Account Managers will contact eligible customers and describe the product to solicit participation. Based on Xcel Energy's experience with similar products, SPS expects project lifecycles to be greater than one year.

<u>Large Customer Self-Direct</u>

As an alternative to the guided process of the Custom Efficiency product, the Large Customer Self-Direct product is available to SPS customers with contiguous facilities that use over 7,000 MWh per year ("Large Customer"). These large customers account for 47 percent of the peak kW and 55 percent of the annual consumption of the entire commercial and industrial customer base, but only account for 0.2 percent of total commercial and industrial premises. Self-direct participants are also eligible for the other Business Segment programs.

The Large Customer Self-Direct product entitles customers who use more than 7,000 MWh per year at a single, contiguous facility to apply for either:

- A bill credit of up to 70 percent 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 percent of the energy efficiency tariff rider charges for 24 months if the customer demonstrates that it has exhausted all cost-effective energy efficiency or load management projects at its facility.

In this context, a project is cost-effective if it has a simple payback period of more than one year, but less than seven years.

To claim a credit, the customer must submit to the Self-Direct Administrator an energy efficiency project description, along with relevant engineering studies showing the projected savings, expenditures, and cost effectiveness, by November 30 of the year preceding the installation of the project. To claim an exemption, the customer must submit to the Self-Direct Administrator a detailed engineering study showing the absence of cost-effective energy efficiency investments and an affidavit confirming the results of the engineering study from the Evaluator by November 30 of the year preceding the exemption.

An energy efficiency project must reduce electric energy consumption or peak demand and be cost-effective in order to qualify for a credit. Large Customers will be able to receive the credit only after expenditures have been made, the project has been completed, and the Evaluator has determined that the efficiency measures are properly installed and are able to deliver the expected energy or peak demand savings. For projects that take more than one year to complete, annual credits for operating energy efficiency measures will be determined by the Evaluator. Eligible expenses incurred in excess of $52,500 in any year may be recovered in the subsequent year.

Eligible expenses are actual expenses reasonably incurred by a Large Customer in connection with construction, installation, or implementation of an eligible project, including but not limited to, equipment costs, engineering and consulting expenses, and finance charges.

A description of the study product offered within the Business Comprehensive program follows:

Building Tune-Up

The Building Tune-Up product, is a study/implementation option targeted to buildings smaller than 75,000 square feet. The study vendor, selected by SPS, will work through a checklist of measures focusing on the proper operation of existing equipment and complete fixes on-site as appropriate. The Building Tune-Up product is designed to assist smaller business customers to improve the efficiency of existing building operations by identifying existing functional systems that can be "tuned up" to run as efficiently as possible through low- or no-cost improvements.

Examples of typical Building Tune-Up measures include:[7]

- calibration/tune-up of Energy Management System points;
- adjustment of outside air and return air dampers;
- resetting the chilled water and hot water supply temperatures;
- optimizing the start/stop of air handlers and makeup air units (early shutdown in the evening, late start in the morning);
- resetting chiller condenser water temperature; and
- eliminating simultaneous heating and cooling.

Building Tune-Up consists of two phases: diagnosis (study) and implementation. SPS offers rebates for Building Tune-Up studies and the implementation of recommissioning measures. To ensure consistency with the studies and implementation of on-site fixes, SPS will hire a qualified engineering firm to complete both the study and implementation phases.

[7] At this time, SPS will not be offering gas measures like those proposed by Public Service Company of New Mexico and El Paso Electric for inclusion in their Building Tune-Up programs. However, SPS may review these measures for potential addition in the future.

Budget

Budgets were developed based on the established goals. Rebates, labor, and promotional expenses comprise the majority of the budget.

- Incentives: The largest portion of the Business Comprehensive budget is dedicated to customer rebates, which will be paid based on the energy savings achieved. The rebate budget is an average of all the rebate amounts which have been tracked in previous years. Prescriptive rebates are based on both the kW saved and a reasonable but attractive percent of the incremental cost of higher efficiency. Custom rebates are based on the calculated savings of expected projects.
- Promotions: The promotional budget includes spending for radio and print advertising, educational and sales materials, online advertising, and seminars for customers and the trade.
- Internal Administration: This was determined by estimating the number of full-time employees needed to manage the product and execute the marketing strategy, trade incentives, and engineering analysis and rebate processing, including internal employees and external consultants and/or contract labor. Approximately 45 percent of the internal administration budget is dedicated to the cost of conducting engineering analysis for custom projects to ensure energy savings are accurate and credible.
- Third-Party Delivery: Used only when a third party administers, implements, or delivers a major portion of the program to customers. This should include all costs that the third party incurs, minus the cost of the energy efficient equipment, which should be counted as a rebate.
- M&V: The time and cost the Evaluator expends to verify energy savings, by in-person customer visits or post-project telephone surveys or metering.

Changes for 2016

The Motors and Drives product will no longer prescriptively rebate motors that only meet NEMA Premium® efficiencies, as they are now the standard for new AC induction motors.

In addition, the program will add the following new measures:

- Computer Efficiency:
  - Efficient server power supplies that are shipped to customers in our service area.
- Lighting Efficiency
  - Direct Install Low-Flow Aerators and Pre-Rinse Spray valves, which will reduce hot water usage and save energy associated with heating the water. The measures are likely to be installed as part of the lighting assessment for small, electric-only customer locations.
  - LED troffer fixtures
  - LED retrofit kits
  - LED outdoor area lighting pole lights that replace HID fixtures.

b. Program Administration

Customers learn about the program and its benefits through newsletters, direct mail, trade allies, Account Managers, and EES. Applications for the program are available both on Xcel Energy's website (xcelenergy.com) and from trade allies. Customers may apply for rebates by completing the application and providing a detailed invoice for the newly installed efficient equipment. The equipment must be new and meet all the qualifications detailed on the application. After the customer has installed the equipment, the application and invoice must be submitted to SPS within 12 months of the invoice date. Once the paperwork is completed and submitted, rebate checks will be mailed to the customer within six to eight weeks. Participants in the program may submit their application to their Account Manager or an EES.

The custom components of the Business Comprehensive program will be administered internally. The project review process involves the following steps:

1. <u>Application</u> – Prior to purchase and installation of equipment, customers must submit an application and receive pre-approval for their projects. The application form requests a description of the project, operating hours, and costs.
2. <u>Pre-Approval</u> – To qualify for a rebate, projects must be cost-effective using the UCT. Xcel Energy's engineering team will review the proposal, specifically reviewing the project's demand and energy savings relative to industry standards and the interactive energy effects of the system components. Non-energy benefits, such as maintenance savings and reduced water consumption, are considered in the analysis for customer benefit. These non-energy benefits are not used to calculate the UCT by the Independent Evaluator.
3. <u>Pre-Approval Notification</u> – Typically, within approximately ten business days after receiving the complete proposal information, SPS will determine whether or not the project qualifies and notifies the customer of the decision and the rebate amount (if project is pre-approved).
4. <u>Implementation</u> – Once the customer has received pre-approval, they may purchase and install their new energy efficient equipment or process improvement.
5. <u>Post-Project Review & Payment of Rebate</u> – Upon completion of the project, the customer must notify SPS. If the project has undergone any changes of scope or equipment, a second engineering analysis will be performed to determine whether the project still qualifies under the program guidelines and what level of rebate is owed.

The study components of the Business Comprehensive program will be administered through a third-party study provider. Customers will learn about the program and its benefits through newsletters, direct mail, trade allies, Account Managers, and EES. Applications for the program are available both on Xcel Energy's website (xcelenergy.com) and from trade allies. Customers may apply for study rebates by completing the application and corresponding Building Tune-Up. Once the study is completed and paperwork submitted, rebate checks will be mailed to the customer within six to eight weeks. Participants in the program may submit their application to their Account Manager or an EES.

c. Marketing and Outreach Plan

The Business Comprehensive program creates a base level of awareness and knowledge in the marketplace through newsletters and direct mail to customers and trade allies. These tactics make customers aware of the key benefits of energy efficiency and its applicability to their systems, and give the trade a platform from which to educate customers on high efficiency solutions for their particular applications. The program also provides tools for the customers and trade allies to evaluate rebates and incorporate them into purchase decisions. SPS Account Managers and EES will educate customers on specific energy efficiency opportunities, evaluate rebate potential, and assist in the rebate application process. The trade can find similar assistance through SPS's Trade Relations Manager. In some cases, the trades may be offered a cash incentive to promote qualifying products.

Marketing communications will revolve around the benefits of energy efficiency through paybacks, lifecycle costs, and environmental benefits. SPS aims to help its customers understand the benefits of cutting costs by choosing high efficiency equipment. Newer equipment is typically more efficient, more reliable, and may have more effective controls than older systems providing both energy and non-energy benefits to the end user.

SPS will use the following methods to reach and educate customers and trade allies: Xcel Energy website (xcelenergy.com), collateral materials, direct mailings, Email campaigns, newsletters, print and radio advertising, and the Trade Relations Manager.

To reach its energy savings goal, SPS needs to continue to educate customers and increase awareness of the program offerings. It is also necessary to partner with the trade allies and position customer incentives as a tool to increase their sales volumes. Trade allies are one of SPS's greatest assets in continuing to educate customers on the benefits of energy efficient equipment. SPS's internal Account Managers and EES are also an essential part of assisting customers with program participation and understanding.

d. Measurement & Verification Plan

The savings for the prescriptive products will be calculated using deemed savings algorithms, provided directly to the Evaluator. The Evaluator will review the deemed technical assumptions, decide on M&V methods per prescriptive product, and make recommendations regarding necessary changes to the technical assumptions for prescriptive measures. Custom project savings will be calculated individually per project. The Evaluator will review the engineering assumptions prior to the project being approved and establish an M&V plan specific to the project.

It is expected that the independent evaluator will perform M&V on the program in 2016.

e. Cost-Effectiveness Tests

See Appendix A Program benefit-cost analyses and Appendix B for the forecasted planning assumptions.

2. Interruptible Credit Option

a. Program Description

The ICO program will offer incentives to New Mexico business customers who allow SPS to interrupt their load during periods of high demand, such as hot summer days. In return, customers receive a monthly bill credit, which varies depending on how much load they are willing to interrupt and how far in advance they receive notification of the interruption. Interruption periods are triggered by capacity, contingency, and/or economic constraints. By participating in this program, ICO customers will help reduce the amount of electricity needed, which helps SPS meet electric system requirements at critical times.

Customers may enroll or bid (depending on which contract option they choose) between January 1 and March 1 of each year. To qualify, customers must have an Interruptible Demand and a Contract Interruptible Load of at least 300 kW during the months of June, July, August, and September. To participate, customers must sign an ICO contract, which will specify the number of hours they contract to be interrupted each year, their advance notice option, and Contract Firm demand selected. The options include 40 hours, 80 hours, or 160 hours of annual interruption. Customers also have an advance notice interruption options of one-hour or no-notice. Customers must install a phone line that is connected to their meter, which allows SPS to provide near real-time usage information. Customers who select the no-notice option must pay for SPS to install equipment that will provide physical control over their interruptible load.

There are two ICO contract terms offered: the three-year and summer only ("SOICO") options. The three-year plan automatically renews for rolling three-year periods and requires a three-year written notice required to cancel participation in the program. Any time during the first year of service under this schedule, a customer may opt to cancel their contract by returning all monthly credits paid by SPS, up until the date of cancellation. No additional cost will be assessed. The SOICO option is available to customers in a summer only contract term which must be renewed each year and cannot be cancelled during the contract year.

Another option offered to customers is the voluntary load reduction purchase option ("VLRPO"). This option provides SPS with an additional power purchase resource to more efficiently manage system requirements during exceptional periods. During such periods, New Mexico customers will have the opportunity to provide voluntary load reduction and receive pricing associated with energy supply markets. Use of this service will be limited to exceptional situations when enough lead time is available to reach agreement on specific terms with customers. SPS expects the use of this service will normally occur during summer periods of very high temperature and humidity conditions or during periods of significant and extended difficulties with regional generation or transmission systems.

This voluntary option is available to customers who agree to provide load reduction in amounts of 500 kW or greater. Customers under this option shall complete an enabling agreement with SPS to establish general terms for payment in return for voluntary load reductions. Availability is subject to SPS approval. Completion of the enabling agreement qualifies the customer to submit an offer to participate in any Buyback Period. The enabling agreement expedites the purchase process by leaving only specific terms to be determined before a specific Buyback Period. Customers that have an enabling agreement with SPS have the option, but are under no obligation, to offer to sell energy to SPS during any Buyback Period. Likewise, SPS has the option, but not the obligation, to accept any offer by the customer. If a customer is interested in selling energy to SPS, the enabling agreement provides the structure and procedures for establishing the price and quantity for a specific energy purchase by SPS.

Budget

The budget for this program was established based on the amount of contracted load and the number of hours of load SPS anticipates to receive in 2016. SPS is basing the customer and budget forecasts on experience gained from other business interruptible programs it has offered.

The customer promotion budget includes the development of marketing materials such as customer ICO System Guides, program features, and benefits collateral. The budget also includes spending for annual training for both customers and SPS Account Managers. This annual training will ensure that all involved in the program are updated on the latest enhancements and revisions. The budget also includes system upgrades, maintenance, testing, and training associated with the technology needed to support the program.

Customers in the ICO program do not receive a rebate. Instead, they will receive a monthly credit for the interruptible load they provide. The customer's credit calculation is based on the lesser of their Contract Interruptible Load or their Interruptible Demand for each month. Credits vary by season and are higher in the summer months. Other factors that influence the Monthly Credit rate include the type of service the customer receives, the interrupt notice option they choose (1-hour or No-Notice), and the number of annual Interruptible Hours agreed to under contract (40, 80, or 160 hours per year). Customers in the SOICO program will receive a monthly credit (June through September) for the interruptible load they provide.

Changes for 2016

None

b. Program Administration

SPS will administer and manage the ICO program internally. All contracts, marketing/sales, billing processes, program training, credit record maintenance, energy market administration, and load control procedures are handled internally. Most operational work is also completed internally. SPS utilizes an interruption system to notify customers of events and provide customers with energy trend information. The VLRPO system notifies customers of events, offers energy prices, and provides the customer the opportunity to accept, reject, or negotiate the energy price offer.

SPS will use the following process to determine when to call an interruption:

1. Each operating day, SPS operators will evaluate the margin between total available resources (power plants, transmission, market options, and purchased power contracts) and forecasted loads plus required operating reserves.
2. When the margins fall between SPS's largest power plant (Tolk) and 200 MW, SPS must evaluate whether to call upon the ICO buy-through option.
3. When the margin falls below 200 MW, SPS may call a capacity interruption.
4. If SPS calls an interruption through the ICO buy-through option, then the avoided cost is calculated based on the marginal unit (or purchased power contract) in SPS's portfolio.
5. The price is then broadcast to the ICO participants to facilitate their decision as to whether to buy-through or reduce their loads.
6. The buy-through cost is then calculated from actual operating data for billing purposes.

SPS retains data on all short-term, non-firm sales made during economic interruptions to demonstrate the hourly needs of the system and costs of alternatives available to system operators, as required by Paragraph L of the Recommended Decision in Case No. 08-00333-UT[8].

c. Marketing and Outreach Plan

For a program of this nature, it is not only important to promote the program to potential customers, but to also provide participants with ongoing support and communication. The marketing of this program is an on-going process that includes initial discussion to recruit participants, then ongoing communication to ensure customers realize the program value and can continue to reap the benefits of the program.

SPS faces certain challenges while promoting this program, including: recruiting customers with large enough curtailable load to qualify, assuring customers that they can shed load and still operate efficiently, and convincing specific industries (*i.e.*, oil and gas

---

[8] Case No. 08-00333-UT; *In the Matter of Southwestern Public Service Company's Application for Approval of its 2009 Energy Efficiency and Load Management Plan and Associated Programs and its Program Cost Tariff Riders,* Final Order Adopting Recommended Decision (Mar. 31, 2009).

production) to participate when it is more economical to continue production rather than interrupt their operation.

Because of the size of the customers eligible for this program, SPS will market the program primarily through its Account Managers. Account Managers will contact and meet with potential qualifying customers to introduce customers to the various program options, discuss program requirements and responsibilities, and ensure the program is a good fit. The Account Managers will play a crucial role by interacting with customers on a regular basis to ensure customer satisfaction.

In addition, SPS will use the following marketing materials to communicate the features and benefits of the program:

- New Mexico ICO System Guide – This guide will be provided to new customers when trained on the program and to existing customers on an as-needed basis to serve as a valuable reference in navigating the ICO system (provided by Account Manager after sign up).
- ICO Feature Sheet – This piece will summarize the program features and benefits and help potential customers determine their qualification status (available on xcelenergy.com).
- ICO 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 (available on xcelenergy.com).
- New Mexico ICO webpage on xcelenergy.com[9] – Comprehensive program information will be included on the Xcel Energy website for potential customers. The site will be updated annually or whenever there are program updates.
- VLRPO Feature Sheet – This piece will summarize the program features and benefits and help potential customers determine their qualification status (available on xcelenergy.com).
- New Mexico VLRPO User's Manual – This manual will be provided to new customers when trained on the program and to existing customers on an as-needed basis to serve as a valuable reference in navigating the VLRPO system (provided by Account Manager after sign up).

d. Measurement & Verification Plan

The savings for this load management program will be calculated based on technical assumptions derived from interval data collected via recording meters that are installed for each customer.

It is expected that the Evaluator will perform M&V on the program in 2016.

[9] http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Business/Interruptible_&_Time_of_Use/Interruptible_Credit_Option_(ICO)_-_NM

e. Cost-Effectiveness Tests

See Appendix A for the 2016 program benefit-cost analyses and Appendix B for the forecasted planning assumptions.

3. Saver's Switch® for Business

a. Program Description

Saver's Switch is a demand response program that offers bill credits for customers with a qualifying AC unit[10] as an incentive for commercial customers to allow SPS to control operation of their central air conditioners when warranted. This program is generally utilized on hot summer days when SPS's load is expected to reach near-peak capacity.

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. Interrupted air conditioners are generally cycled off and on in 15-20 minute increments for the duration of the control period.

Due to limitations of available communications technologies in the area, Saver's Switch is currently only available to customers in Roswell, Carlsbad, Clovis, Hobbs, Portales, and Artesia.

<u>Budget</u>
The primary costs associated with operating the Saver's Switch program are driven by the number of customers that seek to join the program, and include:

- the cost of switches;
- the cost of installations,
- the cost of service calls (if warranted);
- marketing expenses;
- M&V expenses for evaluating program performance; and
- bill credits to participating customers.

Relative to other programs offered in New Mexico, M&V expenses for Saver's Switch are quite significant. Monitoring of the Saver's Switch program is conducted by installing data loggers at a sampling of customer premises. The loggers measure air conditioning activity over the course of the cooling season. The data gathered is used to determine the resulting savings from activating Saver's Switches. Installing and retrieving the loggers entails multiple visits to the customer premise. The cost is largely independent of the size of the program. With the program size being relatively small, monitoring accounts for a significant portion of the overall budget.

---

[10] Qualifying AC units must be greater than 5 tons. This limit is included in the associated tariff and was developed to ensure high savings levels and improve cost-effectiveness.

The internal administration portion of the budget is primarily driven by the cost of both installations. In order to reduce costs, SPS is working to improve its pre-screening to reduce the number of ineligible applications which create a cost for the program without driving any savings. In addition, SPS conducts significant data monitoring for M&V and program management purposes. The installation of the switches is accounted for in the Third-Party Delivery budget category.

Changes for 2016
None.

b. Program Administration

The Saver's Switch program is promoted to customers using a variety of channels. Customers may sign up for the program via a mail-in form, email, print promotion, outbound phone calls, or the Xcel Energy website. Applications are pre-screened for eligibility in the program generally processed and switches installed within six to eight weeks.

A contracted third-party handles equipment installation, removal, and associated service calls. Due to variations in air conditioner age and location, the installer makes the final on-site determination as to whether the customer qualifies for the program.

The Saver's Switch program has the additional requirement that participants cannot opt out of individual control days.

Saver's Switch can be activated at the request of SPS's Commercial Operations or Transmission Operations under the following conditions:

- Commercial Operations will activate Saver's Switch along with other load management programs in order to maintain reserves on the system above 200 MW.
- SPS will consider activating the program when obligation loads are high (above 4,400 MW), or if the forecasted reserves fall below 200 MW. This would likely occur when temperatures are above 100 degrees or when large SPS-owned generation units are off line.
- SPS's Transmission Operations would also expect to request program activation if a Load Serving Entity in the SPS Balancing Authority is at NERC Energy Emergency Alert Level 2.

Activation of load management programs would take place prior to, or concurrent with, public appeals for conservation to reduce load to relieve a local transmission overload or unacceptably low transmission voltage. SPS is sensitive to the fact that participants in Saver's Switch may leave the program if they deem it overused. SPS will make every attempt to avoid activating the program multiple days in a row.

c. Marketing and Outreach Plan

SPS may use the following marketing channels to promote participation:

- bill inserts and newsletters to customers;
- direct mail, including e-mail marketing;
- trade marketing; and
- outbound telemarketing.

d. Measurement & Verification Plan

SPS's load research organization leads an annual research project to evaluate the load relief achieved and uses third parties specializing in load research projects to collect the data sample populations. This is done with a data logger installed on-site to monitor an air conditioner's energy use and how that use changes on a control day. The results are used to document the extent of load relief achieved during a control day.

Upon completion of field research, the raw data and tabulated results will be provided to the Evaluator for their input and an assessment of estimated load relief. It is expected that the independent evaluator will conduct M&V on the program in 2016.

e. Cost-Effectiveness Tests

See Appendix A for benefit-cost analyses and Appendix B for the forecasted planning assumptions.

C. Planning & Research Segment

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

- provide strategic direction for SPS's energy efficiency and load management programs;
- support direct impact programs through education and opportunity identification;
- ensure regulatory compliance with energy efficiency and load management legislation and rules;
- guide SPS internal policy issues related to energy efficiency and load management;
- evaluate program technical assumptions, program achievements, cost-effectiveness, and marketing strategies;
- provide segment and target market information;
- analyze overall effects of SPS's energy efficiency and load management portfolio on customer usage and overall system peak demand and system energy usage;

- measure customer satisfaction with SPS's energy efficiency and load management efforts; and
- develop new energy efficiency and load management programs.

Because of the indirect nature of the Planning & Research Segment, the normal program categories (*i.e.*, rebate structure, program administration, marketing & outreach, M&V, and cost-effectiveness) do not apply. The following sections are limited to a description of each program.

1. Consumer Education

Consumer Education is an indirect impact program that focuses primarily on creating consumer 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 also supports the various energy efficiency products SPS offers to residential customers. SPS employs a variety of resources and channels to communicate conservation and energy efficiency messages, including the Xcel Energy website, print, direct mail and community library partnerships. SPS has found through industry and internal market research that customers who are educated on the benefits of energy efficiency are much more likely to participate in DSM programs. This research also shows that customers need multiple exposures to the same message before it becomes knowledge. SPS believes that this general education drives customers to participate in its portfolio of programs.

SPS's Consumer Education program targets all of its New Mexico residential customers. The primary emphasis will continue to focus on:

- community library partnerships;
- messaging through local newspaper websites and local radios;
- targeted communications to address seasonal usage challenges;
- conservation messaging through Xcel Energy's newsletters and bill inserts to residential customers; and
- creation and publication of reference education materials (in English and Spanish).

SPS has approximately 92,000 residential customers in its New Mexico service territory. SPS plans to interface with approximately 80 percent of the residential customer base through bill inserts, community library partnerships, and conservation advertising.

<u>Budget</u>

The Consumer Education budget was developed based on past experience building awareness and community outreach in New Mexico, as well as projected costs for reaching customers through multiple communication channels and tactics including:

- community-based library partnerships;
- direct mail campaigns and promotions about conservation;

- bill inserts; and
- advertising, including, print, radio, and web.

Changes for 2016
SPS will scale back its general education activities in 2016 compared to previous years in an effort to focus on direct program promotion and awareness.

2. Market Research

The Market Research group oversees a variety of research efforts that are used to assist SPS with energy efficiency and load management decision-making. These research functions are needed to provide overall support for clarifying issues and for thoroughly understanding both current and potential customers. Often, similar information is collected over multiple service territories, making comparisons possible.

In 2016, the Market Research group plans to conduct several projects and studies as described below:

- **Home Use Study** – Quantitative research about New Mexico residential customers to gauge appliance saturation.
- **Dun & Bradstreet Business List Purchase** – Quarterly update on the demographics of existing business customers. This updated information can then be used to understand, profile, and target marketing efforts more effectively.
- **E Source Membership** – Robust repository of secondary and syndicated research resources for national marketing studies, research services, and consulting services.
- **Business DSM Awareness, Attitude & Usage Studies** – Quantitative research to gauge the energy awareness and energy efficient behaviors of Business SPS customers.

Budget
The Market Research budget was developed based on past experience and the costs of the projects listed above.

Changes for 2016
None.

3. Measurement and Verification

17.7.2.15. NMAC requires that all energy efficiency and load management programs be subject to measurement and verification through the Evaluator, where M&V is defined as "means an analysis performed by an independent evaluator that estimates, consistent with 17.7.2.7.B NMAC, reductions of energy usage or peak demand and determines any actual reduction of energy usage or peak demand that directly results from the utility's implementation of particular energy efficiency measures or programs or of particular load management measures or programs." Under the direction of the Commission and Staff, the Evaluator will conduct an analysis of specified programs and provide a report on its findings. SPS will facilitate the M&V of all of its direct impact energy efficiency and load management programs according to the requirements set forth in the New Mexico rules and statutes.

a. Selection of the Independent Program Evaluator

While the Evaluation Committee has been eliminated as part of the statewide process 17.7.2.15.B still provides the utilities the opportunity to participate in the selection of a statewide, M&V contractor.

b. Measurement & Verification Process

In 2016, SPS will require M&V of selected prescriptive programs (deemed savings) and its custom programs (calculated savings). The Evaluator will provide an individual M&V Plan for programs describing both the annual and comprehensive plans according to the program characteristics. The following are nationally accepted guidelines as to the type of M&V for each category of energy efficiency and load management programs:

<u>Prescriptive Programs/Products</u>
Prescriptive products are those pre-defined, common energy efficiency measures that do not require individual complex engineering analysis and are below a certain kW/kWh threshold. These measures make up a program, making the program 'prescriptive' in nature. The gross savings from prescriptive programs, which are determined using deemed savings technical assumptions, will be verified each year based on the factors identified in the deemed savings algorithm. In addition, the independent evaluator may choose to perform field measurements and verification in order to fine-tune the technical assumptions. For some programs, such as Home Energy Services, which provide savings that may be detected at the whole-house level, the Evaluator may choose to perform an independent billing analysis of electric billings before and after the installation of measures, in order to calculate the gross savings.

SPS's algorithms and underlying deemed savings assumptions will be provided to the Evaluator to assist in its review. As part of their responsibilities, the Commission may rely on the Evaluator to assist the Commission in their review of these deemed savings technical assumptions. In addition, the Evaluator will review program processes and establish net-to-gross ratios to account for free-ridership.

<u>Custom Products</u>
For the custom projects (*e.g.*, Custom Efficiency and Large Customer Self-Direct), SPS and the Evaluator will analyze each project's savings separately, employing both internal and external engineers to calculate and provide expert engineering reviews. For projects that have large energy savings or unique technologies, the Evaluator may choose to perform pre- and post-metering of the efficiency measure or process. If metering is not physically or economically feasible, engineering models or other regression analyses may be employed to calculate the savings of each project.

Load Management Programs

To monitor its load management programs, SPS will provide interval-metering data for a census of the ICO customers. For the Saver's Switch programs, statistical samples of air conditioners will be metered during the summer months. The Evaluator will use this data to analyze the gross and net savings impacts of the program by November 30 of each year for the previous summer and winter interruptions. In addition, the Evaluator may perform more comprehensive evaluations surveying customers at least once during a three-year period in order to provide recommendations for improvements to the program delivery and marketing processes.

c. Portfolio-Level M&V

The Evaluator will assess the cost-effectiveness of all programs each year prior to the annual status report filing. In compliance with reporting requirements, the Evaluator's M&V Report will 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; and
- description of the M&V process, including confirmation that:
    - measures are actually installed;
    - installations meet reasonable quality standards; and
    - measures are operating correctly and are expected to generate the predicted savings.

Budget

The 2016 budget for indirect M&V expenses includes the following:

- Internal labor and expenses to provide project management of the entire M&V process, to interface with the Evaluator processing invoices and tracking costs, and to ensure internally that proper M&V and data tracking is in place.
- Fees to be charged by the Evaluator for preparing reports, reviewing technical assumptions, preparing discovery responses, testimony, and participating in hearings if needed.

In addition, SPS has budgeted for direct program-related M&V costs for the specific programs that ADM has designated for M&V in 2016. For total budgeted costs see Table 1, and for the cost for each program by cost category, see Table 10.

Programs that will not require M&V in 2016 are: Home Lighting and Recycling, Refrigerator Recycling, and School Education Kits.

Changes for 2016
None.

4. Planning & Administration

Planning & Administration provides policies and procedures for effectively addressing the requirements of the energy efficiency and load management regulatory processes. This functional team manages all regulatory filings, directs and carries out benefit-cost analyses, provides tracking and reporting of energy efficiency and load management achievements and expenditures, and analyzes and prepares cost recovery reports. The costs of outside legal services are included within this function as well. Outside legal services are retained for the purposes of preparing and filing of DSM regulatory reports, DSM plans, and settlements and representing SPS at all DSM evidentiary hearings. In addition, Planning & Administration supports the energy efficiency and load management components of resource planning, participates in rulemaking, and provides internal policy guidance. 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.

Budget
The 2016 budget includes funds for: internal labor to prepare filings and benefit-cost analyses, outside legal services to support energy efficiency and load management filings and hearings, and employee expenses related to travel to and from New Mexico.

Changes for 2016
None.

5. Product Development

The Product Development group identifies, assesses, and develops new energy efficiency and load management products and services that can be offered to customers in SPS's New Mexico service area. For 2016, new product development will focus on exploring potential measures for Oil and Gas and Agricultural segments, as well as 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.

Measures, products, and programs are selected for development based on a variety of criteria, including: savings, potential cost of savings, ability to be developed quickly, longevity of the offering (*i.e.*, how long until a technology being rebated becomes the standard), level of market barriers and risk.

Budget
The 2016 budget includes funds for internal labor as well as outside consultant support.

Changes for 2016
None.

IV. Conclusion

SPS proposes a portfolio of energy efficiency and load management programs, consistent with the EUEA requirement. The 10 programs are:

Residential Segment

- Energy Feedback Pilot (EE);
- Residential Cooling (EE);
- Home Energy Services (EE):
- Home Lighting & Recycling (EE);
- Refrigerator Recycling (EE);
- School Education Kits (EE); and
- Residential Saver's Switch (LM).

Business Segment

- Business Comprehensive (EE);
- Interruptible Credit Option (LM); and
- Saver's Switch for Business (LM).

These programs were designed to offer SPS's customers opportunities for broad participation and the ability to reduce their energy consumption and peak demand. SPS solicited input on the proposed 2016 Plan program design from Staff, the New Mexico Attorney General's office, Southwest Energy Efficiency Project, Coalition for Clean Affordable Energy, EMNRD, and Occidental Petroleum, LLC.

Each of the programs pass the UCT, while the overall 2016 portfolio results in a UCT ratio of 1.95.

SPS has provided two appendices to this Plan:

- Appendix A contains the cost-effectiveness analyses of the individual programs, the customer segments, and the portfolio as a whole; and
- Appendix B presents the detailed forecasted planning assumptions on which the energy and demand savings projections and the cost-effectiveness analyses were calculated.

HOME LIGHTING & RECYCLING — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$1,388,804
Transmission & Distribution Capacity	$61,960
Marginal Energy	$4,707,606
Avoided Emissions	$213,913
Total Benefits	$6,372,283
Costs	
Utility Project Costs	
Total Incentive	$1,250,035
Internal Administration	$141,918
Third-Party Delivery	$290,733
Promotion	$832,128
M&V	$0
Subtotal	$2,514,814
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$2,514,814
Net Benefit (Cost)	$3,857,469
Benefit/Cost Ratio	2.53

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	12.49%
Gross Load Factor at Customer	E	10.52%
Net-to-Gross (Energy)	F	87.3%
Net-to-Gross (Demand)	G	86.6%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	97.663%
Installation Rate (Demand)	K	97.587%
UCT Net Benefit (Cost)	L	$314
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.1196 kW
Gross Annual kWh Saved at Customer	(B x E x C)	921 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	786 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	891 kWh

Program Summary per Participant		
Gross kW Saved at Customer	M	0.08 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.01 kW
Gross Annual kWh Saved at Customer	(B x E x M)	76 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	65 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	74 kWh

Program Summary All Participants		
Total Participants	N	148,500
Total Budget	O	**$2,514,814**
Gross kW Saved at Customer	(N x M)	12,304 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**1,549 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	11,337,921 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	11,072,920 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	9,667,431 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**10,960,806 kWh**
UCT Net Benefits	(N x M x L)	$3,857,469

Utility Program Cost per kWh Lifetime	$0.0187
Utility Program Cost per kW at Gen	$1,624

REFRIGERATOR RECYCLING — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$12,346
Transmission & Distribution Capacity	$547
Marginal Energy	$80,826
Avoided Emissions	$2,410
Total Benefits	$96,130
Costs	
Utility Project Costs	
Total Incentive	$22,500
Internal Administration	$20,138
Third-Party Delivery	$31,500
Promotion	$15,000
M&V	$0
Subtotal	$89,138
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$89,138
Net Benefit (Cost)	$6,992
Benefit/Cost Ratio	1.08

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	7 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	55.00%
Gross Load Factor at Customer	E	100.00%
Net-to-Gross (Energy)	F	57.1%
Net-to-Gross (Demand)	G	57.1%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$124
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.3563 kW
Gross Annual kWh Saved at Customer	(B x E x C)	8,760 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	5,005 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	5,675 kWh
Program Summary per Participant		
Gross kW Saved at Customer	M	0.13 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.05 kW
Gross Annual kWh Saved at Customer	(B x E x M)	1,102 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	629 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	714 kWh
Program Summary All Participants		
Total Participants	N	450
Total Budget	O	**$89,138**
Gross kW Saved at Customer	(N x M)	57 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**21 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	495,678 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	495,678 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	283,214 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**321,105 kWh**
UCT Net Benefits	(N x M x L)	**$6,992**
Utility Program Cost per kWh Lifetime		**$0.0402**
Utility Program Cost per kW at Gen		**$4,201**

SCHOOL EDUCATION KITS 2016 ELECTRIC GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$18,688
Transmission & Distribution Capacity	$831
Marginal Energy	$281,729
Avoided Emissions	$10,613
Total Benefits	$311,861
Costs	
Utility Project Costs	
Total Incentive	$50,350
Internal Administration	$20,608
Third-Party Delivery	$81,503
Promotion	$5,725
M&V	$0
Subtotal	$158,186
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$158,186
Net Benefit (Cost)	$153,675
Benefit/Cost Ratio	1.97

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	10.17%
Gross Load Factor at Customer	E	51.91%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	54.917%
Installation Rate (Demand)	K	65.000%
UCT Net Benefit (Cost)	L	$466
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.0749 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,547 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	2,497 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	2,831 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	0.13 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.01 kW
Gross Annual kWh Saved at Customer	(B x E x M)	600 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	330 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	374 kWh

Program Summary All Participants

Total Participants	N	2,500
Total Budget	O	**$158,186**
Gross kW Saved at Customer	(N x M)	330 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**26 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	1,500,619 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	824,100 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	824,100 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**934,353 kWh**
UCT Net Benefits	(N x M x L)	**$153,675**

Utility Program Cost per kWh Lifetime	**$0.0210**
Utility Program Cost per kW at Gen	**$6,077**

ENERGY FEEDBACK PILOT — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$46,184
Transmission & Distribution Capacity	$2,035
Marginal Energy	$148,663
Avoided Emissions	($15)
Total Benefits	$196,867
Costs	
Utility Project Costs	
Total Incentive	$0
Internal Administration	$16,800
Third-Party Delivery	$150,890
Promotion	$2,200
M&V	$15,000
Subtotal	$184,890
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$184,890
Net Benefit (Cost)	$11,977
Benefit/Cost Ratio	1.06

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	1 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	70.39%
Gross Load Factor at Customer	E	66.76%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$22
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.7981 kW
Gross Annual kWh Saved at Customer	(B x E x C)	5,849 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	5,849 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	6,631 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	0.03 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.03 kW
Gross Annual kWh Saved at Customer	(B x E x M)	189 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	189 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	214 kWh

Program Summary All Participants

Total Participants	N	16,714
Total Budget	O	**$184,890**
Gross kW Saved at Customer	(N x M)	539 kW
Net coincident kW Saved at Generator	((G x M x K) x D / (1 - I)) x N	**453 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	3,151,742 kWh
Gross Installed Annual kWh Saved at Customer	(B x E x M) x N x J	3,151,742 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	3,151,742 kWh
Net Annual kWh Saved at Generator	((B x E x M) / (1 - H)) x N x J x F	**3,573,404 kWh**
UCT Net Benefits	(N x M x L)	$11,977

Utility Program Cost per kWh Lifetime	$0.0517
Utility Program Cost per kW at Gen	$408

HOME ENERGY SERVICES: RESIDENTIAL AND LOW INCOME — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$835,030
Transmission & Distribution Capacity	$37,284
Marginal Energy	$3,899,386
Avoided Emissions	$213,331
Total Benefits	$4,985,032
Costs	
Utility Project Costs	
Total Incentive	$732,997
Internal Administration	$143,118
Third-Party Delivery	$1,571,462
Promotion	$74,421
M&V	$40,000
Subtotal	$2,561,998
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$2,561,998
Net Benefit (Cost)	$2,423,034
Benefit/Cost Ratio	1.95

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	17 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	74.00%
Gross Load Factor at Customer	E	78.64%
Net-to-Gross (Energy)	F	96.6%
Net-to-Gross (Demand)	G	96.6%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	98.044%
Installation Rate (Demand)	K	99.711%
UCT Net Benefit (Cost)	L	$2,793
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.8079 kW
Gross Annual kWh Saved at Customer	(B x E x C)	6,889 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	6,522 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	7,394 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	0.47 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.40 kW
Gross Annual kWh Saved at Customer	(B x E x M)	3,232 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	3,060 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	3,469 kWh

Program Summary All Participants

Total Participants	N	1,850
Total Budget	O	**$2,561,998**
Gross kW Saved at Customer	(N x M)	868 kW
Net coincident kW Saved at Generator	((G x M x K) x D / (1 - I)) x N	738 kW
Gross Annual kWh Saved at Customer	(B x E x M) x N	5,977,007 kWh
Gross Installed Annual kWh Saved at Customer	(B x E x M) x N x J	5,860,101 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	5,658,676 kWh
Net Annual kWh Saved at Generator	((B x E x M) / (1 - H)) x N x J x F	6,415,732 kWh
UCT Net Benefits	(N x M x L)	$2,423,034
Utility Program Cost per kWh Lifetime		$0.0240
Utility Program Cost per kW at Gen		$3,473

RESIDENTIAL COOLING — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$84,938
Transmission & Distribution Capacity	$3,785
Marginal Energy	$137,828
Avoided Emissions	$7,487
Total Benefits	$234,038
Costs	
Utility Project Costs	
Total Incentive	$27,696
Internal Administration	$74,124
Third-Party Delivery	$14,537
Promotion	$99,091
M&V	$15,000
Subtotal	$230,448
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$230,448
Net Benefit (Cost)	$3,590
Benefit/Cost Ratio	1.02

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	16 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	92.50%
Gross Load Factor at Customer	E	29.90%
Net-to-Gross (Energy)	F	91.2%
Net-to-Gross (Demand)	G	82.2%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$37
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.8619 kW
Gross Annual kWh Saved at Customer	(B x E x C)	2,619 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	2,389 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	2,708 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	0.50 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.46 kW
Gross Annual kWh Saved at Customer	(B x E x M)	1,320 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	1,204 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	1,365 kWh

Program Summary All Participants

Total Participants	N	192
Total Budget	O	**$230,448**
Gross kW Saved at Customer	(N x M)	97 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**88 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	253,426 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	253,426 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	231,102 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**262,020 kWh**
UCT Net Benefits	(N x M x L)	$3,590

Utility Program Cost per kWh Lifetime	$0.0566
Utility Program Cost per kW at Gen	$2,626

RESIDENTIAL SAVER'S SWITCH — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$991,070
Transmission & Distribution Capacity	$44,196
Marginal Energy	$6,067
Avoided Emissions	$345
Total Benefits	$1,041,678
Costs	
Utility Project Costs	
Total Incentive	$214,028
Internal Administration	$17,124
Third-Party Delivery	$275,214
Promotion	$17,684
M&V	$114,211
Subtotal	$638,261
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$638,261
Net Benefit (Cost)	$403,417
Benefit/Cost Ratio	1.63

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	15 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	21.67%
Gross Load Factor at Customer	E	0.02%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$118
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.2457 kW
Gross Annual kWh Saved at Customer	(B x E x C)	2 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	2 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	2 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	3.76 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.97 kW
Gross Annual kWh Saved at Customer	(B x E x M)	8 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	8 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	9 kWh

Program Summary All Participants

Total Participants	N	910
Total Budget	O	**$638,261**
Gross kW Saved at Customer	(N x M)	3,419 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**884 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	7,148 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	7,148 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	7,148 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**8,104 kWh**
UCT Net Benefits	(N x M x L)	**$403,417**

Utility Program Cost per kWh Lifetime	**$5.2507**
Utility Program Cost per kW at Gen	**$722**

RESIDENTIAL SEGMENT TOTAL **2016** **ELECTRIC** **GOAL**

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$3,377,060
Transmission & Distribution Capacity	$150,640
Marginal Energy	$9,262,105
Avoided Emissions	$448,083
Total Benefits	$13,237,889
Costs	
Utility Project Costs	
Total Incentive	$2,297,606
Internal Administration	$433,830
Third-Party Delivery	$2,415,839
Promotion	$1,046,249
M&V	$184,211
Subtotal	$6,377,735
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$6,377,735
Net Benefit (Cost)	$6,860,154
Benefit/Cost Ratio	2.08

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	11 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	19.60%
Gross Load Factor at Customer	E	14.73%
Net-to-Gross (Energy)	F	91.7%
Net-to-Gross (Demand)	G	92.5%
Transmission Loss Factor (Energy)	H	11.800%
Transmission Loss Factor (Demand)	I	16.200%
Installation Rate (Energy)	J	95.103%
Installation Rate (Demand)	K	98.572%
UCT Net Benefit (Cost)	L	$390
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.2027 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,290 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	1,126 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	1,276 kWh
Program Summary per Participant		
Gross kW Saved at Customer	M	0.10 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.02 kW
Gross Annual kWh Saved at Customer	(B x E x M)	133 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	116 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	131 kWh
Program Summary All Participants		
Total Participants	N	171,115
Total Budget	O	**$6,377,735**
Gross kW Saved at Customer	(N x M)	17,613 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	3,758 kW
Gross Annual kWh Saved at Customer	(B x E x M) x N	22,723,542 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	21,610,735 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	19,823,413 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	22,475,524 kWh
UCT Net Benefits	(N x M x L)	$6,860,154
Utility Program Cost per kWh Lifetime		$0.0247
Utility Program Cost per kW at Gen		$1,697

BUSINESS COMPREHENSIVE — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$1,836,515
Transmission & Distribution Capacity	$81,988
Marginal Energy	$5,481,915
Avoided Emissions	$298,563
Total Benefits	$7,698,981
Costs	
Utility Project Costs	
Total Incentive	$1,433,792
Internal Administration	$587,395
Third-Party Delivery	$1,070,697
Promotion	$482,668
M&V	$88,000
Subtotal	$3,662,552
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$3,662,552
Net Benefit (Cost)	$4,036,429
Benefit/Cost Ratio	2.10

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	16 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	62.72%
Gross Load Factor at Customer	E	50.03%
Net-to-Gross (Energy)	F	80.4%
Net-to-Gross (Demand)	G	80.8%
Transmission Loss Factor (Energy)	H	7.700%
Transmission Loss Factor (Demand)	I	10.400%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$1,476
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.5493 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,382 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	3,524 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	3,818 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	4.64 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	2.62 kW
Gross Annual kWh Saved at Customer	(B x E x M)	20,330 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	16,346 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	17,710 kWh

Program Summary All Participants

Total Participants	N	589
Total Budget	O	**$3,662,552**
Gross kW Saved at Customer	(N x M)	2,734 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**1,547 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	11,981,021 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	11,981,021 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	9,633,404 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**10,437,057 kWh**
UCT Net Benefits	(N x M x L)	$4,036,429
Utility Program Cost per kWh Lifetime		$0.0221
Utility Program Cost per kW at Gen		$2,368

INTERRUPTIBLE CREDIT OPTION — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$280,796
Transmission & Distribution Capacity	$12,399
Marginal Energy	$1,327
Avoided Emissions	$0
Total Benefits	$294,524
Costs	
Utility Project Costs	
Total Incentive	$15,550
Internal Administration	$23,112
Third-Party Delivery	$0
Promotion	$2,907
M&V	$7,500
Subtotal	$49,069
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$49,069
Net Benefit (Cost)	$245,455
Benefit/Cost Ratio	6.00

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	3 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	78.92%
Gross Load Factor at Customer	E	0.08%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.700%
Transmission Loss Factor (Demand)	I	10.400%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$245
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.8550 kW
Gross Annual kWh Saved at Customer	(B x E x C)	7 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	7 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	8 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	500.00 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	440.40 kW
Gross Annual kWh Saved at Customer	(B x E x M)	3,500 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	3,500 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	3,792 kWh

Program Summary All Participants

Total Participants	N	2
Total Budget	O	**$49,069**
Gross kW Saved at Customer	(N x M)	1,000 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**881 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	7,000 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	7,000 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	7,000 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**7,584 kWh**
UCT Net Benefits	(N x M x L)	$245,455
Utility Program Cost per kWh Lifetime		$2.1567
Utility Program Cost per kW at Gen		$56

SAVER'S SWITCH FOR BUSINESS — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$1,150,082
Transmission & Distribution Capacity	$51,287
Marginal Energy	$5,691
Avoided Emissions	$323
Total Benefits	$1,207,384
Costs	
Utility Project Costs	
Total Incentive	$128,000
Internal Administration	$19,528
Third-Party Delivery	$315,576
Promotion	$51,000
M&V	$55,000
Subtotal	$569,104
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$569,104
Net Benefit (Cost)	$638,280
Benefit/Cost Ratio	2.12

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	16.59%
Gross Load Factor at Customer	E	0.02%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.700%
Transmission Loss Factor (Demand)	I	10.400%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$122
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.1798 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	1 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	1 kWh

Program Summary per Participant		
Gross kW Saved at Customer	M	33.02 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	6.12 kW
Gross Annual kWh Saved at Customer	(B x E x M)	44 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	44 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	48 kWh

Program Summary All Participants		
Total Participants	N	159
Total Budget	O	**$569,104**
Gross kW Saved at Customer	(N x M)	5,251 kW
Net coincident kW Saved at Generator	((G x M x K) x D / (1 - I)) x N	973 kW
Gross Annual kWh Saved at Customer	(B x E x M) x N	7,023 kWh
Gross Installed Annual kWh Saved at Customer	(B x E x M) x N x J	7,023 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	7,023 kWh
Net Annual kWh Saved at Generator	((B x E x M) / (1 - H)) x N x J x F	7,609 kWh
UCT Net Benefits	(N x M x L)	$638,280

Utility Program Cost per kWh Lifetime	$4.9861
Utility Program Cost per kW at Gen	$585

BUSINESS SEGMENT TOTAL — 2016 — ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$3,267,394
Transmission & Distribution Capacity	$145,675
Marginal Energy	$5,488,933
Avoided Emissions	$298,887
Total Benefits	$9,200,889
Costs	
Utility Project Costs	
Total Incentive	$1,577,341
Internal Administration	$630,034
Third-Party Delivery	$1,386,274
Promotion	$536,576
M&V	$150,500
Subtotal	$4,280,725
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$4,280,725
Net Benefit (Cost)	$4,920,164
Benefit/Cost Ratio	2.15

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	16 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	37.57%
Gross Load Factor at Customer	E	15.24%
Net-to-Gross (Energy)	F	80.4%
Net-to-Gross (Demand)	G	90.3%
Transmission Loss Factor (Energy)	H	7.700%
Transmission Loss Factor (Demand)	I	10.400%
Installation Rate (Energy)	J	100.000%
Installation Rate (Demand)	K	100.000%
UCT Net Benefit (Cost)	L	$548
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.3674 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,335 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	1,074 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	1,163 kWh

Program Summary per Participant		
Gross kW Saved at Customer	M	11.97 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	4.53 kW
Gross Annual kWh Saved at Customer	(B x E x M)	15,986 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	12,858 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	13,930 kWh

Program Summary All Participants		
Total Participants	N	750
Total Budget	O	**$4,280,725**
Gross kW Saved at Customer	(N x M)	8,985 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**3,400 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	11,995,045 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	11,995,045 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	9,647,427 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**10,452,250 kWh**
UCT Net Benefits	(N x M x L)	**$4,920,164**

Utility Program Cost per kWh Lifetime	**$0.0258**
Utility Program Cost per kW at Gen	**$1,259**

PORTFOLIO TOTAL — 2016 ELECTRIC — GOAL

2016 Net Present Cost Benefit Summary

Analysis For All Participants

	Utility Cost Test ($Total)
Benefits	
System Benefits (Avoided Costs)	
Generation Capacity	$6,644,454
Transmission & Distribution Capacity	$296,315
Marginal Energy	$14,751,038
Avoided Emissions	$746,970
Total Benefits	$22,438,777
Costs	
Utility Project Costs	
Total Incentive	$3,874,947
Internal Administration	$1,605,026
Third-Party Delivery	$3,966,211
Promotion	$1,679,398
M&V	$363,519
Subtotal	$11,489,101
Participant Costs	
Costs	
Incremental Capital Costs	N/A
Incremental O&M Costs	N/A
Subtotal	N/A
Reductions to Costs	
Participant Rebates	N/A
Subtotal	N/A
Subtotal	N/A
Total Costs	$11,489,101
Net Benefit (Cost)	$10,949,676
Benefit/Cost Ratio	1.95

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW

Lifetime (Weighted on Generator kWh)	A	13 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	25.41%
Gross Load Factor at Customer	E	14.90%
Net-to-Gross (Energy)	F	87.9%
Net-to-Gross (Demand)	G	91.4%
Transmission Loss Factor (Energy)	H	10.425%
Transmission Loss Factor (Demand)	I	14.327%
Installation Rate (Energy)	J	96.605%
Installation Rate (Demand)	K	99.245%
UCT Net Benefit (Cost)	L	$412
Net coincident kW Saved at Generator	(G x C x K) x D / (1 - I)	0.2574 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,305 kWh
Net Annual kWh Saved at Customer	(F x (B x E x C x J))	1,109 kWh
Net Annual kWh Saved at Generator	(F x (B x E x C x J)) / (1 - H)	1,238 kWh

Program Summary per Participant

Gross kW Saved at Customer	M	0.15 kW
Net coincident kW Saved at Generator	(G x M x K) x D / (1 - I)	0.04 kW
Gross Annual kWh Saved at Customer	(B x E x M)	202 kWh
Net Annual kWh Saved at Customer	(F x (B x E x M x J))	172 kWh
Net Annual kWh Saved at Generator	(F x (B x E x M x J)) / (1 - H)	192 kWh

Program Summary All Participants

Total Participants	N	171,865
Total Budget	O	**$11,489,101**
Gross kW Saved at Customer	(N x M)	26,597 kW
Net coincident kW Saved at Generator	**((G x M x K) x D / (1 - I)) x N**	**7,158 kW**
Gross Annual kWh Saved at Customer	(B x E x M) x N	34,718,587 kWh
Gross Installed Annual kWh Saved at Customer	**(B x E x M) x N x J**	33,539,740 kWh
Net Annual kWh Saved at Customer	(B x E x M) x N x J x F	29,494,955 kWh
Net Annual kWh Saved at Generator	**((B x E x M) / (1 - H)) x N x J x F**	**32,927,775 kWh**
UCT Net Benefits	(N x M x L)	**$10,949,676**

Utility Program Cost per kWh Lifetime	**$0.0269**
Utility Program Cost per kW at Gen	**$1,605**

Electric Product Detailed Technical Assumptions

Measure Description		High Efficiency Product Assumptions			Baseline Product Assumptions			Economic Assumptions				
Electric Measure Group	Electric Measure Description	Efficient Product Description / Rating	Efficient Product Consumption (watts)	Efficient Hours of Operation (hrs/yr)	Baseline Product Description / Rating	Baseline Product Consumption (watts)	Baseline Hours of Operation (hrs/yr)	Measure Lifetime (years)	Rebate Amount ($)	Average Baseline Product Cost ($)	Incremental Cost of Efficient Product ($)	Assumed Energy Cost ($/kWh)
NM - Computer Efficiency - Upstream	Upstream Power Supply - Bronze	desktop computer meeting ENERGY STAR version 5.0 spec with an 80 Plus Bronze level power supply	43	7,706	Baseline desktop computer with a standard efficiency power supply	68	7,706	5.00	$0	$600	$9	$ 0.060
NM - Computer Efficiency - Upstream	Upstream Power Supply - Silver	desktop computer meeting ENERGY STAR version 5.0 spec with an 80 Plus Silver level power supply	41	7,706	Baseline desktop computer with a standard efficiency power supply	68	7,706	5.00	$0	$600	$14	$ 0.060
NM - Computer Efficiency - Upstream	Upstream Power Supply - Gold	desktop computer meeting ENERGY STAR version 5.0 spec with an 80 Plus Gold level power supply	41	7,706	Baseline desktop computer with a standard efficiency power supply	68	7,706	5.00	$0	$600	$16	$ 0.060
NM - Computer Efficiency - Upstream	Upstream Power Supply - Platinum	desktop computer meeting ENERGY STAR version 5.0 spec with an 80 Plus Platinum level power supply	40	7,706	Baseline desktop computer with a standard efficiency power supply	68	7,706	5.00	$0	$600	$22	$ 0.060
NM - Computer Efficiency - Prescriptive	Zero & Thin Client Installations	Server & software at data center along with thin-client or zero-client device replaces desktop CPU (VM Ware w/ Wyse thin-client system, Pano-Logic zero-client system); meeting Energy Star 5.0 specification	16	7,706	Baseline desktop computer with a standard efficiency power supply	48	7,706	10.00	$60	$600	$117	$ 0.060
NM - Computer Efficiency - Prescriptive	Network Based PC Power Management	Desktop Computer with network controlled software installed	17	7,706	Desktop Computer with no network controlled software	48	7,706	6.00	$5	$0	$15	$ 0.044
NM - Computer Efficiency - Prescriptive	Server with Gold Rated Power Supply	Gold Power Supply	239	8,760	Silver Power Supply	251	8,739	5.00	$0	$90	$15	$ 0.056
NM - Computer Efficiency - Prescriptive	Server with Platinum Rated Power Supply	Platinum Power Supply	226	8,760	Silver Power Supply	248	8,721	5.00	$0	$88	$39	$ 0.056
NM - Computer Efficiency - Prescriptive	Server with Titanium Rated Power Supply	Titanium Power Supply	194	8,760	Silver Power Supply	222	8,706	5.00	$0	$87	$73	$ 0.056
Cooling Efficiency - Prescriptive	DX Units < than 5.4 tons	Unit size 3.7 tons, 14.1 SEER, 12 EER	3,700	1,126	Unit size 3.7 tons, 13 SEER, 11.05 EER	4,018	1,126	15.00	$548	$4,500	$600	$ 0.067
Cooling Efficiency - Prescriptive	DX Units 5.5-11.3 tons	Unit size 10 tons, 14.6 SEER, 12.4 EER	9,677	1,345	Unit size 10 tons, 12.9 SEER, 11 EER	10,909	1,345	15.00	$660	$13,500	$1,162	$ 0.067
Cooling Efficiency - Prescriptive	DX Units11.4-19.9 tons	Unit size 15.6 tons, 14.4 SEER, 12.2 EER	15,344	1,345	Unit size 15.6 tons, 12.7 SEER, 10.8 EER	17,333	1,345	15.00	$1,030	$22,500	$4,976	$ 0.067
Cooling Efficiency - Prescriptive	DX Units 20-63.3 tons	Unit size 30.7 tons, 12.7 SEER, 10.8 EER	34,111	1,345	Unit size 30.7 tons, 11.5 SEER, 9.8 EER	37,592	1,345	15.00	$2,026	$45,000	$9,793	$ 0.067
Cooling Efficiency - Prescriptive	DX Units greater than 63.3 tons	Unit size 174 tons, 12 SEER, 10.2 EER	204,706	1,345	Unit size 174 tons, 11.2 SEER, 9.5 EER	219,789	1,345	15.00	$10,092	$187,500	$41,621	$ 0.067
Cooling Efficiency - Prescriptive	Hotel Room Controller	Hotel Room w/ Smart HVAC Thermostat	0	322	Hotel Room w/ Standard HVAC Thermostat	815	322	15.00	$75	$0	$300	$ 0.067
Cooling Efficiency - Prescriptive	RTU Economizer & Demand Control Ventilation	RTU with Demand Control	4,503	1,039	RTU with Standard Economizer	9,006	1,039	20.00	$628	$1,000	$1,500	$ 0.067
Cooling Efficiency - Prescriptive	Water-source Heat Pumps	Unit size 2.5 tons, 13.5 SEER, 13.5 EER	2,222	1,345	Unit size 2.5 tons, 12 SEER, 12 EER	2,500	1,345	15.00	$155	$4,500	$500	$ 0.067
Cooling Efficiency - Prescriptive	PTAC >= 7,000 BTUH to <=15,000 BTUH	Condensing Units size 1.1 tons, 13.5 SEER, 11.5 EER	1,148	1,137	Condensing Units 1.1 tons, 11.4 SEER, 9.7 EER	1,361	1,137	15.00	$77	$1,125	$188	$ 0.067
Cooling Efficiency - Prescriptive	PTAC < 7,000 BTUH	Condensing Units size 0.58 tons, 13.5 SEER, 11.5 EER	605	969	Condensing Units 0.58 tons, 13 SEER, 11 EER	633	969	15.00	$41	$1,125	$188	$ 0.067
Cooling Efficiency - Prescriptive	PTAC > 15,000 BTUH	Condensing Units size 1.26 tons, 13.5 SEER, 11.5 EER	1,315	1,155	Condensing Units 1.26 tons, 10.9 SEER, 9.3 EER	1,626	1,155	15.00	$88	$1,125	$188	$ 0.067
Cooling Efficiency - Prescriptive	Scroll/Screw Chiller < 75 tons	Chiller size 58.8 tons, 0.59 full load kW/ton, 0.48 IPLV	34,692	1,040	Chiller size 58.8 tons, 0.78 full load kW/ton, 0.63 IPLV	45,864	1,040	20.00	$3,969	$35,280	$5,880	$ 0.067
Cooling Efficiency - Prescriptive	Scroll/Screw Chiller >= 75 tons to < 150 tons	Chiller size 113.5 tons, 0.64 full load kW/ton, 0.53 IPLV	72,640	846	Chiller size 113.5 tons, 0.78 full load kW/ton, 0.62 IPLV	87,963	846	20.00	$5,306	$75,000	$11,350	$ 0.067
Cooling Efficiency - Prescriptive	Scroll/Screw chiller >=150 to <300 tons	Chiller size 225 tons, 0.57 full load kW/ton, 0.48 IPLV	128,250	1,166	Chiller size 225 tons, 0.68 full load kW/ton, 0.58 IPLV	153,000	1,166	20.00	$9,765	$108,000	$22,500	$ 0.067
Cooling Efficiency - Prescriptive	scroll/screw chiller >= 300 tons	Chiller size 300 tons, 0.52 full load kW/ton, 0.37 IPLV	155,100	2,180	Chiller size 300 tons, 0.62 full load kW/ton, 0.54 IPLV	186,000	2,180	20.00	$15,975	$210,000	$21,000	$ 0.067
Cooling Efficiency - Prescriptive	Centrifugal Chillers < 150 tons	Chiller size 125 tons, 0.60 full load kW/ton, 0.57 IPLV	75,000	1,094	Chiller size 125 tons, 0.63 full load kW/ton, 0.60 IPLV	79,250	1,094	20.00	$2,288	$75,000	$12,500	$ 0.067
Cooling Efficiency - Prescriptive	Centrifugal Chillers >= 150 to < 300 tons	Chiller size 225 tons, 0.55 full load kW/ton, 0.51 IPLV	123,032	1,283	Chiller size 225 tons, 0.63 full load kW/ton, 0.60 IPLV	142,650	1,283	20.00	$8,306	$135,000	$22,500	$ 0.067
Cooling Efficiency - Prescriptive	Centrifugal Chillers >= 300 to < 600 tons	Chiller size 425 tons, 0.52 full load kW/ton, 0.49 IPLV	219,300	1,283	Chiller size 425 tons, 0.58 full load kW/ton, 0.55 IPLV	244,800	1,283	20.00	$11,645	$255,000	$31,875	$ 0.067
Cooling Efficiency - Prescriptive	Centrifugal Chillers >= 600 tons	Chiller size 750 tons, 0.55 full load kW/ton, 0.53 IPLV	414,563	986	Chiller size 750 tons, 0.57 full load kW/ton, 0.54 IPLV	427,500	986	20.00	$8,878	$450,000	$56,250	$ 0.067
Cooling Efficiency - Prescriptive	Air-Cooled Chillers - avg. capacity 250 tons	Air-cooled chiller average capacity 250 tons, 1.15 kW/ton	297,030	347	Air-cooled chiller average capacity 250 tons, 1.26 kW/ton	313,742	347	20.00	$3,125	$250,000	$10,000	$ 0.067
Cooling Efficiency - Prescriptive	ECM - Medium Temp Display Case	Electronically Communtated Motor (ECM)	24	8,672	Shaded Pole Motor	72	8,672	15.00	$40	$0	$88	$ 0.067
Cooling Efficiency - Prescriptive	ECM - Low Temp Display Case	Electronically Communtated Motor (ECM)	28	8,672	Shaded Pole Motor	84	8,672	15.00	$40	$0	$88	$ 0.067
Cooling Efficiency - Prescriptive	ECM - Medium Temp Walk-in, Evap fan <= 15" Diameter	Electronically Communtated Motor (ECM)	44	8,585	Shaded Pole Motor	137	8,585	15.00	$70	$0	$180	$ 0.067
Cooling Efficiency - Prescriptive	ECM- Low Temp Walk-in, Evap fan <= 15" Diameter	Electronically Communtated Motor (ECM)	52	8,585	Shaded Pole Motor	161	8,585	15.00	$70	$0	$180	$ 0.067
Cooling Efficiency - Prescriptive	Anti-Sweat Heater Controls	Anti-Sweat Heater Controls	6	8,760	Anti-Sweat Heaters running constantly	177	8,760	12.00	$60	$0	$180	$ 0.067
Cooling Efficiency - Prescriptive	No Heat Case Doors	No Heat Case Doors	0	8,760	Anti-Sweat Heaters running constantly	179	8,760	10.00	$125	$0	$538	$ 0.067
Cooling Efficiency - Prescriptive	Medium-temp Enclosed Reach-In Case (per linear foot)	Medium-temp Reach-In Cases with Doors	31	8,760	Medium-temp Open Reach-In Cases	174	8,760	15.00	$70	$0	$906	$ 0.067
Cooling Efficiency - Prescriptive	Evap Fan Motor Controller	Evaporative Motor Fan Control	0	2,576	No Motor Fan Controls	147	2,576	15.00	$35	$0	$120	$ 0.067
Cooling Efficiency - Prescriptive	Tier 1 - Direct Evaporative Cooling-TOTAL	Standard Direct Evaporative Cooler	1,783	980	Standard Roof-top Unit	9,070	980	10.00	$746	$11,250	-$7,880	$ 0.067
Cooling Efficiency - Prescriptive	VSD Chiller Retrofit	Chiller size 378 tons, 0.58 full load kW/ton, 0.43 IPLV	160,881	1,283	Chiller size 378 tons, 0.59 full load kW/ton, 0.57 IPLV	214,889	1,283	20.00	$8,101	$0	$27,172	$ 0.067
Cooling Efficiency - Prescriptive	Plate & Frame Heat Exchangers	Install plate & frame heat exchanger to allow cooling tower to meet cooling load	8,833	308	Chiller-based cooling	54,207	308	20.00	$28,267	$0	$65,571	$ 0.067
Cooling Efficiency - Prescriptive	LED Ref and Frz Cases 5' or 6' doors	LED Strip lighting	41	8,760	T8 or T12 Fluorescent	113	8,760	16.00	$100	$0	$171	$ 0.056
NM - Custom Efficiency	Custom Efficiency	New Equipment	1,160,355	4,378	Old or less efficient systems or equipment	1,192,843	4,378	20.00	$16,900	$0	$88,487	$ 0.064
NM - Custom Efficiency - Compressed Air	Compressed Air	New Equipment	1,366,784	6,724	Old or less efficient systems or equipment	1,385,610	6,724	20.00	$10,502	$0	$34,626	$ 0.059
NM - Custom Efficiency - Motors	Motors Efficiency	New Equipment	1,596,409	4,633	Old or less efficient systems or equipment	1,625,471	4,633	15.00	$12,654	$0	$45,133	$ 0.066
NM - Custom Efficiency - Lighting	Lighting	High Efficiency Lighting	1,163,157	4,304	Existing Lower Efficiency Lighting	1,177,738	4,304	15.00	$8,586	$0	$21,264	$ 0.063
NM - Custom Efficiency - Cooling	Cooling	New Equipment	2,700,330	4,201	Old or less efficient systems or equipment	2,720,763	4,201	20.00	$9,998	$0	$46,916	$ 0.067
Study	Engineering Studies	Completed Studies	0	0	No Studies	0	0	0.00	$42,500	$0	$50,000	$ 0.064
NM - Lighting Efficiency Rebate	T8 to T8 Optimization	Fluorescent T8 Fixture with Less Lamps (3,2,1)	63	3,876	Fluorescent T8 Fixture with More Lamps (4,3,2)	115	3,876	16.00	$12	$0	$43	$ 0.063

	Stipulated Output							Economic Assumptions		Technical Assumption	Program Forecast Inputs 2016		Stipulated Forecast Inputs			Program Forecast 2016			
Electric Measure Description	Rebate as a % of Incremental Cost (%)	Increm't'l Cost Payback Period w/o Rebate (yrs)	Increm't'l Cost Payback Period w/ Rebate (yrs)	Annual Customer kWh Savings (kWh/yr)	Rebated Cost / Cust kWh Saved ($/kWh)	Rebated Lifetime cost /Cust KWh Saved ($/kWh)	Customer kW Savings (kW)	Generator Peak kW Savings (kW)	Non-Energy O&M Savings ($)	Energy O&M Savings ($)	Coincidence Factor (%)	2016 Participants (-)	2016 Units (-)	NTG (%)	Installation Rate (%)	Realization Rate (%)	2016 NET Gen kW (kW)	2016 NET Gen kWh (kWh)	2016 Rebate Budget ($)	2016 Incremental Costs ($)
Upstream Power Supply - Bronze	0%	0.77	0.77	196	$0.00	$0.00	0.025	0.025	$0.00	$0.00	100.0%	6	56	68%	100%	100%	1.079	8,070	$0	$504
Upstream Power Supply - Silver	0%	1.14	1.14	206	$0.00	$0.00	0.027	0.027	$0.00	$0.00	100.0%	42	420	68%	100%	100%	8.515	63,699	$0	$5,880
Upstream Power Supply - Gold	0%	1.26	1.26	213	$0.00	$0.00	0.028	0.028	$0.00	$0.00	100.0%	78	772	68%	100%	100%	16.172	120,978	$0	$12,352
Upstream Power Supply - Platinum	0%	1.68	1.68	220	$0.00	$0.00	0.028	0.028	$0.00	$0.00	100.0%	0	0	68%	100%	100%	0.000	0	$0	$0
Zero & Thin Client Installations	51%	2.58	1.26	247	$0.24	$0.02	0.032	0.032	$30.50	$0.00	100.0%	5	150	88%	100%	100%	4.715	35,273	$9,000	$17,521
Network Based PC Power Management	34%	1.92	1.27	237	$0.02	$0.00	0.031	0.000	-$2.74	$0.00	0.0%	10	210	88%	100%	100%	0.000	47,418	$1,050	$3,074
Server with Gold Rated Power Supply	0%	2.74	2.74	97	$0.00	$0.00	0.012	0.012	$0.00	$0.00	100.0%	10	84	100%	100%	100%	1.096	8,841	$0	$1,247
Server with Platinum Rated Power Supply	0%	3.79	3.79	184	$0.00	$0.00	0.022	0.022	$0.00	$0.00	100.0%	5	72	100%	100%	100%	1.778	14,357	$0	$2,808
Server with Titanium Rated Power Supply	0%	5.73	5.73	228	$0.00	$0.00	0.027	0.027	$0.00	$0.00	100.0%	5	36	100%	100%	100%	1.103	8,911	$0	$2,633
DX Units < than 5.4 tons	91%	24.95	2.18	358	$1.53	$0.10	0.318	0.318	$0.00	$0.00	100.0%	5	10	88%	100%	100%	3.106	3,396	$5,476	$6,001
DX Units 5.5-11.3 tons	57%	10.45	4.51	1,656	$0.40	$0.03	1.232	1.232	$0.00	$0.00	100.0%	1	1	88%	100%	100%	1.203	1,570	$660	$1,162
DX Units11.4-19.9 tons	21%	27.71	21.98	2,674	$0.38	$0.03	1.989	1.989	$0.00	$0.00	100.0%	1	1	88%	100%	100%	1.942	2,535	$1,030	$4,976
DX Units 20-63.3 tons	21%	31.17	24.72	4,680	$0.43	$0.03	3.481	3.481	$0.00	$0.00	100.0%	3	3	88%	100%	100%	10.197	13,310	$6,079	$29,380
DX Units greater than 63.3 tons	24%	30.56	23.15	20,281	$0.50	$0.03	15.084	15.084	$0.00	$0.00	100.0%	1	1	88%	100%	100%	14.730	19,227	$10,092	$41,621
Hotel Room Controller	25%	17.03	12.77	262	$0.29	$0.02	0.815	0.049	$0.00	$0.00	6.0%	10	125	88%	100%	100%	5.968	31,090	$9,375	$37,500
RTU Economizer & Demand Control Ventilation	42%	4.77	2.78	4,680	$0.13	$0.01	4.503	4.053	$0.00	$0.00	90.0%	1	1	88%	100%	100%	3.958	4,437	$628	$1,500
Water-source Heat Pumps	31%	19.94	13.76	373	$0.41	$0.03	0.278	0.250	$0.00	$0.00	90.0%	1	1	88%	100%	100%	0.244	354	$155	$500
PTAC >= 7,000 BTUH to <=15,000 BTUH	41%	11.53	6.80	242	$0.32	$0.02	0.213	0.192	$0.00	$0.00	90.0%	1	1	88%	100%	100%	0.187	230	$77	$188
PTAC < 7,000 BTUH	22%	104.74	82.06	27	$1.52	$0.10	0.028	0.025	$0.00	$0.00	90.0%	4	125	88%	100%	100%	3.022	3,159	$5,075	$23,438
PTAC > 15,000 BTUH	47%	7.77	4.12	359	$0.25	$0.02	0.311	0.280	$0.00	$0.00	90.0%	1	1	88%	100%	100%	0.273	341	$88	$188
Scroll/Screw Chiller < 75 tons	68%	7.54	2.45	11,618	$0.34	$0.02	11.172	10.055	$0.00	$0.00	90.0%	0	0	88%	100%	100%	0.000	0	$0	$0
Scroll/Screw Chiller >= 75 tons to < 150 tons	47%	13.04	6.95	12,961	$0.41	$0.02	15.323	13.790	$0.00	$0.00	90.0%	1	1	88%	100%	100%	13.467	12,287	$5,306	$11,350
Scroll/Screw chiller >=150 to <300 tons	43%	11.61	6.57	28,868	$0.34	$0.02	24.750	22.275	$0.00	$0.00	90.0%	1	1	88%	100%	100%	21.753	27,367	$9,765	$22,500
scroll/screw chiller >= 300 tons	76%	4.64	1.11	67,359	$0.24	$0.01	30.900	27.810	$0.00	$0.00	90.0%	0	0	88%	100%	100%	0.000	0	$0	$0
Centrifugal Chillers < 150 tons	18%	40.03	32.70	4,651	$0.49	$0.02	4.250	3.825	$0.00	$0.00	90.0%	1	1	88%	100%	100%	3.735	4,409	$2,288	$12,500
Centrifugal Chillers >= 150 to < 300 tons	37%	13.31	8.40	25,171	$0.33	$0.02	19.618	17.657	$0.00	$0.00	90.0%	0	0	88%	100%	100%	0.000	0	$0	$0
Centrifugal Chillers >= 300 to < 600 tons	37%	14.51	9.21	32,717	$0.36	$0.02	25.500	22.950	$0.00	$0.00	90.0%	1	1	88%	100%	100%	22.412	31,016	$11,645	$31,875
Centrifugal Chillers >= 600 tons	16%	65.71	55.34	12,750	$0.70	$0.03	12.937	11.644	$0.00	$0.00	90.0%	0	0	88%	100%	100%	0.000	0	$0	$0
Air-Cooled Chillers - avg. capacity 250 tons	31%	25.65	17.64	5,806	$0.54	$0.03	16.712	15.041	$0.00	$0.00	90.0%	1	1	88%	100%	100%	14.688	5,504	$3,125	$10,000
ECM - Medium Temp Display Case	45%	3.16	1.73	414	$0.10	$0.01	0.048	0.048	$0.00	$0.00	100.0%	10	90	88%	100%	100%	4.198	35,340	$3,600	$7,920
ECM - Low Temp Display Case	45%	2.68	1.46	489	$0.08	$0.01	0.056	0.056	$0.00	$0.00	100.0%	10	90	88%	100%	100%	4.952	41,688	$3,600	$7,920
ECM - Medium Temp Walk-in, Evap fan <= 15" Diameter	39%	3.38	2.07	793	$0.09	$0.01	0.092	0.092	$0.00	$0.00	100.0%	10	60	88%	100%	100%	5.413	45,112	$4,200	$10,800
ECM- Low Temp Walk-in, Evap fan <= 15" Diameter	39%	2.87	1.75	936	$0.07	$0.00	0.109	0.109	$0.00	$0.00	100.0%	10	60	88%	100%	100%	6.386	53,216	$4,200	$10,800
Anti-Sweat Heater Controls	33%	1.79	1.19	1,499	$0.04	$0.00	0.171	0.165	$0.00	$0.00	96.7%	2	13	88%	100%	100%	2.020	17,766	$750	$2,249
No Heat Case Doors	23%	5.09	3.91	1,571	$0.08	$0.01	0.179	0.179	$0.00	$0.00	100.0%	2	5	88%	100%	100%	0.876	7,448	$625	$2,688
Medium-temp Enclosed Reach-In Case (per linear foot)	8%	10.79	9.96	1,251	$0.06	$0.00	0.143	0.143	$0.00	$0.00	100.0%	2	5	88%	100%	100%	0.697	5,928	$350	$4,531
Evap Fan Motor Controller	29%	4.74	3.35	376	$0.09	$0.01	0.146	0.043	$0.00	$0.00	29.4%	5	20	88%	100%	100%	0.839	7,138	$700	$2,395
Tier 1 - Direct Evaporative Cooling-TOTAL	-9%	29.52	32.32	7,141	$0.10	$0.01	7.286	6.558	-$746.42	$0.00	90.0%	4	4	88%	100%	100%	25.616	27,080	$2,986	-$31,520
VSD Chiller Retrofit	30%	5.84	4.10	69,294	$0.12	$0.01	54.008	4.498	$0.00	$0.00	8.3%	0	0	88%	100%	100%	0.000	0	$0	$0
Plate & Frame Heat Exchangers	43%	69.96	39.80	13,959	$2.02	$0.10	45.374	0.000	$0.00	$0.00	0.0%	1	1	88%	100%	100%	0.000	13,233	$28,267	$65,571
LED Ref and Frz Cases 5' or 6' doors	58%	4.90	2.04	627	$0.16	$0.01	0.072	0.072	$0.00	$0.00	100.0%	12	120	88%	100%	100%	8.386	71,311	$12,000	$20,563
Custom Efficiency	19%	3.70	3.00	142,228	$0.12	$0.01	32.488	16.466	$0.00	$14,843.88	50.7%	17	17	80%	100%	100%	249.925	2,095,671	$287,304	$1,504,273
Compressed Air	30%	4.23	2.95	126,590	$0.08	$0.00	18.826	15.592	$0.00	$768.88	82.8%	5	5	80%	100%	100%	69.608	548,601	$52,508	$173,130
Motors Efficiency	28%	4.30	3.10	134,649	$0.09	$0.01	29.061	10.756	$0.00	$1,543.00	37.0%	8	8	80%	100%	100%	76.832	933,647	$101,229	$361,065
Lighting	40%	5.34	3.18	62,759	$0.14	$0.01	14.582	9.873	$0.00	$41.77	67.7%	23	23	80%	100%	100%	202.756	1,251,103	$197,489	$489,082
Cooling	21%	8.05	6.34	85,840	$0.12	$0.01	20.434	11.837	$0.00	$61.50	57.9%	2	2	80%	100%	100%	21.138	148,801	$19,996	$93,833
Engineering Studies	85%	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	0.000	0.000	$0.00	$0.00	0.0%	2	2	80%	100%	100%	0.000	0	$85,000	$100,000
T8 to T8 Optimization	28%	3.38	2.44	202	$0.06	$0.00	0.052	0.040	$0.04	$0.00	77.5%	1	50	80%	100%	100%	1.807	8,767	$600	$2,156

Electric Product Detailed Technical Assumptions																								Program Forecast Inputs		Stipulated Forecast Inputs			Program			
Measure Description		High Efficiency Product Assumptions			Baseline Product Assumptions			Economic Assumptions					Stipulated Output								Economic Assumptions		Technical Assumption	2016					2016			
Electric Measure Group	Electric Measure Description	Efficient Product Description / Rating	Efficient Product Consumption (watts)	Efficient Hours of Operation (hrs/yr)	Baseline Product Description / Rating	Baseline Product Consumption (watts)	Baseline Hours of Operation (hrs/yr)	Measure Lifetime (years)	Rebate Amount ($)	Average Baseline Product Cost ($)	Incremental Cost of Efficient Product ($)	Assumed Energy Cost ($/kWh)	Rebate as a % of Incremental Cost (%)	Incremt'l Cost Payback Period w/o Rebate (yrs)	Incremt'l Cost Payback Period w/ Rebate (yrs)	Annual Customer kWh Savings (kWh/yr)	Rebated Cost / Cust kWh Saved ($/kWh)	Rebated Lifetime cost /Cust KWh Saved ($/kWh)	Customer kW Savings (kW)	Generator Peak kW Savings (kW)	Non-Energy O&M Savings ($)	Energy O&M Savings ($)	Coincidence Factor (%)	2016 Participants (-)	2016 Units (-)	NTG (%)	Installation Rate (%)	Realization Rate (%)	2016 NET Gen kW (kW)	2016 NET Gen kWh (kWh)	2016 Rebate Budget ($)	2016 Incremental Costs ($)
NM - Lighting Efficiency Rebate	T8 Optimization 1 and 2 Lamp v2	Fluorescent T8 Fixture with Less Lamps	57	3,876	T12 Fluorescents with more lamps	119	3,876	7.40	$10	$0	$31	$ 0.063	32%	2.05	1.39	242	$0.04	$0.01	0.062	0.048	-$0.12	$0.00	77.5%	1	50	80%	100%	100%	2.157	10,467	$500	$1,545
NM - Lighting Efficiency Rebate	T8 Optimization 3 and 4 Lamp	Fluorescent T8 Fixture with Less Lamps	90	3,876	T12 Fluorescents with more lamps	152	3,876	7.40	$12	$0	$31	$ 0.063	39%	2.07	1.27	239	$0.05	$0.01	0.062	0.048	-$0.12	$0.00	77.5%	1	50	80%	100%	100%	2.136	10,365	$600	$1,545
NM - Lighting Efficiency Rebate	T8 4' Lamps - Low Wattage	T8 25W and 28W Lamps	32	3,876	T8 32W Lamps	38	3,876	7.40	$1	$0	$4	$ 0.063	25%	2.53	1.89	25	$0.04	$0.01	0.007	0.005	-$0.01	$0.00	77.5%	1	500	80%	100%	100%	2.270	11,015	$500	$2,000
NM - Lighting Efficiency Rebate	Parking Garage Low Wattage T8 4' lamps	T8 25W and 28W Lamps	25	8,760	T8 32W Lamps	30	8,760	7.40	$1	$0	$4	$ 0.056	25%	1.59	1.19	45	$0.02	$0.00	0.005	0.005	$0.00	$0.00	100.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	CFL <= 18W Pin Based	Pin Based Compact Fluorescent <= 18 Watts	25	3,876	Incandescent	77	3,876	3.25	$38	$0	$76	$ 0.063	50%	5.98	3.01	205	$0.19	$0.06	0.053	0.041	-$0.11	$0.00	77.5%	1	10	80%	100%	100%	0.366	1,775	$380	$764
NM - Lighting Efficiency Rebate	CFL 19-32W Pin Based	Pin Based Compact Fluorescent 19 to 32 Watts	42	3,876	Incandescent	153	3,876	3.25	$30	$0	$76	$ 0.063	39%	2.83	1.72	432	$0.07	$0.02	0.112	0.086	-$0.22	$0.00	77.5%	1	100	80%	100%	100%	7.723	37,476	$3,000	$7,635
NM - Lighting Efficiency Rebate	CFL 33W+ Pin Based	Pin Based Compact Fluorescent 19 to 32 Watts	63	3,876	Incandescent	206	3,876	3.25	$35	$0	$80	$ 0.063	44%	2.32	1.30	554	$0.06	$0.02	0.143	0.111	-$0.28	$0.00	77.5%	1	50	80%	100%	100%	4.946	23,998	$1,750	$4,000
NM - Lighting Efficiency Rebate	CFL <= 18W Screw In	Screw IN CFL Equal to or less than 18 Watts	16	3,876	Incandescent	44	3,876	3.25	$1	$0	$7	$ 0.063	15%	1.01	0.86	108	$0.01	$0.00	0.028	0.022	-$0.06	$0.00	77.5%	2	100	80%	100%	100%	1.933	9,378	$100	$679
NM - Lighting Efficiency Rebate	CFL 19-32W Screw In	Screw-In Compact Fluorescent 19 to 32 Watts	34	3,876	Incandescent	114	3,876	3.25	$2	$0	$11	$ 0.063	19%	0.54	0.44	313	$0.01	$0.00	0.081	0.063	-$0.16	$0.00	77.5%	1	10	80%	100%	100%	0.558	2,710	$20	$105
NM - Lighting Efficiency Rebate	CFL 33W+ Screw In	Screw-In Compact Fluorescent 19 to 32 Watts	63	3,876	Incandescent	242	3,876	3.25	$3	$0	$7	$ 0.063	44%	0.16	0.09	693	$0.00	$0.00	0.179	0.139	-$0.36	$0.00	77.5%	2	50	80%	100%	100%	6.185	30,011	$150	$340
NM - Lighting Efficiency Rebate	CFL 2' Lamp - Low Wattage	PL 25W CFL	34	3,876	PL 40W CFL	51	3,876	3.25	$4	$0	$10	$ 0.063	42%	2.29	1.33	67	$0.06	$0.02	0.017	0.013	-$0.03	$0.00	77.5%	1	10	80%	100%	100%	0.119	577	$40	$95
NM - Lighting Efficiency Rebate	LED Interior Lamp <= 5W	LED Interior Lamp	6	3,876	Incandescent	28	3,876	7.51	$7	$0	$34	$ 0.063	21%	6.27	4.97	87	$0.08	$0.01	0.022	0.017	-$0.04	$0.00	77.5%	1	100	80%	100%	100%	1.551	7,526	$700	$3,391
NM - Lighting Efficiency Rebate	LED Interior Lamp 6W - 10W	LED Interior Lamp	11	3,876	Incandescent	42	3,876	7.51	$12	$0	$40	$ 0.063	30%	5.40	3.77	118	$0.10	$0.01	0.031	0.024	-$0.06	$0.00	77.5%	1	100	80%	100%	100%	2.112	10,250	$1,200	$3,979
NM - Lighting Efficiency Rebate	LED Interior Lamp 11W - 20W	LED Interior Lamp	20	3,876	Incandescent	66	3,876	7.51	$15	$0	$65	$ 0.063	23%	5.84	4.49	179	$0.08	$0.01	0.046	0.036	-$0.09	$0.00	77.5%	1	100	80%	100%	100%	3.190	15,478	$1,500	$6,496
NM - Lighting Efficiency Rebate	HPS - 151 to 250W	High Pressure Sodium	305	3,876	Incandescent & Mercury Vapor	607	3,876	14.22	$30	$0	$112	$ 0.063	27%	1.54	1.13	1,169	$0.03	$0.00	0.302	0.234	-$0.60	$0.00	77.5%	1	1	80%	100%	100%	0.209	1,013	$30	$112
NM - Lighting Efficiency Rebate	HPS - 251W+	High Pressure Sodium	582	3,876	Incandescent & Mercury Vapor	1,519	3,876	14.22	$45	$0	$200	$ 0.063	23%	0.88	0.68	3,633	$0.01	$0.00	0.937	0.727	-$1.87	$0.00	77.5%	1	1	80%	100%	100%	0.649	3,149	$45	$200
NM - Lighting Efficiency Rebate	Pulse-Start Metal Halide, <= 175W	175W or Less Pulse Start Metal Halide	175	3,876	Metal Halide, HPS, MV, INX	355	3,876	14.22	$60	$0	$185	$ 0.063	32%	4.26	2.88	696	$0.09	$0.01	0.180	0.139	-$0.36	$0.00	77.5%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	Pulse-Start Metal Halide, 176W-319W	176W-319W Pulse Start Metal Halide	311	3,876	Metal Halide, HPS	438	3,876	14.22	$90	$0	$280	$ 0.063	32%	9.16	6.21	491	$0.18	$0.01	0.127	0.098	-$0.25	$0.00	77.5%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	Pulse-Start Metal Halide, 320W-749W	320W-749W Pulse Start Metal Halide	537	3,876	Metal Halide, MV, HPS, T8	800	3,876	14.22	$100	$0	$305	$ 0.063	33%	4.79	3.22	1,022	$0.10	$0.01	0.264	0.205	-$0.53	$0.00	77.5%	1	5	80%	100%	100%	0.913	4,431	$500	$1,525
NM - Lighting Efficiency Rebate	Pulse-Start Metal Halide, 750W+	750W+ Pulse Start Metal Halide	1,034	3,876	Metal Halide, HPS, MV	1,375	3,876	14.22	$120	$0	$280	$ 0.063	43%	3.40	1.94	1,322	$0.09	$0.01	0.341	0.265	-$0.68	$0.00	77.5%	1	50	80%	100%	100%	11.809	57,301	$6,000	$14,000
NM - Lighting Efficiency Rebate	Ceramic Metal Halide - Integrated 20W - 25W	Ceramic Metal Halide	28	3,876	Incandescent	108	3,876	14.22	$25	$0	$57	$ 0.063	44%	2.94	1.65	311	$0.08	$0.01	0.080	0.062	-$0.16	$0.00	77.5%	1	5	80%	100%	100%	0.278	1,349	$125	$285
NM - Lighting Efficiency Rebate	Ceramic Metal Halide <=150W	Ceramic Metal Halide	65	3,876	Incandescent	171	3,876	14.22	$50	$0	$222	$ 0.063	23%	8.70	6.74	409	$0.12	$0.01	0.106	0.082	-$0.21	$0.00	77.5%	1	20	80%	100%	100%	1.463	7,099	$1,000	$4,440
NM - Lighting Efficiency Rebate	Ceramic Metal Halide 151-250W	Ceramic Metal Halide	287	3,876	Incandescent	451	3,876	14.22	$80	$0	$290	$ 0.063	28%	7.33	5.31	635	$0.13	$0.01	0.164	0.127	-$0.33	$0.00	77.5%	1	10	80%	100%	100%	1.134	5,504	$800	$2,900
NM - Lighting Efficiency Rebate	Ceramic Metal Halide 251W+	Ceramic Metal Halide	498	3,876	Incandescent	939	3,876	14.22	$100	$0	$294	$ 0.063	34%	2.76	1.82	1,709	$0.06	$0.00	0.441	0.342	-$0.88	$0.00	77.5%	1	10	80%	100%	100%	3.053	14,812	$1,000	$2,943
NM - Lighting Efficiency Rebate	LED Pedestrian Signals -9" (Walk/Don't Walk)	LED Pedestrian Walk Signal	8	4,380	Incandescent Pedestrian Walk Signal	69	4,380	10.27	$45	$0	$80	$ 0.056	56%	5.36	2.35	267	$0.17	$0.02	0.061	0.031	$0.00	$0.00	50.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Pedestrian Signals -12" (Walk/Don't Walk)	LED Pedestrian Walk Signal	10	4,380	Incandescent Pedestrian Walk Signal	116	4,380	10.27	$60	$0	$110	$ 0.056	55%	4.24	1.93	464	$0.13	$0.01	0.106	0.053	$0.00	$0.00	50.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Traffic Balls and Arrows - 12" Red	LED Traffic Light	11	4,380	Incandescent Traffic Light	135	4,380	10.27	$48	$0	$90	$ 0.056	53%	2.97	1.38	543	$0.09	$0.01	0.124	0.062	$0.00	$0.00	50.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Traffic Balls and Arrows - 12" Green	LED Traffic Light	11	4,380	Incandescent Traffic Light	135	4,380	10.27	$48	$0	$90	$ 0.056	53%	2.97	1.38	543	$0.09	$0.01	0.124	0.062	$0.00	$0.00	50.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Traffic Balls and Arrows - 8" Red	LED Traffic Light	10	4,380	Incandescent Traffic Light	116	4,380	10.27	$38	$0	$110	$ 0.056	35%	4.24	2.78	464	$0.08	$0.01	0.106	0.053	$0.00	$0.00	50.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Traffic Balls and Arrows - 8" Green	LED Traffic Light	8	4,380	Incandescent Traffic Light	69	4,380	10.27	$38	$0	$70	$ 0.056	54%	4.69	2.14	267	$0.14	$0.01	0.061	0.031	$0.00	$0.00	50.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	Parking Garages 2 - 3 Lamp Fluorescent	High Efficiency Fluorescent T8 or T5 Systems	82	8,760	HID - HPS, PSMH, MV, MH	194	8,760	16.00	$85	$0	$197	$ 0.056	43%	3.60	2.04	979	$0.09	$0.01	0.112	0.112	$0.00	$0.00	100.0%	1	10	80%	100%	100%	0.998	8,486	$850	$1,967
NM - Lighting Efficiency Rebate	High Bay Fluorescents 2-3L T5HO or 4L T8	High Bay Fluorescents with Electronic Ballasts	166	3,876	HID - HPS, PSMH, MV, MH	319	3,876	16.00	$85	$0	$193	$ 0.063	44%	5.22	2.92	593	$0.14	$0.01	0.153	0.119	-$0.30	$0.00	77.5%	2	150	80%	100%	100%	15.885	77,079	$12,750	$28,932
NM - Lighting Efficiency Rebate	High Bay Fluorescents 3L T8VHO, 4-6L T5HO, 6-8L T8	High Bay Fluorescents with Electronic Ballasts	286	3,876	HID - HPS, PSMH, MV, MH	528	3,876	16.00	$125	$0	$266	$ 0.063	47%	4.57	2.42	936	$0.13	$0.01	0.242	0.187	-$0.48	$0.00	77.5%	14	200	80%	100%	100%	33.449	162,308	$25,000	$53,271
NM - Lighting Efficiency Rebate	High Bay Fluorescents 6L T8VHO, 8L T5HO, 12-16L T8	High Bay Fluorescents with Electronic Ballasts	558	3,876	HID - HPS, PSMH, MV, MH	1,062	3,876	16.00	$175	$0	$429	$ 0.063	41%	3.53	2.09	1,950	$0.09	$0.01	0.503	0.390	-$1.00	$0.00	77.5%	3	200	80%	100%	100%	69.670	338,061	$35,000	$85,772
NM - Lighting Efficiency Rebate	High Bay Fluorescents 8L T8VHO, 10L T5HO, 18-20L T8	High Bay Fluorescents with Electronic Ballasts	763	3,876	HID - HPS, PSMH, MV, MH	1,381	3,876	16.00	$175	$0	$499	$ 0.063	35%	3.35	2.17	2,396	$0.07	$0.00	0.618	0.479	-$1.23	$0.00	77.5%	1	5	80%	100%	100%	2.140	10,383	$875	$2,497
NM - Lighting Efficiency Rebate	Wall mount occupancy sensor - 50 Watts to 300 Watts Controlled Load	Lighting Fixture with Occupancy Sensor	86	3,876	Lighting Fixture with Manual Switch	123	3,876	8.00	$15	$0	$55	$ 0.063	27%	6.11	4.44	143	$0.10	$0.01	0.037	0.018	$0.02	$0.00	50.0%	2	5	80%	100%	100%	0.082	620	$75	$275
NM - Lighting Efficiency Rebate	Wall mount occupancy sensor - Greater than 300 Watts Controlled Load	Lighting Fixture with Occupancy Sensor	487	3,876	Lighting Fixture with Manual Switch	696	3,876	8.00	$25	$0	$55	$ 0.063	45%	1.08	0.59	809	$0.03	$0.00	0.209	0.104	$0.10	$0.00	50.0%	2	10	80%	100%	100%	0.932	7,015	$250	$550
NM - Lighting Efficiency Rebate	Ceiling mount occupancy sensor - 50 Watts to 300 Watts Controlled Load	Lighting Fixture with Occupancy Sensor	159	3,876	Lighting Fixture with Manual Switch	228	3,876	8.00	$30	$0	$125	$ 0.063	24%	7.50	5.70	265	$0.11	$0.01	0.068	0.034	$0.03	$0.00	50.0%	2	10	80%	100%	100%	0.305	2,296	$300	$1,250
NM - Lighting Efficiency Rebate	Ceiling mount occupancy sensor - Greater than 300 Watts Controlled Load	Lighting Fixture with Occupancy Sensor	487	3,876	Lighting Fixture with Manual Switch	696	3,876	8.00	$40	$0	$125	$ 0.063	32%	2.45	1.67	809	$0.05	$0.01	0.209	0.104	$0.10	$0.00	50.0%	2	20	80%	100%	100%	1.864	14,031	$800	$2,500
NM - Lighting Efficiency Rebate	Occupancy Sensor - Photocell	Lighting Fixture with Photocell	182	3,876	Lighting Fixture with Manual Switch	228	3,876	8.00	$25	$1	$65	$ 0.053	38%	6.85	4.21	176	$0.14	$0.02	0.046	0.205	$0.20	$0.00	450.0%	2	10	80%	100%	100%	1.828	1,529	$250	$650
NM - Lighting Efficiency Rebate	Stairwell Fixture with Integral Occupancy Sensor	Stairwell Lighting Fixture with Occupancy Sensor	6	8,760	Stairwell Lighting Fixture	61	8,760	16.00	$25	$0	$210	$ 0.056	12%	7.77	6.84	483	$0.05	$0.00	0.055	0.055	$0.06	$0.00	100.0%	2	10	80%	100%	100%	0.492	4,184	$250	$2,098
NM - Lighting Efficiency Rebate	LED Interior Screw In Fixture Retrofit	LED Screw-In Fixture	25	3,876	Incandescent Lamp	107	3,876	7.51	$15	$0	$98	$ 0.063	15%	4.95	4.19	318	$0.05	$0.01	0.082	0.064	-$0.16	$0.00	77.5%	2	50	80%	100%	100%	2.843	13,794	$750	$4,905
NM - Lighting Efficiency Rebate	LED/LEC Exit Sign	LED Exit Sign	1	8,598	Incandescent Exit Sign	44	8,598	16.00	$25	$0	$91	$ 0.056	27%	4.54	3.30	363	$0.07	$0.00	0.042	0.042	-$0.19	$0.00	100.0%	1	50	80%	100%	100%	1.886	15,741	$1,250	$4,566
NM - Lighting Efficiency Rebate	LED Interior Fixture <= 25W	LED Downlight Fixture	25	3,876	Incandescent	102	3,876	16.00	$35	$0	$198	$ 0.063	18%	10.63	8.75	299	$0.12	$0.01	0.077	0.060	-$0.15	$0.00	77.5%	1	50	80%	100%	100%	2.668	12,944	$1,750	$9,892
NM - Lighting Efficiency Rebate	LED Interior Fixture 26W - 50W	LED Downlight Fixture	48	3,876	Incandescent	201	3,876	16.00	$50	$0	$272	$ 0.063	18%	7.36	6.01	594	$0.08	$0.01	0.153	0.119	-$0.31	$0.00	77.5%	1	50	80%	100%	100%	5.303	25,730	$2,500	$13,615
NM - Lighting Efficiency Rebate	LED Outdoor Canopy or Soffit lighting 25W - 60W	LED Canopy/Soffit Fixture	47	4,100	HID - HPS, MH, MV, PSMH	248	4,100	16.00	$135	$0	$659	$ 0.053	20%	15.18	12.07	824	$0.16	$0.01	0.201	0.000	$0.00	$0.00	0.0%	1	40	80%	100%	100%	0.000	28,579	$5,400	$26,343
NM - Lighting Efficiency Rebate	LED Outdoor Canopy or Soffit lighting 61W - 150W	LED Canopy/Soffit Fixture	94	4,100	HID - HPS, MH, MV, PSMH	410	4,100	16.00	$175	$0	$644	$ 0.053	27%	9.43	6.87	1,297	$0.13	$0.01	0.316	0.000	$0.00	$0.00	0.0%	1	40	80%	100%	100%	0.000	44,978	$7,000	$25,761
NM - Lighting Efficiency Rebate	LED Parking Garage lighting 25W - 60W	LED Parking Garage Fixture	43	8,760	HID - HPS, MH, MV, PSMH	183	8,760	16.00	$135	$0	$340	$ 0.056	40%	4.96	2.99	1,227	$0.11	$0.01	0.140	0.140	$0.00	$0.00	100.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Parking Garage lighting 61W - 83W	LED Parking Garage Fixture	71	8,760	HID - HPS, MH, MV, PSMH	280	8,760	16.00	$175	$0	$558	$ 0.056	31%	5.47	3.75	1,829	$0.10	$0.01	0.209	0.209	$0.00	$0.00	100.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Exterior Wall Pack <= 25W	LED Wall Pack Fixture	18	4,100	HID Wall Pack Fixture	103	4,100	16.00	$35	$0	$240	$ 0.053	15%	13.07	11.16	349	$0.10	$0.01	0.085	0.000	$0.00	$0.00	0.0%	1	25	80%	100%	100%	0.000	7,558	$875	$5,999
NM - Lighting Efficiency Rebate	LED Exterior Wall Pack 26W - 60W	LED Wall Pack Fixture	44	4,100	HID Wall Pack Fixture	218	4,100	16.00	$75	$0	$440	$ 0.053	17%	11.68	9.69	715	$0.10	$0.01	0.174	0.000	$0.00	$0.00	0.0%	1	25	80%	100%	100%	0.000	15,487	$1,875	$10,989
NM - Lighting Efficiency Rebate	LED Exterior Wall Pack 61W - 150W	LED Wall Pack Fixture	97	4,100	HID Wall Pack Fixture	414	4,100	16.00	$100	$0	$845	$ 0.053	12%	12.33	10.87	1,302	$0.08	$0.00	0.318	0.000	$0.00	$0.00	0.0%	1	25	80%	100%	100%	0.000	28,217	$2,500	$21,124
NM - Lighting Efficiency Rebate	LED Parking Garage Wall Pack <= 25W	LED Parking Garage Fixture	18	8,760	HID Wall Pack Fixture	99	8,760	16.00	$35	$0	$241	$ 0.056	15%	6.07	5.19	710	$0.05	$0.00	0.081	0.081	$0.00	$0.00	100.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Parking Garage Wall Pack 26W - 60W	LED Parking Garage Fixture	44	8,760	HID Wall Pack Fixture	219	8,760	16.00	$75	$0	$440	$ 0.056	17%	5.15	4.28	1,530	$0.05	$0.00	0.175	0.175	$0.00	$0.00	100.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Parking Garage Wall Pack 61W - 150W	LED Parking Garage Fixture	94	8,760	HID Wall Pack Fixture	410	8,760	16.00	$100	$0	$820	$ 0.056	12%	5.29	4.64	2,776	$0.04	$0.00	0.317	0.317	$0.00	$0.00	100.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Lighting Efficiency Rebate	LED Ref and Frz Cases 5' or 6' doors	LED Strip lighting	41	8,760	T8 or T12 Fluorescent	113	8,760	16.00	$100	$0	$171	$ 0.056	58%	4.90	2.04	627	$0.16	$0.01	0.072	0.072	$0.00	$0.00	100.0%	1	100	80%	100%	100%	6.389	54,332	$10,000	$17,136
NM - Lighting Efficiency Rebate	LED Troffer Retrofit	LED Troffer Fixture - Retrofit Kit	51	3,876	Fluorescent Fixture	103	3,876	16.00	$30	$0	$175	$ 0.063	17%	14.18	11.76	199	$0.15	$0.01	0.051	0.040	-$0.10	$0.00	77.5%	1	50	80%	100%	100%	1.773	8,604	$1,500	$8,774
NM - Lighting Efficiency Rebate	LED Troffer Fixture	LED Troffer Fixture	56	3,876	Fluorescent Fixture	109	3,876	16.00	$50	$0	$243	$ 0.063	21%	18.59	14.77	208	$0.24	$0.02	0.054	0.042	$0.04	$0.00	77.5%	1	50	80%	100%	100%	1.856	9,006	$2,500	$12,172
NM - Lighting Efficiency Rebate	T12 LED Troffer Retrofit	LED Troffer T12 Fixture - Retrofit Kit	48	3,876	Fluorescent Fixture	90	3,876	16.00	$30	$51	$123	$ 0.063	24%	12.02	9.10	163	$0.18	$0.01	0.042	0.033	$0.03	$0.00	77.5%	1	100	80%	100%	100%	2.905	14,094	$3,000	$12,322
NM - Lighting Efficiency Rebate	T12 LED Troffer Fixture	LED Troffer T12 Fixture	53	3,876	Fluorescent Fixture	92	3,876	16.00	$50	$50	$196	$ 0.063	26%	20.74	15.45	150	$0.33	$0.02	0.039	0.030	$0.03	$0.00	77.5%	1	100	80%	100%	100%	2.678	12,994	$5,000	$19,596
NM - Lighting Efficiency Rebate	LED Area Lighting - 150W MH Replacement Fixture	LED Area Light	52	4,100	Metal Halide Fixture	185	4,100	16.00	$75	$0	$196	$ 0.053	38%	6.82	4.21	545	$0.14	$0.01	0.133	0.000	$0.00	$0.00	0.0%	1	25	80%	100%	100%	0.000	11,816	$1,875	$4,894
NM - Lighting Efficiency Rebate	LED Area Lighting - 175W MH Replacement Fixture	LED Area Light	52	4,100	Metal Halide Fixture	210	4,100	16.00	$75	$0	$196	$ 0.053	38%	5.74	3.54	648	$0.12	$0.01	0.158	0.000	$0.00	$0.00	0.0%	1	25	80%	100%	100%	0.000	14,037	$1,875	$4,894
NM - Lighting Efficiency Rebate	LED Area Lighting - 250W MH Replacement Fixture	LED Area Light	85	4,100	Metal Halide Fixture	295	4,100	16.00	$85	$0	$319	$ 0.053	27%	7.03	5.16	862	$0.10	$0.01	0.210	0.000	$0.00	$0.00	0.0%	1	100	80%	100%	100%	0.000	74,702	$8,500	$31,905
NM - Lighting Efficiency Rebate	LED Area Lighting - 400W MH Replacement Fixture	LED Area Light	130	4,100	Metal Halide Fixture	456	4,100	16.00	$100	$0	$489	$ 0.053	20%	6.96	5.54	1,337	$0.07	$0.00	0.326	0.000	$0.00	$0.00	0.0%	1	100	80%	100%	100%	0.000	115,848	$10,000	$48,942
NM - Lighting Efficiency Rebate	Restroom Aerator	0.5 GPM Bathroom Faucet Aerator in facility with electric DHW heater	4,500	66	2.2 GPM Bath Faucet Aerator	4,500	279	10.00	$10	$0	$10	$ 0.058	100%	0.11	0.00	960	$0.01	$0.00	0.000	0.000	$38.50	$0.00	0.0%	75	220	80%	100%	100%	0.000	183,067	$2,200	$2,200
NM - Lighting Efficiency Rebate	Pre-rinse Sprayer	1.25 GPM Pre-rinse Sprayer in a Restaurant with electric DHW heater	4,500	2,352	2.25 GPM Pre-rinse Sprayer	4,500	3,975	5.00	$130	$0	$130	$ 0.058	100%	0.20	0.00	7,301	$0.02	$0.00	0.000	0.000	$226.16	$0.00	0.0%	28	30	80%	100%	100%	0.000	189,831	$3,900	$3,900
NM - Lighting Efficiency Rebate	Kitchen Aerator	1 .5 GPM Kitchen Faucet Aerator in a kitchen with electric DHW heater	4,500	135	2.2 GPM Kitchen Faucet Aerator	4,500	198	10.00	$10	$0	$10	$ 0.058	100%	0.36	0.00	284	$0.04	$0.00	0.000	0.000	$11.38	$0.00	0.0%	26	28	80%	100%	100%	0.000	6,889	$280	$280
NM - Lighting Efficiency New Construction	New Construction - Lighting Power Density	Savings in addition to Code Maximum LPD	21,797	3,630	Code Maximum LPD	50,830	3,630	15.00	$13,977	$0	$41,803	$ 0.063	33%	6.74	4.49	105,404	$0.13	$0.01	29.034	22.985	-$418.18	$0.00	79.2%	1	5	80%	100%	100%	102.613	456,790	$69,885	$209,017
NM - Lighting Efficiency New Construction	LED Refrigerated Cases - New Construction	LED Strip lighting	41	8,760	T8 or T12 Fluorescent	113	8,760	16.00	$70	$38	$152	$ 0.056	46%	4.35	2.35	627	$0.11	$0.01	0.072	0.072	$0.00	$0.00	100.0%	1	5	80%	100%	100%	0.319	2,717	$350	$761
NM - Lighting Redesign Implementation	Lighting Redesign Implementation	Improved Light Levels	52,601	5,055	Excessive Light Levels or	101,391	5,055	15.00	$6,895	$0	$96,424	$ 0.063	7%	6.27	5.82	246,648	$0.03	$0.00	48.790	37.835	-$121.21	$0.00	77.5%	1	1	80%	100%	100%	33.781	213,779	$6,895	$96,424
NM - Lighting Redesign Study	Lighting Redesign Study	0	0	0	0	0	0	0.00	$3,200	$0	$18,800	$ 0.063	17%	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	0.000	0.000	$0.00	$0.00	0.0%	1	1	80%	100%	100%	0.000	0	$3,200	$18,800
NM - Motors and Drives - Prescriptive	New Motor Enhanced	NEMA Premium plus 1% Efficient Motors	5,972	4,368	NEMA Premium	6,060	4,368	20.00	$93	$1,329	$609	$ 0.060	15%	26.51	22.44	384	$0.24	$0.01	0.088	0.069	$0.00	$0.00	78.0%	10	13	80%	100%	100%	0.796	4,326	$1,215	$7,911
NM - Motors and Drives - Prescriptive **	Upgrade Motor **	NEMA Premium Efficient Motors	9,030	4,274	EPACT	9,219	4,274	20.00	$693	$0	$1,766	$ 0.060	39%	36.67	22.29	806	$0.86	$0.04	0.188	0.147	$0.00	$0.00	78.0%	0	0	80%	100%	100%	0.000	0	$0	$0
NM - Motors and Drives - Prescriptive	Upgrade Motor Enhanced	NEMA Premium plus 1% Efficient Motors	3,201	3,409	EPACT	3,332	3,409	20.00	$279	$0	$1,368	$ 0.060	20%	51.26	40.80	447	$0.63	$0.03	0.131	0.102	$0.00	$0.00	78.0%	7	8	80%	100%	100%	0.730	3,097	$2,235	$10,947
NM - Motors and Drives - Prescriptive	Variable Frequency Drive	Equipment coupled with an ASD/VFD	9,939	4,835	Equipment without an ASD/VFD	15,197	4,835	15.00	$2,921	$0	$4,796	$ 0.066	61%	2.84	1.11	25,421	$0.11	$0.01	5.257	4.101	$0.00	$0.00	78.0%	16	49	80%	100%	100%	179.401	1,079,632	$143,140	$234,989
NM - Motors and Drives - Prescriptive	Constant Speed Motor Controller	Motor with Voltage Controller	5,498	4,500	Motor without Voltage Controller	6,180	4,500	20.00	$584	$0	$1,288	$ 0.066	45%	6.31	3.45	3,071	$0.19	$0.01	0.683	0.532	$0.00	$0.00	78.0%	4	16	80%	100%	100%	7.605	42,592	$9,338	$20,604

Electric Product Detailed Technical Assumptions													
Measure Description		High Efficiency Product Assumptions			Baseline Product Assumptions			Economic Assumptions					Stipulated Output
Electric Measure Group	Electric Measure Description	Efficient Product Description / Rating	Efficient Product Consumption (watts)	Efficient Hours of Operation (hrs/yr)	Baseline Product Description / Rating	Baseline Product Consumption (watts)	Baseline Hours of Operation (hrs/yr)	Measure Lifetime (years)	Rebate Amount ($)	Average Baseline Product Cost ($)	Incremental Cost of Efficient Product ($)	Assumed Energy Cost ($/kWh)	Rebate as a % of Incremental Cost (%)
NM - Pump Off Controller	Pump Off Controllers	Pump Off Controllers	0	6,132	% Clock Off Controller	5,093	6,132	20.00	$3,000	$0	$5,959	$ 0.066	50%
NM - Compressed Air Prescriptive	No Air Loss Drain	No Air Loss Drain	0	6,996	Electronic Solenoid/Timed Drains	517	6,996	15.00	$200	$125	$448	$ 0.059	45%
NM - Compressed Air Prescriptive	VFD Air Compressor New	VFD Compressor	13,619	3,034	Load/unload compressor with two gallons of storage per CFM of compressor-rated capacity or less OR Modulator compressor with or without blow down	19,635	3,034	20.00	$2,525	$10,767	$4,730	$ 0.059	53%
NM - Compressed Air Prescriptive	VFD Air Compressor Upgrade	VFD Compressor	11,951	2,883	Load/unload compressor with two gallons of storage per CFM of compressor-rated capacity or less OR Modulator compressor with or without blow down	17,230	2,883	20.00	$5,188	$0	$15,754	$ 0.059	33%
NM - Compressed Air Prescriptive	Cycling Dryers	Cycling Dryer	1,437	7,009	Non-Cycling Dryer	2,279	7,009	20.00	$480	$5,308	$902	$ 0.059	53%
NM - Compressed Air Prescriptive	Dewpoint Controls	Purge Control for Heatless Dessicant Dryers	37,601	6,865	No Purge Control for Heatless Dessicant Dryers	42,920	6,865	10.00	$1,000	$0	$3,271	$ 0.059	31%
NM - Compressed Air Prescriptive	Mist Eliminators	Mist Eliminator Filter	78,883	7,278	General Purpose Filter	80,186	7,278	15.00	$2,060	$1,358	$4,386	$ 0.059	47%
Self-Direct	Average Project	New Equipment	0	0	Old or less efficient systems or equipment	0	0	20.00	$0	$0	$0	#N/A	#DIV/0!
Recommissioning	Small Building Tune-up Study	Existing systems studied for opportunities	181,881	4,856	Existing systems	181,881	4,856	7.00	$7,000	$0	$8,000		88%
Recommissioning	Small Building Tune-up Measure	Implemented Recommissioning measures	170,059	4,856	Existing systems	181,881	4,856	7.00	$601	$0	$2,721		22%
NM - Saver's Switch for Business	Commercial AC Switch Single Stage - NM	Utility load control device	0	0	No control, no switch	9,360	1	15.00	$0	$0	$0		#DIV/0!
NM - Saver's Switch for Business	Commercial AC Switch Multi Stage - NM	Utility load control device	0	0	No control, no switch	9,360	1	15.00	$0	$0	$0		#DIV/0!
Interruptible Service Credit Option	Average Customer	Utility load control for control period	0	0	No Control	500,000	7	3.00	$0	$0	$0		#DIV/0!
NM - Residential Cooling	Standard Evaporative Cooling	Evaporative Cooler 85% effective	800	1,622	13 SEER AC Split System	3,180	1,456	15.00	$700	$2,587	$0	$ 0.093	#DIV/0!
NM - Residential Cooling	EC Motor Furnace Fan in house without central AC	EC Motor Furnace Fan	153	7,968	PSC Motor Furnace Fan	307	7,968	18.00	$100	$0	$464	$ 0.090	22%
NM - Residential Cooling	EC Motor Furnace Fan in house with central AC	EC Motor Furnace Fan	153	8,754	PSC Motor Furnace Fan	307	8,754	18.00	$100	$0	$464	$ 0.090	22%
NM - Residential Cooling	High Efficiency Air Conditioning (HEAC)	2014 Average Participant High Efficiency Air Conditioner	3,087	2,103	Average 13 SEER Baseline Efficiency Air Conditioner	3,542	2,103	15.00	$124	$4,484	$1,865	$ 0.095	7%
NM - Residential Cooling	HEAC Quality Install	2014 Average Participant High Efficiency Air Conditioner with Quality Install	2,437	960	2014 Average Participant High Efficiency Air Conditioner	3,087	960	8.00	$0	$0	$250	$ 0.095	0%
NM - Residential Cooling	Air Source Heat Pump (ASHP)	Installation of new Air Source Heat Pump 3 T 15 SEER 8.7 HPSF	2,927	4,725	Installation of new Air Source Heat Pump 3T 14 SEER 8.2 HPSF	3,061	4,725	12.00	$79	$5,700	$1,000	$ 0.095	8%
NM - Residential Cooling	ASHP Quality Install	Installation of new Air Source Heat Pump 3 T 15 SEER 8.2 HPSF with Quality Install	2,311	1,481	Installation of new Air Source Heat Pump 3 T 15 SEER 8.2 HPSF without Quality Install	2,927	1,481	6.00	$0	$0	$250	$ 0.095	0%
Home Lighting & Recycling	CFL Sales	Average CFL Bulb Purchased by Customer	14	1,012	Average incandescent bulb being replaced	46	1,012	5.17	$1	$1	$1	$ 0.090	100%
Home Lighting & Recycling	CFL Low Income	Average CFL Bulb Purchased by Customer	14	818	Average incandescent bulb being replaced	46	818	6.39	$1	$1	$1	$ 0.090	100%
Home Lighting & Recycling	LED Sales	Average LED Bulb Purchased by Customer	12	1,012	Average incandescent bulb being replaced	44	1,012	20.00	$5	$2	$14	$ 0.090	35%
Home Lighting & Recycling	LED Giveaways	12W LED Bulb	12	818	Incandescent bulb being replaced	43	818	20.00	$5	$0	$5	$ 0.090	100%
HES AC	HEAC	2014 Average Participant High Efficiency Air Conditioner	3,087	2,103	Average 13 SEER Baseline Efficiency Air Conditioner	3,542	2,103	15.00	$124	$4,484	$1,865	$ 0.095	7%
HES AC	HEAC Quality Install	2014 Average Participant High Efficiency Air Conditioner with Quality Install	2,437	960	2014 Average Participant High Efficiency Air Conditioner	3,087	960	8.00	$0	$0	$250	$ 0.095	0%
HES General	Low Flow Showerheads	School Education Kits - Prescriptive	4,500	717	Federal Minimum Standard flow rate 2.5 GPM	4,500	826	10.00	$3	$0	$3	$ 0.090	100%
HES Evaps	Evap Cooling	Evaporative Cooler 85% effective	800	1,622	13 SEER AC Split System	3,180	1,456	15.00	$700	$2,587	$0	$ 0.093	#DIV/0!
HES Radiant Barriers	Radiant Barriers	Average 1,850 sqft house with Radiant Barrier	2,539	5,424	Average 1,850 sqft house without Radiant Barrier	2,684	5,424	20.00	$229	$0	$1,573	$ 0.095	15%
HES AC	ASHP	Installation of new Air Source Heat Pump 3 T 15 SEER 8.7 HPSF	2,927	4,725	Installation of new Air Source Heat Pump 3T 14 SEER 8.2 HPSF	3,061	4,725	12.00	$79	$5,700	$1,000	$ 0.095	8%
HES AC	ASHP Quality Install	Installation of new Air Source Heat Pump 3 T 15 SEER 8.2 HPSF with Quality Install	2,311	1,481	Installation of new Air Source Heat Pump 3 T 15 SEER 8.2 HPSF without Quality Install	2,927	1,481	6.00	$0	$0	$250	$ 0.095	0%
HES Ceiling	Ceiling Insulation - Gas Heat	2014 Average Participant R30, 1,573 sq ft	3,282	902	2014 Average Participant R3, 1,573 sq ft	3,542	902	20.00	$148	$0	$1,538	$ 0.095	10%
HES Ceiling	Ceiling Insulation - Electric Heat	2014 Average Participant R30, 1,700 sq ft	3,357	17,529	2014 Average Participant R3, 1,700 sq ft	3,542	17,529	20.00	$1,028	$0	$1,662	$ 0.095	62%
HES Duct Leakage	Duct Leakage - Gas Heat	2014 Average Participant 108 CFM25 1,738 sqft	3,048	1,355	2014 Average Participant 462 CFM25 1,738 sqft	3,542	1,355	18.00	$88	$0	$417	$ 0.095	21%
HES Duct Leakage	Duct Leakage - Electric Heat	2014 Average Participant 103 CFM25 1,787 sqft	3,074	12,538	2014 Average Participant 439 CFM25 1,787 sqft	3,542	12,538	18.00	$429	$0	$429	$ 0.095	100%
HES General	Programmable Thermostats	Programmable Thermostat	2,608	5,424	Non-programmable Thermostat	2,684	5,424	11.00	$50	$0	$50	$ 0.095	100%
HES Infiltration	Air Infiltration - Gas Heat	2014 Average Participant 1,975 CFM50 1,878 sqft	3,443	1,355	2014 Average Participant 3,135 CFM50 1,875 sqft	3,542	1,355	11.00	$130	$0	$8,822	$ 0.095	1%
HES Infiltration	Air Infiltration - Electric Heat	2014 Average Participant 1,927 CFM50 1,875 sqft	3,455	13,143	2014 Average Participant 2,946 CFM50 1,875 sqft	3,542	13,143	11.00	$166	$0	$7,739	$ 0.095	2%
Refrigerator Recycling - Secondary	Secondary Refrigerator	Removal of second refrigerator	0	8,760	Existing secondary unit - age mostly >10 years	130	8,760	5.00	$50	$0	$0	$ 0.090	#DIV/0!
Refrigerator Recycling - Primary	Primary Refrigerator	Removal of primay refrigerator so it doesn't become a secondary	0	8,760	Existing primary unit - age mostly >10 years	119	8,760	10.00	$50	$0	$0	$ 0.090	#DIV/0!
Refrigerator Recycling - Freezer	Freezer	Removal of freezer	0	8,760	Existing freezer unit - age mostly >10 years	121	8,760	10.00	$50	$0	$0	$ 0.090	#DIV/0!
NM - Saver's Switch	Residential AC Switch	Utility load control device	0	0	No control, no switch	3,749	2	15.00	$0	$0	$0	$ 0.096	#DIV/0!
NM - Saver's Switch	Residential WH Switch	Utility load control device	0	0	No control, No Switch	4,500	0	15.00	$0	$0	$0	$ 0.096	#DIV/0!

											Program Forecast Inputs		Stipulated Forecast Inputs			Program Forecast			
Measure Description		Stipulated Output							Economic Assumptions		Technical Assumption	2016					2016		
Electric Measure Group	Electric Measure Description	Incremt'l Cost Payback Period w/o Rebate (yrs)	Incremt'l Cost Payback Period w/ Rebate (yrs)	Annual Customer kWh Savings (kWh/yr)	Rebated Cost / Cust kWh Saved ($/kWh)	Rebated Lifetime cost /Cust KWh Saved ($/kWh)	Customer kW Savings (kW)	Generator Peak kW Savings (kW)	Non-Energy O&M Savings ($)	Energy O&M Savings ($)	Coincidence Factor (%)	2016 Participants (-)	2016 Units (-)	NTG (%)	Installation Rate (%)	Realization Rate (%)	2016 NET Gen kW (kW)	2016 NET Gen kWh (kWh)	2016 Rebate Budget ($)	2016 Incremental Costs ($)
NM - Pump Off Controller	Pump Off Controllers	2.87	1.43	31,228	$0.10	$0.00	5.093	4.947	$0.00	$0.00	97.1%	4	24	80%	100%	100%	105.999	649,607	$72,000	$143,016
NM - Compressed Air Prescriptive	No Air Loss Drain	2.12	1.17	3,616	$0.06	$0.00	0.517	0.357	$0.00	$0.00	69.1%	5	5	80%	100%	100%	1.596	15,671	$1,000	$2,240
NM - Compressed Air Prescriptive	VFD Air Compressor New	4.43	2.06	18,251	$0.14	$0.01	6.016	5.342	$0.00	$0.00	88.8%	2	2	80%	100%	100%	9.539	31,637	$5,050	$9,460
NM - Compressed Air Prescriptive	VFD Air Compressor Upgrade	17.68	11.86	15,220	$0.34	$0.02	5.279	4.688	$0.00	$0.00	88.8%	4	4	80%	100%	100%	16.742	52,766	$20,750	$63,018
NM - Compressed Air Prescriptive	Cycling Dryers	2.61	1.22	5,897	$0.08	$0.00	0.841	0.841	$0.00	$0.00	100.0%	1	1	80%	100%	100%	0.751	5,111	$480	$902
NM - Compressed Air Prescriptive	Dewpoint Controls	1.53	1.06	36,512	$0.03	$0.00	5.319	5.319	$0.00	$0.00	100.0%	1	1	80%	100%	100%	4.749	31,647	$1,000	$3,271
NM - Compressed Air Prescriptive	Mist Eliminators	7.05	3.74	9,483	$0.22	$0.01	1.303	1.303	$66.73	$0.00	100.0%	1	1	80%	100%	100%	1.163	8,220	$2,060	$4,386
Self-Direct	Average Project	#N/A	#N/A	0	#DIV/0!	#DIV/0!	0.000	0.000	$0.00	$0.00	0.0%	0	0	80%	100%	100%	0.000	0	$0	$0
Recommissioning	Small Building Tune-up Study	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	0.000	0.000	$0.00	$0.00	56.7%	2	5	90%	100%	100%	0.000	0	$35,000	$40,000
Recommissioning	Small Building Tune-up Measure	1.54	1.20	57,413	$0.01	$0.00	11.822	6.709	$0.00	$1,763.55	56.7%	3	5	90%	100%	100%	33.694	279,912	$3,007	$13,604
NM - Saver's Switch for Business	Commercial AC Switch Single Stage - NM	#DIV/0!	#DIV/0!	13	$0.00	$0.00	9.360	1.553	$0.00	$0.00	16.6%	47	198	100%	100%	100%	343.243	2,686	$0	$0
NM - Saver's Switch for Business	Commercial AC Switch Multi Stage - NM	#DIV/0!	#DIV/0!	13	$0.00	$0.00	9.360	1.553	$0.00	$0.00	16.6%	3	4	100%	100%	100%	6.934	54	$0	$0
Interruptible Service Credit Option	Average Customer	#DIV/0!	#DIV/0!	3,500	$0.00	$0.00	500.000	394.600	$0.00	$0.00	78.9%	2	2	100%	100%	100%	880.804	7,584	$0	$0
NM - Residential Cooling	Standard Evaporative Cooling	0.00	-2.31	3,332	$0.21	$0.01	2.380	2.380	-$7.29	$0.00	100.0%	20	20	67%	100%	100%	37.773	50,244	$14,000	$0
NM - Residential Cooling	EC Motor Furnace Fan in house without central AC	4.19	3.29	1,227	$0.08	$0.00	0.154	0.086	$0.00	$0.00	55.6%	36	36	100%	100%	100%	3.677	50,082	$3,600	$16,716
NM - Residential Cooling	EC Motor Furnace Fan in house with central AC	3.81	2.99	1,348	$0.07	$0.00	0.154	0.127	$0.00	$0.00	82.4%	64	64	100%	100%	100%	9.694	97,818	$6,400	$29,717
NM - Residential Cooling	High Efficiency Air Conditioning (HEAC)	20.56	19.20	956	$0.13	$0.01	0.455	0.455	$0.00	$0.00	100.0%	19	19	100%	100%	100%	10.310	20,600	$2,353	$35,437
NM - Residential Cooling	HEAC Quality Install	4.22	4.22	624	$0.00	$0.00	0.650	0.650	$0.00	$0.00	100.0%	19	19	100%	100%	100%	14.735	13,444	$0	$4,750
NM - Residential Cooling	Air Source Heat Pump (ASHP)	16.60	15.29	635	$0.12	$0.01	0.134	0.102	$0.00	$0.00	76.0%	17	17	100%	100%	100%	2.072	12,239	$1,343	$17,000
NM - Residential Cooling	ASHP Quality Install	2.89	2.89	913	$0.00	$0.00	0.616	0.468	$0.00	$0.00	76.0%	17	17	100%	100%	100%	9.500	17,594	$0	$4,250
Home Lighting & Recycling	CFL Sales	0.42	0.00	32	$0.04	$0.01	0.032	0.005	$0.00	$0.00	14.5%	42,500	170,000	74%	96%	100%	659.085	4,366,920	$203,924	$203,924
Home Lighting & Recycling	CFL Low Income	0.51	0.00	26	$0.05	$0.01	0.032	0.003	$0.00	$0.00	10.2%	5,000	20,000	100%	96%	100%	73.815	564,092	$23,991	$23,991
Home Lighting & Recycling	LED Sales	4.97	3.21	32	$0.16	$0.01	0.032	0.005	$0.00	$0.00	14.5%	18,500	37,000	100%	100%	100%	202.666	1,342,810	$187,220	$529,307
Home Lighting & Recycling	LED Giveaways	2.22	0.00	25	$0.20	$0.01	0.031	0.003	$0.00	$0.00	10.2%	82,500	165,000	100%	100%	99%	613.318	4,686,984	$834,900	$834,900
HES AC	HEAC	20.56	19.20	956	$0.13	$0.01	0.455	0.455	$0.00	$0.00	100.0%	16	19	93%	100%	100%	9.589	19,158	$2,353	$35,437
HES AC	HEAC Quality Install	4.22	4.22	624	$0.00	$0.00	0.650	0.650	$0.00	$0.00	100.0%	16	19	93%	100%	100%	13.703	12,503	$0	$4,750
HES General	Low Flow Showerheads	0.06	0.00	491	$0.01	$0.00	0.000	0.000	$8.43	$0.00	0.0%	21	25	93%	100%	100%	0.000	12,940	$78	$78
HES Evaps	Evap Cooling	0.00	-2.31	3,332	$0.21	$0.01	2.380	2.380	-$7.29	$0.00	100.0%	5	5	93%	100%	100%	13.206	17,567	$3,500	$0
HES Radiant Barriers	Radiant Barriers	21.15	18.07	784	$0.29	$0.01	0.145	0.145	$0.00	$0.00	100.0%	1	1	93%	100%	100%	0.160	826	$229	$1,573
HES AC	ASHP	16.60	15.29	635	$0.12	$0.01	0.134	0.102	$0.00	$0.00	76.0%	14	17	93%	100%	100%	1.927	11,382	$1,343	$17,000
HES AC	ASHP Quality Install	2.89	2.89	913	$0.00	$0.00	0.616	0.468	$0.00	$0.00	76.0%	14	17	93%	100%	100%	8.835	16,363	$0	$4,250
HES Ceiling	Ceiling Insulation - Gas Heat	12.37	11.18	234	$0.63	$0.03	0.259	0.259	$0.00	$102.12	100.0%	16	20	93%	100%	100%	5.754	4,932	$2,959	$30,758
HES Ceiling	Ceiling Insulation - Electric Heat	5.40	2.06	3,242	$0.32	$0.02	0.185	0.185	$0.00	$0.00	100.0%	46	55	93%	100%	100%	11.291	188,040	$56,553	$91,428
HES Duct Leakage	Duct Leakage - Gas Heat	1.65	1.30	669	$0.13	$0.01	0.494	0.430	$0.00	$189.06	87.0%	143	170	93%	100%	100%	81.042	119,924	$14,926	$70,913
HES Duct Leakage	Duct Leakage - Electric Heat	0.77	0.00	5,868	$0.07	$0.00	0.468	0.407	$0.00	$0.00	87.0%	336	400	93%	100%	100%	180.769	2,475,113	$171,525	$171,525
HES General	Programmable Thermostats	1.28	0.00	413	$0.12	$0.01	0.076	0.076	$0.00	$0.00	100.0%	55	65	93%	100%	100%	5.495	28,317	$3,250	$3,250
HES Infiltration	Air Infiltration - Gas Heat	175.76	173.16	134	$0.97	$0.09	0.099	0.086	$0.00	$37.47	87.0%	42	50	93%	100%	100%	4.779	7,071	$6,522	$441,124
HES Infiltration	Air Infiltration - Electric Heat	71.49	69.96	1,141	$0.15	$0.01	0.087	0.076	$0.00	$0.00	87.0%	126	150	93%	100%	100%	12.576	180,495	$24,840	$1,160,873
Refrigerator Recycling - Secondary	Secondary Refrigerator	0.00	-0.49	1,135	$0.04	$0.01	0.130	0.071	$0.00	$0.00	55.0%	270	270	60%	100%	100%	13.776	208,463	$13,500	$0
Refrigerator Recycling - Primary	Primary Refrigerator	0.00	-0.53	1,039	$0.05	$0.00	0.119	0.065	$0.00	$0.00	55.0%	90	90	53%	100%	100%	3.679	55,672	$4,500	$0
Refrigerator Recycling - Freezer	Freezer	0.00	-0.52	1,063	$0.05	$0.00	0.121	0.067	$0.00	$0.00	55.0%	90	90	53%	100%	100%	3.765	56,970	$4,500	$0
NM - Saver's Switch	Residential AC Switch	0.00	0.00	8	$0.00	$0.00	3.749	0.821	$0.00	$0.00	21.9%	900	900	100%	100%	100%	881.742	8,082	$0	$0
NM - Saver's Switch	Residential WH Switch	0.00	0.00	2	$0.00	$0.00	4.500	0.200	$0.00	$0.00	4.4%	10	10	100%	100%	100%	2.387	22	$0	$0

Electric Product Detailed Technical Assumptions													
Measure Description			High Efficiency Product Assumptions			Baseline Product Assumptions			Economic Assumptions				
Electric Measure Group	Electric Measure Description	Efficient Product Description / Rating	Efficient Product Consumption (watts)	Efficient Hours of Operation (hrs/yr)	Baseline Product Description / Rating	Baseline Product Consumption (watts)	Baseline Hours of Operation (hrs/yr)	Measure Lifetime (years)	Rebate Amount ($)	Average Baseline Product Cost ($)	Incremental Cost of Efficient Product ($)	Assumed Energy Cost ($/kWh)	
School Education Kits - Prescriptive	13 Watt CFLs	High efficieny CFL lighting (1-13W	13	818	baseline is 1 incandescent bulb (1- 43W EISA Halogen)	43	818	6.40	$2	$0	$2	$	0.090
School Education Kits - Prescriptive	18 Watt CFLs	High efficieny CFL lighting (2-18W)	36	818	baseline is 2 incandescent bulbs (2- 53W EISA Halogen)	106	818	6.40	$4	$0	$4	$	0.090
School Education Kits - Prescriptive	11 Watt LED	High efficieny LED lighting (1-11W)	11	818	baseline is 1 incandescent bulbs (1- 43W EISA Halogen)	43	818	20.00	$10	$0	$10	$	0.090
School Education Kits - Prescriptive	Showerhead	Low Flow Shower head - 1.5 GPM	2,444	717	Federal Minimum Standard flow rate 2.5 GPM	2,444	826	10.00	$3	$0	$3	$	0.090
School Education Kits - Prescriptive	Aerators - Bathroom	1.0 GPM flow rate aerator	2,444	786	Federal Minimum Standard flow rate 2.2 GPM	2,444	826	5.00	$0	$0	$0	$	0.090
School Education Kits - Prescriptive	Aerators - Kitchen	1.5 GPM flow rate aerator	2,444	774	Federal Minimum Standard flow rate 2.2 GPM	2,444	826	5.00	$1	$0	$1	$	0.090
Residential Energy Feedback	Online Energy Feedback & Tools	Participant Group	4,438	2,613	Control Group	4,518	2,613	1.00	$0	$0	$0	$	0.090
Residential Energy Feedback	Print Feedback Report - Legacy Participant Group	Participant Group	1,717	6,727	Control Group	1,754	6,727	1.00	$0	$0	$0	$	0.090
Residential Energy Feedback	Print Feedback Report - 2016 Expansion Participant Group	2016 Expansion Participant Group	1,746	6,727	Control Group	1,754	6,727	1.00	$0	$0	$0	$	0.090
Residential Energy Feedback	Print Feedback Report - 2016 Refill Participant Group	2016 Refill Participant Group	1,746	6,727	Control Group	1,754	6,727	1.00	$0	$0	$0	$	0.090
Low Income Kits - Prescriptive	CFL	High efficieny CFL lighting (4 bulbs; 2-13W; 2-20W)	66	818	baseline is 4 incandescent bulbs (2- 43W & 2 - 53W EISA Halogen)	192	818	6.40	$6	$0	$6	$	0.090
Low Income Kits - Prescriptive	Showerhead	Low Flow Shower head - 1.5 GPM	2,444	717	Federal Minimum Standard flow rate 2.5 GPM	2,444	826	10.00	$3	$0	$3	$	0.090
Low Income Kits - Prescriptive	Aerators - Kitchen	1.5 GPM flow rate Kitchen aerator	2,444	774	Federal Minimum Standard flow rate 2.2 GPM	2,444	826	5.00	$2	$0	$2	$	0.090
Low Income Kits - Prescriptive	Aerators - Bathroom	1.0 GPM flow rate bathroom aerator	2,444	786	Federal Minimum Standard flow rate 2.2 GPM	2,444	826	5.00	$1	$0	$1	$	0.090
HES General	CFLs	Average CFL Bulb Purchased by Customer	14	818	Average incandescent bulb being replaced	46	818	6.00	$1	$1	$1	$	0.090
HES General	Refrigerator Replacements	New Refrigerator	5,108	8,343	Existing Refrigerator	5,200	8,343	13.00	$683	$0	$683	$	0.090
HES General	Low Flow Showerheads	Low Flow Shower head - 1.5 GPM	4,500	717	Federal Minimum Standard flow rate 2.5 GPM	4,500	826	10.00	$3	$0	$3	$	0.090
HES Evaps	Evap Cooling	Evaporative Cooler 85% effective	800	1,604	13 SEER AC Split System	3,180	1,451	15.00	$700	$2,587	$0	$	0.093
HES Radiant Barriers	Radiant Barriers	Average 1,850 sqft house with Radiant Barrier	2,539	5,424	Average 1,850 sqft house without Radiant Barrier	2,684	5,424	20.00	$229	$0	$1,573	$	0.095
HES Ceiling	Ceiling Insulation - Gas Heat	2014 Average Participant R30, 1,573 sq ft	3,282	902	2014 Average Participant R3, 1,573 sq ft	3,542	902	20.00	$148	$0	$1,538	$	0.095
HES Ceiling	Ceiling Insulation - Electric Heat	2014 Average Participant R30, 1,700 sq ft	3,357	17,529	2014 Average Participant R3, 1,700 sq ft	3,542	17,529	20.00	$1,028	$0	$1,662	$	0.095
HES Duct Leakage	Duct Leakage - Gas Heat	2014 Average Participant 108 CFM25 1,738 sqft	3,048	1,355	2014 Average Participant 462 CFM25 1,738 sqft	3,542	1,355	18.00	$385	$0	$417	$	0.095
HES Duct Leakage	Duct Leakage - Electric Heat	2014 Average Participant 103 CFM25 1,787 sqft	3,074	12,538	2014 Average Participant 439 CFM25 1,787 sqft	3,542	12,538	18.00	$429	$0	$429	$	0.095
HES General	Programmable Thermostats	Programmable Thermostat	2,608	5,424	Non-programmable Thermostat	2,684	5,424	11.00	$50	$0	$50		
HES Infiltration	Air Infiltration - Gas Heat	2014 Average Participant 1,975 CFM50 1,878 sqft	3,443	1,355	2014 Average Participant 3,135 CFM50 1,875 sqft	3,542	1,355	11.00	$183	$0	$8,822		
HES Infiltration	Air Infiltration - Electric Heat	2014 Average Participant 1,927 CFM50 1,875 sqft	3,455	13,143	2014 Average Participant 2,946 CFM50 1,875 sqft	3,542	13,143	11.00	$232	$0	$7,739		

												Program Forecast Inputs		Stipulated Forecast Inputs			Program Forecast			
	Stipulated Output								Economic Assumptions		Technical Assumption	2016					2016			
Electric Measure Description	Rebate as a % of Incremental Cost (%)	Incremt'l Cost Payback Period w/o Rebate (yrs)	Incremt'l Cost Payback Period w/ Rebate (yrs)	Annual Customer kWh Savings (kWh/yr)	Rebated Cost / Cust kWh Saved ($/kWh)	Rebated Lifetime cost /Cust KWh Saved ($/kWh)	Customer kW Savings (kW)	Generator Peak kW Savings (kW)	Non-Energy O&M Savings ($)	Energy O&M Savings ($)	Coincidence Factor (%)	2016 Participants (-)	2016 Units (-)	NTG (%)	Installation Rate (%)	Realization Rate (%)	2016 NET Gen kW (kW)	2016 NET Gen kWh (kWh)	2016 Rebate Budget ($)	2016 Incremental Costs ($)
13 Watt CFLs	100%	0.72	0.00	25	$0.06	$0.01	0.030	0.003	$0.00	$0.00	10.2%	417	2,500	100%	65%	100%	5.916	45,190	$3,950	$3,950
18 Watt CFLs	100%	0.77	0.00	57	$0.07	$0.01	0.070	0.007	$0.00	$0.00	10.2%	417	2,500	100%	65%	100%	13.805	105,444	$9,950	$9,950
11 Watt LED	100%	4.16	0.00	26	$0.37	$0.02	0.032	0.003	$0.00	$0.00	10.2%	417	2,500	100%	65%	100%	6.311	48,203	$24,500	$24,500
Showerhead	100%	0.08	0.00	267	$0.01	$0.00	0.000	0.000	$15.53	$0.00	0.0%	417	2,500	100%	55%	100%	0.000	415,542	$7,825	$7,825
Aerators - Bathroom	100%	0.03	0.00	98	$0.00	$0.00	0.000	0.000	$5.75	$0.00	0.0%	417	2,500	100%	50%	100%	0.000	138,367	$1,175	$1,175
Aerators - Kitchen	100%	0.06	0.00	128	$0.01	$0.00	0.000	0.000	$7.54	$0.00	0.0%	417	2,500	100%	50%	100%	0.000	181,606	$2,950	$2,950
Online Energy Feedback & Tools	#DIV/0!	0.00	0.00	209	$0.00	$0.00	0.080	0.056	$0.00	$0.00	70.4%	1,438	1,438	100%	100%	100%	96.635	340,751	$0	$0
Print Feedback Report - Legacy Participant Group	#DIV/0!	0.00	0.00	249	$0.00	$0.00	0.037	0.026	$0.00	$0.00	70.4%	10,276	10,276	100%	100%	100%	319.370	2,899,669	$0	$0
Print Feedback Report - 2016 Expansion Participant Group	#DIV/0!	0.00	0.00	59	$0.00	$0.00	0.009	0.006	$0.00	$0.00	70.4%	0	0	100%	100%	100%	0.000	0	$0	$0
Print Feedback Report - 2016 Refill Participant Group	#DIV/0!	0.00	0.00	59	$0.00	$0.00	0.009	0.006	$0.00	$0.00	70.4%	5,000	5,000	100%	100%	100%	36.675	332,984	$0	$0
CFL	100%	0.66	0.00	103	$0.06	$0.01	0.126	0.013	$0.00	$0.00	10.2%	100	400	100%	65%	100%	3.976	30,368	$2,444	$2,444
Showerhead	100%	0.10	0.00	267	$0.01	$0.00	0.000	0.000	$8.43	$0.00	0.0%	100	400	100%	50%	100%	0.000	60,442	$1,340	$1,340
Aerators - Kitchen	100%	0.10	0.00	128	$0.01	$0.00	0.000	0.000	$4.10	$0.00	0.0%	100	400	100%	50%	100%	0.000	29,057	$644	$644
Aerators - Bathroom	100%	0.05	0.00	98	$0.01	$0.00	0.000	0.000	$3.12	$0.00	0.0%	100	400	100%	50%	100%	0.000	22,139	$236	$236
CFLs	100%	0.52	0.00	26	$0.05	$0.01	0.032	0.003	$0.00	$0.00	10.2%	448	3,500	100%	100%	100%	13.456	102,829	$4,198	$4,198
Refrigerator Replacements	100%	9.87	0.00	770	$0.89	$0.07	0.092	0.092	$0.00	$0.00	100.0%	13	100	100%	100%	100%	11.014	87,302	$68,250	$68,250
Low Flow Showerheads	100%	0.06	0.00	491	$0.01	$0.00	0.000	0.000	$8.43	$0.00	0.0%	3	20	100%	100%	100%	0.000	11,131	$63	$63
Evap Cooling	#DIV/0!	0.00	-2.31	3,332	$0.21	$0.01	2.380	2.380	-$6.92	$0.00	100.0%	1	10	100%	100%	100%	28.401	37,778	$7,000	$0
Radiant Barriers	15%	21.15	18.07	784	$0.29	$0.01	0.145	0.145	$0.00	$0.00	100.0%	0	1	100%	100%	100%	0.172	889	$229	$1,573
Ceiling Insulation - Gas Heat	10%	12.37	11.18	234	$0.63	$0.03	0.259	0.259	$0.00	$102.12	100.0%	2	12	100%	100%	100%	3.712	3,182	$1,775	$18,455
Ceiling Insulation - Electric Heat	62%	5.40	2.06	3,242	$0.32	$0.02	0.185	0.185	$0.00	$0.00	100.0%	4	33	100%	100%	100%	7.284	121,316	$33,932	$54,857
Duct Leakage - Gas Heat	92%	1.65	0.13	669	$0.57	$0.03	0.494	0.430	$0.00	$189.06	87.0%	28	220	100%	100%	100%	112.772	166,877	$84,623	$91,769
Duct Leakage - Electric Heat	100%	0.77	0.00	5,868	$0.07	$0.00	0.468	0.407	$0.00	$0.00	87.0%	44	340	100%	100%	100%	165.219	2,262,200	$145,796	$145,796
Programmable Thermostats	100%	#DIV/0!	#DIV/0!	413	$0.12	$0.01	0.076	0.076	$0.00	$0.00	100.0%	1	10	100%	100%	100%	0.909	4,684	$500	$500
Air Infiltration - Gas Heat	2%	235.44	230.56	134	$1.36	$0.12	0.099	0.086	$0.00	$37.47	87.0%	21	165	100%	100%	100%	16.957	25,092	$30,132	$1,455,711
Air Infiltration - Electric Heat	3%	#DIV/0!	#DIV/0!	1,141	$0.20	$0.02	0.087	0.076	$0.00	$0.00	87.0%	35	275	100%	100%	100%	24.791	355,814	$63,756	$2,128,267

Southwestern Public Service Company

2014 Energy Efficiency and Load Management Annual Report

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

May 1, 2015

Table of Contents

Glossary of Acronyms and Definition

Acronym/Defined Term	Definition
2014 Annual Report	SPS's 2014 Energy Efficiency and Load Management Annual Report
2014 Plan	SPS's 2014 Energy Efficiency and Load Management Plan
ADM	ADM Associates – 2014 independent program evaluator for the State of New Mexico
CFL	Compact Fluorescent Light
Commission	New Mexico Public Regulation Commission
DSM	Demand-Side Management – refers to the energy efficiency and load management programs collectively
EE Rider	Energy Efficiency Rider
EUEA	New Mexico Efficient Use of Energy Act, as amended by Senate Bill 418 (2007), House Bill 305 (2008), and House Bill 267 (2013) §§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
kW	Kilowatt
kWh	Kilowatt hour
LED	Light Emitting Diode
Net Generator kW; Net Generator kWh	Demand and energy savings, respectively, measured at the generator, corrected for transmission line losses and free-rider/drivership
ICO	Interruptible Credit Option

Acronym/Defined Term	**Definition**
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
Rule	Energy Efficiency Rule 17.7.2 NMAC)
SPS	Southwestern Public Service Company, a New Mexico corporation
Stipulation	Settlement Agreement between the parties to Case No. 13-00286-UT
UCT	Utility Cost Test the cost-effectiveness standard implemented on July 1, 2013. Also known as the Program Administrator Test
Xcel Energy	Xcel Energy Inc.

Document Layout
Southwestern Public Service Company's ("SPS") 2014 Energy Efficiency and Load Management Annual Report ("2014 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 17.7.2.14 NMAC.
- Section III provides the program descriptions including an explanation of deviations from goal and changes during 2014, organized into the Residential, Business, and Planning & Research Segments.
- Section IV provides compliance requirements set forth in the Stipulation Agreement in Case No. 13-00286-UT.
- Appendix A provides the Measurement and Verification ("M&V") Report of SPS's 2014 program year prepared by ADM Associates, Inc. ("ADM").

Section I. Executive Summary

Introduction
In accordance with the Efficient Use of Energy Act ("EUEA"), as amended by Senate Bill 418 (2007), House Bill 305 (2008), and House Bill 267 (2013), and the New Mexico Public Regulation Commission's ("Commission") Energy Efficiency Rule ("17.7.2 NMAC", "Rule"), SPS respectfully submits for Commission review its 2014 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, 17.7.2.8.A NMAC requires SPS to file with the Commission on May 1 of each year, a report on its energy efficiency and load management programs during the prior calendar year. The specific reporting requirements of the Rule and Revised Rule are discussed in Section II.

With this 2014 Annual Report, SPS provides the expenditures and savings results for 10 energy efficiency and load management direct impact programs in the Residential Segment (including Low-Income) and Business Segment (including Large Customer). In addition, the 2014 Annual Report includes a summary of the Planning and Research Segment, which supports the direct impact programs. The M&V Report of SPS's 2014 savings is included as Appendix A.

Background
SPS filed its 2014 Energy Efficiency and Load Management Plan ("2014 Plan") on August 29, 2013 (Case No. 13-00286-UT).[1] SPS, the Commission's Utility Division Staff ("Staff"), and the other parties to the case agreed to a stipulation ("Stipulation") or did not oppose the

---

1 *In the Matter of Southwestern Public Service Company's Application for Approval of its (a) 2014 Energy Efficiency and Load Management Plan and Associated Programs, (b) Request for Financial Incentives for 2013-2015; (c) Cost Recovery Tariff Rider, and (d) Request to Establish Lower Minimum Savings Requirements for 2014 under the Efficient Use of Energy Act*, Case No. 13-00286-UT, Final Order Adopting Certification of Stipulation (Jun. 25, 2014).

Stipulation, which was approved by the Commission on June 25, 2014. The Stipulation included the following revisions to the originally proposed 2014 Plan: the addition of a low-income kit to the Home Energy Services program, measurement and evaluation efforts to improve the savings in the Home Lighting program, and increased marketing and promotion of various programs – especially to Spanish speaking audiences.

Summary of Results

In compliance with 17.7.2.14.C NMAC, Table 1 below shows SPS's program goals, budgets, and Utility Cost Test ("UCT") ratios approved by the Commission on June 25, 2014.

In 2014, SPS achieved verified electric savings of 8,873 kilowatts ("kW") and 30,492,802 kilowatt-hours ("kWh") at the generator, at a total cost of $7,809,444 (see Table 1 below.) This equals 102% of SPS's 2014 approved energy goal, while spending 99% of the approved budget. The portfolio was cost-effective with a UCT ratio of 2.45.

As shown in Table 2, most of the direct impact energy efficiency programs were cost-effective under the UCT. Three of the programs did not pass the UCT test in 2014. While each of the products listed below is discussed in more detail later in the Status Report, a summary of the primary reasons for individual programs falling below 1.0 on the UCT follows.

- Residential Saver's Switch: For 2014, the program resulted in a UCT of 0.69. As the program continues to grow in the future SPS expects the cost-effectiveness of the program to improve. It is also important to note that no major curtailment events were called in 2014. The only events called were two localized controls in the city of Hobbs. As a result, the program recognized no energy savings which lowered the net benefits and therefore the UCT for the program.
- Interruptible Credit Option ("ICO"): ICO didn't have any participants in 2014, and therefore achieved a UCT ratio of 0.0. Increasing participation will continue to be a challenge in the current economic climate, but given that it has a relatively small budget, offering the program is a valuable option for customers if economic conditions do change.
- Business Saver's Switch: For 2014, this program achieved a UCT of 0.29. As discussed further in Section III of this report, SPS continues to make every effort to grow the program while minimizing costs. It is also important to note that no major curtailment events were called in 2014. The only events called were two localized controls in the city of Hobbs. As a result, the program recognized no energy savings which lowered the net benefits and therefore the UCT for the program.

SPS works in good faith to comply with the EUEA and to offer cost-effective energy efficiency and load management programs to all of its customers. Each year, SPS evaluates the performance and progress of each of its programs to determine whether they are in the best interests of the portfolio and customers.

Table 1: Estimated and Actual Program Data for 2014

Program	2014 Estimated								2014 Reported and Verified							
	Participants	Budget	Peak Demand Savings (Customer kW)	Annual Energy Savings (Customer kWh)	Peak Demand Savings (Generator kW)	Annual Energy Savings (Generator kWh)	Utility Avoided Cost	Utility Cost Test	Participants	Expenditures	Peak Demand Savings (Net Customer kW)	Annual Energy Savings (Net Customer kWh)	Peak Demand Savings (Net Generator kW)	Annual Energy Savings (Net Generator kWh)	Utility Avoided Cost	Utility Cost Test
Residential Segment																
Energy Feedback Pilot	13,565	$218,114	916	3,669,295	1,093	4,160,198	$ 358,359	1.64	12,353	$190,221	355	3,211,232	424	3,640,853	$ 202,645	1.07
Evaporative Cooling Rebates	385	$252,592	334	173,444	398	196,648	$ 782,983	3.10	132	$124,224	267	296,309	318	335,951	$ 766,034	6.17
Home Energy Services: Residential & Low Income	1,300	$1,696,392	380	2,260,600	454	2,563,039	$ 2,217,937	1.31	3,611	$1,389,227	721	4,271,208	860	4,842,639	$ 3,488,974	2.51
Home Lighting & Recyling	7,900	$1,385,351	1,134	8,161,008	1,353	9,252,844	$ 3,008,430	2.17	507,867	$1,494,445	1,851	12,550,318	2,209	14,229,385	$ 5,647,740	3.78
Refrigerator Recycling	650	$133,648	54	506,735	64	574,529	$ 182,825	1.37	440	$110,883	69	339,388	82	384,794	$ 120,822	1.09
Residential Saver's Switch	945	$432,268	678	21,600	809	24,490	$ 1,223,461	2.83	3,756	$506,149	3,084	0	3,680	0	$ 348,918	0.69
School Education Kits	2,500	$116,751	12	691,054	14	783,508	$ 304,988	2.61	10,632	$121,833	2	713,311	3	808,743	$ 299,707	2.46
Residential Segment Total	**98,345**	**$4,235,116**	**3,508**	**15,483,735**	**4,186**	**17,555,255**	**$ 8,078,984**	**1.91**	**538,791**	**$3,936,982**	**6,349**	**21,381,766**	**7,576**	**24,242,365**	**$ 10,874,840**	**2.76**
Business Segment																
Business Comprehensive	444	$2,866,942	2,120	14,419,374	2,366	15,622,290	$ 11,990,807	4.18	1,700	$3,191,063	1,957	9,111,036	2,184	9,871,112	$ 8,163,089	2.56
Interruptible Credit Option	2	$29,970	789	7,000	881	7,584	$ 297,252	9.92	0	$471	0	0	0	0	$ -	0.00
Saver's Switch for Business	82	$129,604	78	517	87	560	$ 129,874	1.00	476	$209,515	566	0	632	0	$ 61,352	0.29
Business Segment Total	**528**	**$3,026,516**	**2,986**	**14,426,891**	**3,333**	**15,630,434**	**$ 12,417,933**	**4.10**	**2,176**	**$3,401,050**	**2,524**	**9,111,036**	**2,817**	**9,871,112**	**$ 8,224,441**	**2.42**
Planning & Research Segment																
Consumer Education		$152,120								$177,239						
Market Research		$45,130								$58,140						
Measurement & Verification		$19,817								$6,800						
Planning & Administration		$219,200								$198,313						
Product Development		$185,715								$30,921						
Planning & Research Segment Total		**$621,982**								**$471,413**						
2014 TOTAL	**98,873**	**$7,883,614**	**6,494**	**29,910,625**	**7,519**	**33,185,689**	**20,496,917**	**2.60**	**540,967**	**$7,809,444**	**8,873**	**30,492,802**	**10,393**	**34,113,477**	**19,099,281**	**2.45**

Table 2: Variance Comparison of 2014 Estimated and Reported/Verified Data

Program	2014 Estimated and Reported/Verified Variances							
	Participants	Expenditures	Peak Demand Savings (Net Customer kW)	Annual Energy Savings (Net Customer kWh)	Peak Demand Savings (Net Generator kW)	Annual Energy Savings (Net Generator kWh)	Utility Avoided Cost	Utility Cost Test
Residential Segment								
Energy Feedback Pilot	91%	87%	39%	88%	39%	88%	57%	65%
Evaporative Cooling Rebates	34%	49%	80%	171%	80%	171%	98%	199%
Home Energy Services: Residential & Low Income	278%	82%	189%	189%	189%	189%	157%	192%
Home Lighting & Recyling	6429%	108%	163%	154%	163%	154%	188%	174%
Refrigerator Recycling	68%	83%	129%	67%	129%	67%	66%	80%
Residential Saver's Switch	397%	117%	455%	0%	455%	0%	29%	24%
School Education Kits	425%	104%	20%	103%	20%	103%	98%	94%
Residential Segment Total	548%	93%	181%	138%	181%	138%	135%	145%
Business Segment								
Business Comprehensive	383%	111%	92%	63%	92%	63%	68%	61%
Interruptible Credit Option	0%	2%	0%	0%	0%	0%	0%	0%
Saver's Switch for Business	580%	162%	727%	0%	727%	0%	47%	29%
Business Segment Total	412%	112%	85%	63%	85%	63%	66%	59%
Planning & Research Segment								
Consumer Education		117%						
Market Research		129%						
Measurement & Verification		34%						
Planning & Administration		90%						
Product Development		17%						
Planning & Research Segment Total		76%						
2013 TOTAL	547%	99%	137%	102%	138%	103%	93%	94%

As shown in Tables 1 and 2 (above), SPS met or exceeded most of its program forecasts for 2014. Notably, SPS exceeded its energy and demand savings forecasts while remaining within its Commission-approved funding level. While program performance varied, the reasons for which are discussed further in Section III of this report, the majority of programs were within 25% of their forecasts. Notably, the Evaporative Cooling, Home Energy Services, and Home Lighting programs far exceeded their savings forecasts. SPS also controlled its indirect spending costs primarily focusing its spending on the Consumer Education and Market Research programs that improve customer awareness and education and SPS's understanding of customer preferences and motivations.

Section II: 17.7.2.14 NMAC Reporting Requirements

17.7.2.14.C NMAC requires that annual reports include specific details on the programs offered during the report year. Specifically, 17.7.2.14.C states:

C. Annual reports shall include the following for each measure and program:
(1) documentation of program expenditures;
(2) estimated and actual customer participation levels;
(3) estimated and actual energy savings;
(4) estimated and actual demand savings;
(5) estimated and actual monetary costs of the public utility;
(6) estimated and actual avoided monetary costs of the public utility;
(7) an evaluation of its cost-effectiveness; and
(8) an evaluation of the cost-effectiveness and pay-back periods of self-directed programs.

In addition, 17.7.2.14.D NMAC requires that the annual report also include:

(1) the most recent M&V report of the independent program evaluator, which includes documentation, at both the portfolio and individual program levels, of expenditures, savings, and cost-effectiveness of all energy efficiency measures and programs and load management measures and programs, expenditures, savings and cost-effectiveness of all self-direct programs, and all assumptions used by the evaluator;
(2) a listing of each measure or program expenditure not covered by the independent measurement and verification report and related justification as to why the evaluation was not performed;
(3) a comparison of estimated energy savings, demand savings, monetary costs, and avoided monetary costs to actual energy savings, demand savings, actual monetary costs, and avoided monetary costs for each of the utility's approved measure or programs by year;
(4) a listing of the number of program participants served for each of the utility's approved measures of programs by year;
(5) a listing of the calculated economic benefits for each of the utility's approved measures or programs by year;
(6) information on the number of customers applying for and participating in self-direct programs, the number of customers applying for and receiving exemptions, measurement and verification of self-direct program targets, payback periods and achievements, customer expenditures on qualifying projects, oversight expenses incurred by the utility representative or administrator; and
(7) any other information required by the commission.

The following table provides direction as to where the supporting data and narratives for each of these requirements can be found in this report.

Table 3: Location of Reporting Requirements

Reporting Requirement	Location in Annual Report
17.7.2.14.C(1)	Table 2
17.7.2.14.C(2)	Table 2
17.7.2.14.C(3)	Table 2
17.7.2.14.C(4)	Table 2
17.7.2.14.C(5)	Table 2
17.7.2.14.C(6)	Table 2
17.7.2.14.C(7)	Table 2
17.7.2.14.C(8)	N/A
17.7.2.14.D(1)	Appendix A
17.7.2.14.D(2)	Appendix A and Section III
17.7.2.14.D(3)	Table 2
17.7.2.14.D(4)	Table 2
17.7.2.14.D(5)	Table 2
17.7.2.14.D(6)	N/A
17.7.2.14.D(7)	N/A

Section III: Segment and Program Descriptions

Residential Segment

SPS has approximately 93,000 customers in its Residential Segment in New Mexico. The service area is relatively rural, with only a few small cities, including Clovis, Roswell, Artesia, Carlsbad, Portales, and Hobbs. The climate in this part of New Mexico consists of winters with very little snow and hot, relatively dry summers.

In 2014, SPS offered seven residential programs with opportunities for all residential customers, including low-income customers, to participate. In total, SPS spent $3,936,982 on these programs and achieved 6,349 kW and 21,381,766 kWh savings at the customer level.

Overall, the Residential Segment of programs was cost-effective with a UCT of 2.76. Achievements were 138 percent of the annual kWh goal with significant contributions from the Home Lighting and Home Energy Services programs. All of the programs under the Residential Segment are discussed in more detail below.

Energy Feedback Pilot

The Energy Feedback Pilot provides participating customers with different forms of feedback regarding their energy consumption in order to study which methods affect residential customer energy usage. The feedback communication strategies and associated tips and tools are intended to result in a decrease in energy usage by inducing changes in the behavior of participating customers. Furthermore, the program attempts to build a persistent increase in, or earlier adoption of, energy efficient technologies and energy efficient practices.

In 2014, the Energy Feedback Pilot provided an average of 12,353 customers with a Home Energy Report by mail six times. The report provided information on the customer's energy usage and benchmarked their energy consumption behavior as compared to 100 similar customers. The pilot aimed to produce a decrease in energy usage by inducing changes in the behavior of the end-user and an increased or earlier adoption of energy efficient technologies and energy efficient practices.

Table 4: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Energy Feedback Pilot	12,353	13,565	$ 190,221	$ 218,114	355	916	3,211,232	3,669,295	1.07

Deviations from Goal

The Energy Feedback Pilot did not achieve its estimated savings impact goals in 2014 yet it was still cost-effective under the UCT. The program fell short of goals for two reasons.

First, participants saved an average of 1.53% in 2014 and the forecast was 2% energy savings per customer. Second, achievements were lower due to natural attrition in the program which was mainly due to customers moving from their home. Eighty-four customers selected to opt-out of the program in 2014 (0.06%). The annual average number of customers receiving reports in 2014 was 9 percent lower than the original forecast of 13,565 participants. This difference is due to attrition which is very typical across the third-party implementer's program with other utilities.

Changes in 2014
None.

Evaporative Cooling

The Evaporative Cooling Rebate Product provides a cash rebate to electric customers who purchase and permanently install high-efficiency evaporative cooling equipment for residential use in New Mexico. A tiered rebate was offered for the first seven months of the year. This tiered rebate program provides $200 or the cost of the unit, whichever is less, for Standard System (Tier 1) units. A $1,000 rebate is offered for Premium System (Tier 2) units with a minimum media saturation[2] effectiveness of 85%, a remote thermostat, and a periodic purge water control. With the August 1, 2014 effective date of the 2014 DSM Plan, rebates for the Tier 1 units are no longer available and the Tier 2 rebate is $300.

Table 5: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Evaporative Cooling Rebates	132	385	$ 124,224	$ 252,592	267	334	296,309	173,444	6.17

Deviations from Goal
SPS continued to conduct outreach, including on-line media ads, bill inserts, and radio ads, but the program participation fell short overall. Despite lower than expected participation, the Evaporative Cooling Program exceeded the savings goal for 2014 and therefore, the program was highly cost-effective. Weaker than expected participation is likely attributable to three issues:

1. contractor community preferences for central air conditioning units;
2. Homeowner's Association restrictions on roof-mounted evaporative coolers; and,
3. new home construction uses refrigerated air systems, which makes retrofitting for evaporative coolers costly and technically difficult.

2 Media saturation effectiveness is the measure of the efficiency of the evaporative cooling unit. When operating, the unit intakes warm outside air and passes it through the media filter inside the unit where the water is, and then blows the cooled air into the home.

To make the program more successful in 2015, SPS plans to: utilize available marketing and advertising dollars, continue trade incentives, meet with local distributors that stock the Tier 2 units, and coordinate with local retailers to further increase participation.

Changes in 2014
With approval of the 2014 DSM Plan, rebates for Tier 1 units are no longer available.

Home Energy Services

The Home Energy Services Program provides incentives to energy efficiency service providers for the installation of a range of upgrades that save energy and reduce costs for existing households. Qualifying customers 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 and low-income homes. Additional objectives of the program are to:

- encourage private sector delivery of energy efficiency products and services;
- utilize a whole-house approach to efficiency upgrades; and
- significantly reduce barriers to participation by streamlining program procedures.

SPS partners with qualifying third-party contractors to deliver these services to qualifying residential customers. 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.

Table 6: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Home Energy Services: Residential & Low Income	3,611	1,300	$ 1,389,227	$ 1,696,392	721	380	4,271,208	2,260,600	2.51

Deviations from Goal
The Home Energy Services program exceeded its participation and energy savings goals for 2014. The program was also highly cost-effective. Unlike in 2013, the Low-Income portion of the program performed well achieving 1,851,603 kWh. SPS attributes this to changes made through the 2014 Plan to improve the reporting and verification requirements for program participants. Furthermore, SPS spent $530,694 which is 135 percent of its required funding level of $394,180. The Residential portion of the program also performed well, achieving 2,694,599 kWh. As noted in the M&V Report, part of this saving is attributable to customers implementing measures that historically have not been implemented.

Changes in 2014
SPS revised its participant reporting requirements for the Low-Income program consistent with its 2014 Plan and also began targeting multi-family residences for participation in the Low-Income portion of the Home Energy Services program. Additionally, SPS began offering income-qualified customers an energy savings kit consisting of four compact fluorescent light ("CFL") (two 13-Watt and two 20-Watt) bulbs, a high efficiency showerhead and two faucet (one kitchen and one bathroom) aerators. This kit was introduced as part of SPS's Stipulation Agreement in Case No. 13-00286-UT.

Home Lighting and Recycling

The Home Lighting and Recycling Program helps customers save energy and money by offering energy efficient CFL and light emitting diode ("LED") bulbs at a discounted price at participating retailers. SPS works with retailers and manufacturers to buy down the prices of bulbs. The price of a general purpose CFL bulb is bought down to to approximately $1.00 each. LED bulbs receive a buy down discount of up to $10 each but unit prices vary. This provides an inexpensive way for customers to reduce energy usage and their impact on the environment.

SPS marketed the program extensively through a variety of advertising and promotions, including television, radio, on-line, publications, bill inserts, community events, and point of purchase displays. SPS also participated in many local events and implemented bulb giveaways. SPS partnered with Domino's Pizza to deliver free 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 way to reach consumers. SPS leveraged the Refrigerator Recycling program and installed CFLs in customers' homes during the Refrigerator Recycling visit. SPS also used GreenWorks (a local contractor) to install CFLs in customers' homes; this tactic focused reaching income qualified customers.

Table 7: 2014 Program Achievements[3]

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Home Lighting & Recyling	507,867	7,900	$ 1,494,445	$1,385,351	1,851	1,134	12,550,318	8,161,008	3.78

Deviations from Goal
The Home Lighting and Recycling Program exceeded its energy savings goals. In addition, SPS spent less per kWh achieved than originally forecasted. A large part of the success of the 2014 program can be attributed to increased efforts to promote customer purchases of higher efficiency LED bulbs. SPS has made the promotion LED bulbs a focus of its 2014 program and will continue to increase this promotion in the future.

3 In its report, the Independent Evaluator recorded the total number of measures issued through the program. SPs does not forecast the number of measures in its plans only the number of calculated participants.

Changes in 2014
SPS made adjustments to its deemed savings based upon changes mandated by the Energy Independence and Security Act of 2007.

Refrigerator Recycling

The Refrigerator Recycling Product is designed to decrease the number of inefficient secondary refrigerators, primary refrigerators, and freezers in residential households. The product reduces energy usage by allowing customers to dispose of their operable, inefficient appliances in an environmentally safe and convenient manner. Customers receive a $75 incentive and free pick up and disposal services to recycle the freezer or refrigerator. This product is primarily marketed by bill inserts, direct mailers, radio, and on-line/social media efforts.

Table 8: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Refrigerator Recycling	440	650	$ 110,883	$ 133,648	69	54	339,388	506,735	1.09

Deviations from Goal
Despite significant outreach efforts, the Refrigerator Recycling Product did not achieve the electric energy savings goal in 2014. However, the program was cost-effective.

Changes in 2014
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 customers' central air conditioners and electric water heaters on days when the SPS 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, SPS utilizes a cycling strategy to achieve a 50% reduction in load. For enrolled electric water heaters, the entire load is shed for the duration of the control period. Due to limitations in available over-the-air control systems, the program is currently available only in the cities of Portales, Hobbs, Clovis, Roswell, Artesia, and Carlsbad.

Table 9: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Residential Saver's Switch	3,756	945	$ 506,149	$ 432,268	3,084	678	0	21,600	0.69

Deviations from Goal
The 2014 program year was the fourth operational year for the Saver's Switch program and SPS continues to make adjustments to improve program performance. In 2014, there were only two, highly localized, events called. Therefore, the 2013 demand savings assumptions were used to verify available load reductions. As noted by the Independent Evaluator, an event should not be called if there is no system need in order to avoid inconveniencing customers and reducing customer satisfaction with the program. Furthermore, because no events were called; no energy savings were counted towards the program year achievements. This likely had some negative impact on the program's cost-effectiveness as there were no energy related benefits to the program in 2014.

Changes in 2014
None.

School Education Kits

The School Education Kits program provides classroom and in-home activities that enable students and parents to install energy efficiency and water conservation products in their homes. The program is targeted to fifth grade students. A third-party contractor fully implemented the School Education Kits program, including recruiting and training teachers, providing all materials, and tracking participation by schools and teachers. Energy savings are based on the number of measures that are installed in the homes of the students. Students complete surveys to determine the measure installation rates.

Table 10: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
School Education Kits	10,632	2,500	$ 121,833	$ 116,751	2	12	713,311	691,054	2.46

Deviations from Goal[4]
The product exceeded its savings goals for 2014 by providing more kits than originally anticipated while coming in under budget.

[4] In its report, the Independent Evaluator recorded the total number of measures issued through the program. The actual number of kits issued in 2014 was 2,658.

Changes in 2014
SPS included two additional CFL bulbs in the student kits, one 13-Watt CFL and one 18-Watt CFL.

Business Segment

SPS's Business Segment in New Mexico consists of nearly 14,000 active premise locations among nearly 9,600 commercial, industrial, and agricultural customers.

In 2014, SPS offered three business programs with opportunities for all commercial and industrial customers to participate. In total, SPS spent $3,401,050 on these programs and achieved 2,524 kW and 9,111,036 kWh savings at the customer level.

Overall, the Business Segment of programs was cost-effective with a UCT of 2.42. Achievements were 63 percent of the annual kWh goal. All of the programs under the Business Segment are discussed in more detail below.

Business Comprehensive

The Business Comprehensive program bundles traditional prescriptive and custom products in a way that is more easily understood by customers. Business Comprehensive encompasses the Computer Efficiency, Cooling Efficiency, Custom Efficiency, Large Customer Self-Direct, Lighting Efficiency, and Motor & Drive Efficiency products. Customers can choose to participate in the any or all of the individual program components.

Table 11: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Business Comprehensive	1,700	444	$ 3,191,063	$ 2,866,942	1,957	2,120	9,111,036	14,419,374	2.56

Deviations from Goal
The Business Comprehensive program did not surpass its full-year goal. Oil production and pipeline operators either cancelled or delayed 17 large projects. Among small and medium sized businesses, the rate of closure of projects slowed from two prior years. Most of that decline was within the Lighting product, which was impacted by a reduction in the prescriptive rebate options and by our transition between 3rd party implementers.

Positive performance was mostly driven by small Motors & Drives projects among by oil producers, and by Custom Efficiency projects at schools, municipalities, and a manufacturing site.

Changes in 2014
SPS introduced the Building Tune-Up product to provide re-commissioning studies to customers, and we are expecting our first participants in 2015. Lighting Efficiency updated

rebate levels, added the DesignLights Consortium's qualified product list requirement for LED products that are not certified by ENGERY STAR, and Small Business Lighting has been streamlined to be one program, called Lighting Efficiency. The Lighting Efficiency program also added new prescriptive retrofit rebates for the following products: LED wall packs, LED screw-in down light retrofit kit, bi-level stairwell fixtures with integrated sensors, LED parking garage fixtures, and fluorescent delamping rebates.

Interruptible Credit Option

The ICO program was developed to offer significant savings opportunities to SPS 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.

Table 12: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Interruptible Credit Option	0	2	$ 471	$ 29,970	0	789	0	7,000	0.00

Deviations from Goal
The ICO programs did not have any participants during 2014. The ICO program is best suited for SPS's largest customers, most of whom are in the oil and gas industries. Due to the current economic conditions, most of these large customers see a financial benefit to continuing production, rather than being paid to curtail their load. SPS had conversations with some customers about participation which will continue in 2015 as economic conditions evolve.

Changes in 2014:
None.

Saver's Switch for 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 afternoon on weekdays. SPS utilizes a cycling strategy to determine how a customer's air conditioning is being operated in order to achieve a 50% reduction in load. Due to limitations in available paging systems, the program is currently available only in the cities of Portales, Hobbs, Clovis, Roswell, Artesia, and Carlsbad.

Table 12: 2014 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Saver's Switch for Business	476	82	$ 209,515	$ 129,604	566	78	0	517	0.29

Deviations from Goal
Similar to the Residential Saver's Switch program, this program has been in operation for four years and SPS continues to make changes to the program design to improve performance. In 2014, there were only two, highly localized, events called. Therefore, the 2013 demand savings assumptions were used to verify available load reductions. As noted by the Independent Evaluator, an event should not be called if there is no system need in order to avoid inconveniencing customers and reducing customer satisfaction with the program. Furthermore, because no events were called; no energy savings were counted towards the program year achievements. This likely had some negative impact on the program's cost-effectiveness as there were not energy related benefits to the program in 2014.

Changes in 2014
None.

Planning & Research Segment

The Planning and Research Segment consists of internal functions (not customer-facing), which support the direct impact programs. 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 compliance and cost-effectiveness;
- 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 to both customers and the system of SPS's energy efficiency portfolio;
- measure customer satisfaction with SPS's energy efficiency efforts; and
- develop new conservation and load management programs.

The segment includes energy efficiency and load management-related expenses for Business Education, Consumer Education, DSM Planning & Administration, Market Research, Measurement & Verification, and Product Development. 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 also supports the various energy efficiency and load management products. SPS employs a variety of resources and channels to communicate conservation and energy efficiency messages, including: the Xcel Energy Inc. ("Xcel Energy") website, bill inserts, events, radio, print, and on-line advertising.

The Consumer Education Program is targeted to all New Mexico residential electric customers. In spreading its messages, the Consumer Education program focuses on:

- web presence on ResponsibleByNature.com;
- community-based marketing events;
- messaging through local radio stations as well as on-line 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).

Deviations from Goal
None.

Changes in 2014
None.

Planning & Administration

The Planning and Administration area manages all energy efficiency and load management regulatory filings (including this Annual 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 DSM 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 Commission Staff.

In 2014, SPS worked with the parties to its 2014 Plan to agree to settlement. SPS received approval of this Plan on June 25, 2014.

Deviations from Goal
None.

Changes in 2014
None.

Market Research

The Market Research group spearheads energy efficiency-related research efforts that are used to inform SPS's decision-making concerning energy efficiency and load management. In 2014, the Market Research group oversaw the SPS portion of several Xcel Energy-wide projects such as the Awareness, Attitude & Usage Study, E-Source Membership, and the Dun & Bradstreet list purchase. In addition, this group supported SPS's third-party review of its Home Lighting promotional and giveaway events. This review was agreed to as part of the 2014 Stipulation Agreement and was intended to identify ways to improve the net-to-gross ratio assigned to these types of events.

Deviations from Goal
None.

Changes in 2013
None.

Measurement & Verification

The Measurement & Verification budget funds the internal staff from the Planning and Administration area who oversee M&V planning, data collection, 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.

17.7.2.14.D(1) NMAC requires that utilities submit the most recent M&V Report conducted by the approved Evaluator with its Annual Report. All New Mexico utilities have contracted with ADM Associates, Inc. as their Evaluator for 2014 programs. The 2014 M&V Report is provided as Appendix A of this document. In compliance with the reporting requirements, the 2014 M&V Report includes:

- expenditure documentation, at both the total portfolio and individual program levels;
- measured and verified savings;
- evaluation of 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; and
    - measures are operating correctly and are expected to generate the predicted savings.

Deviations from Goal
None.

Changes in 2014
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.

Deviations from Goal
None.

Changes in 2014
None.

Section IV: Compliance with Stipulation Agreement in Case No. 13-00286-UT

Paragraph (m) of Section 1.2 of the Stipulation Agreement requires that SPS provide the value of incentives issued in 2014 by rate class. The following table provides the value of incentives by rate class for programs in which participants rate classes are tracked. This list includes the Business Comprehensive (excluding Computer Efficiency measures), Saver's Switch for Business, Home Energy Services – Residential and Low-Income (excluding Low-Income lighting giveaways), Residential Saver's Switch, Refrigerator Recycling, and Evaporative Cooling programs. Other programs, such as Home Lighting programs do not track participant rate classes due to the nature of the incentive process. Excluded programs include the Home Lighting and Recycling, School Education Kits, and Energy Feedback Pilot (no incentives provided) programs.

Table 13: 2014 Incentives by Rate Class

Rate Class	Participant Rebates	Participant Bonus Rebate	Grand Total
RHS NM:[RRHS Res Htg Svc	$ 519,938	$ -	$ 519,938
RL NM:[RRL Residential Svc	$ 370,208	$ -	$ 370,208
IRRNM:[RIRR Irrigation Serv	$ 26,055	$ -	$ 26,055
LGST NM 115:[RLGST Lg Gen Svc	$ 258,336	$ 11,086	$ 269,422
LMSSNM:[RLMSS Municipal&School	$ 102,375	$ 14,325	$ 116,700
PG NM:[RPG Pri General Svc	$ 384,915	$ 6,081	$ 390,996
SG NM:[RSG Sec General Svc	$ 385,594	$ 4,721	$ 390,315
SGS NM:[RSGS Small Gen Svc	$ 119,730	$ 858	$ 120,588
Grand Total	$ 2,167,151	$ 37,071	$ 2,204,221

(Page intentionally left blank)

Appendix A: Measurement & Verification Report:

SPS 2014 Program Year

Provided by ADM Associates, Inc., April 2015

Southwestern Public Service Company DSM Portfolio Program Year 2014

Prepared for:

Xcel Energy

April 2015

Final

Prepared by:

ADM Associates, Inc.
3239 Ramos Circle
Sacramento, CA 95827
916.363.8383

Table of Contents

List of Tables

List of Figures

1. Executive Summary

This report is to provide a summary of the evaluation effort of the 2014 Demand Side Management (DSM) portfolio by the Southwestern Public Service Company (SPS, a division of Xcel Energy).

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 2014, the SPS DSM portfolio contained the following programs:

- Residential Evaporative Cooling
- Residential Home Energy Services
- Low Income Home Energy Services;
- Energy Feedback Pilot
- Home Lighting & Recycling
- School Education Kits
- Residential Refrigerator Recycling
- Business Comprehensive
- Large Customer Self-Direct[1]
- Small Business Lighting Efficiency
- Residential Saver's Switch
- Business Saver's Switch
- Interruptible Credit Option[2]

For 2014, ADM Associates, Inc. (the Evaluators) evaluated a subset of the portfolio. The programs evaluated for this program year include:

- Business Comprehensive;
- Home Energy Services;
- Low Income Home Energy Services;
- Home Lighting;

[1] No participants in 2014

[2] No participants in 2014

- Energy Feedback Pilot;
- Refrigerator Recycling
- Residential Saver's Switch; and
- Business Saver's Switch.

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 Evaluators then estimated free-ridership and associated net-to-gross ratios (NTGRs) for the evaluated programs Table 1-1 and 1-2 below present the gross and net impact by program. It should be noted that these tables include both evaluated and non-evaluated programs. Non-evaluated programs are shown as having 100% gross and net realization rates.

Table 1-1 Gross Impact Summary

Program	Peak Demand Savings (kW)		Annual Energy Savings, (kWh)		Lifetime Energy Savings (kWh)		Gross Realization Rate
	Expected	Realized	Expected	Realized	Expected	Realized	
Home Energy Services	539.6	546.2	2,852,662	2,897,418	50,058,428	50,869,112	101.6%
Home Lighting	1855.1	2278.1	18,820,856	15,397,905	150,566,848	101,029,434	81.8%
Business Comprehensive	1842.6	2197.7	12,652,768	10,258,148	175,491,895	141,379,979	81.1%
Energy Feedback Pilot	365	355.4	3,298,448	3,211,232	3,298,448	3,211,232	97.4%
Evaporative Cooling Rebates	364	364	443,427	443,427	6,651,405	6,651,405	100.0%
Low Income Home Energy Services	224.2	212.8	1,851,603	1,576,609	24,589,467	22,389,516	85.1%
Refrigerator Recycling	52.9	101.8	499,221	500,573	2,496,105	2,502,865	100.3%
School Education Kits	34.6	34.6	1,332,332	1,332,332	12,689,737	12,689,737	100.0%
Total	5278.0	6090.6	41,751,317	35,617,644	425,842,333	340,723,280	85.3%

Table 1-2 Net Impact Summary

Program	Peak Demand Savings (kW)		Annual Energy Savings, (kWh)		Lifetime Energy Savings (kWh)		Net Realization Rate
	Expected	Realized	Expected	Realized	Expected	Realized	
Home Energy Services	501.8	508.0	2,652,976	2,694,599	46,554,338	47,308,274	101.6%
Home Lighting	1,365.70	1851.4	13,860,507	12,550,318	110,884,054	84,263,645	90.5%
Business Comprehensive	1,480.40	1957.2	10,345,721	9,111,036	130,255,856	139,689,152	88.1%
Energy Feedback Pilot	365	355.4	3,298,448	3,211,232	3,298,448	3,211,232	97.4%
Evaporative Cooling Rebates	266.5	266.5	296,309	296,309	4,444,630	4,444,630	100.0%
Low Income Home Energy Services	224.2	212.8	1,851,603	1,576,609	24,589,467	22,389,516	85.1%
Refrigerator Recycling	33.8	69.0	334,478	339,388	1,672,390	1,696,942	101.5%
School Education Kits	2.3	2.3	713,311	713,311	6,793,899	6,793,899	100.0%
Total	4239.7	5222.6	33,353,353	30,492,802	328,493,082	309,797,290	91.4%

Additionally, the Residential and Business Saver's Switch programs were evaluated, providing independent verification of the per-unit kW Factor and total available demand reduction. The results of these evaluations are presented in Table 1-3.

Table 1-3 Saver's Switch Evaluation Results

Sector	Peak kW Factor	# Units	Available Demand Reduction	kWh Savings
Residential	0.821	3,756	3,083.7	0
Business	1.19	476	566.4	0
Total	0.863	4,232	3,650.1	0

Finally, the Evaluators estimated cost-effectiveness of the 2014 programs and overall portfolio using the Total Resource Cost (TRC) test and Utility Cost (UCT) test. The results are provided in Table 1-4.

Table 1-4 Cost Effectiveness Testing by Program

Program	NPV of TRC Benefits	NPV of UCT Benefits	NPV of TRC Costs	NPV of UCT Costs	TRC	UCT
Home Energy Services (Res & LI)	$3,488,974	$3,488,974	$1,417,398	$1,389,227	2.46	2.51
Home Lighting	$5,647,740	$5,647,740	$1,628,806	$1,494,444	3.47	3.78
Business Comprehensive	$8,163,089	$8,163,089	$4,496,046	$3,191,063	1.82	2.56
Energy Feedback Pilot	$202,645	$202,645	$190,221	$190,221	1.07	1.07
Evaporative Cooling	$766,034	$766,034	$96,163	$124,224	7.97	6.17
Refrigerator Recycling	$120,822	$120,822	$84,808	$110,883	1.42	1.09
School Education Kits	$299,707	$299,707	$121,833	$121,833	2.46	2.46
Residential Saver's Switch	$348,918	$348,918	$371,122	$506,150	0.94	0.69
Business Saver's Switch	$61,352	$61,352	$170,585	$209,515	0.36	0.29
Interruptible Credit Option	$0	$0	$471	$471	0.00	0.00
Business Education	$0	$0	$0	$0	-	-
Consumer Education	$0	$0	$177,239	$177,239	-	-
Market Research	$0	$0	$58,140	$58,140	-	-
Measurement & Verification	$0	$0	$6,800	$6,800	-	-
Planning & Administration	$0	$0	$198,313	$198,313	-	-
Product Development	$0	$0	$30,921	$30,921	-	-
Total:	$19,099,281	$19,099,281	$9,048,866	$7,809,444	2.11	2.45

1.4 Conclusions

The Evaluators found the following:

- **Some SPS programs that include CFLs had not been updating their deemed savings to correspond to EISA.** This was most acutely seen in the Low Income Home Energy Services Program, which was still utilizing 60W and 75W incandescent lamps as a baseline. The adjustment to EISA guidelines for baseline wattages was the primary contributor for programs of this type.
- **The transition period for Business Comprehensive to a new implementation contractor contributed to program underperformance in 2014.** Due to the shortfalls in quality assurance by the prior implementation contractor, SPS opted to put the Business Comprehensive program out to

competitive bid. This resulted in a mid-year change in implementation from Franklin Energy to CLEAResult. The Evaluators found that this transition period was marked by lower participation rates as the new implementation staff required time to get up to speed.

- **Quality assurance issues identified in 2013 have been corrected.** SPS put into place a more stringent quality assurance process for Business Comprehensive so as to prevent further instances of the QA/QC shortfalls identified in 2013 EM&V.
- **SPS has been responsive to evaluation recommendations pertaining to residential cooling measures.** In the 2013 EM&V report, the Evaluators recommended that SPS develop a residential cooling program, comprised of fixed incentives for high efficiency refrigerated air systems in addition to evaporative cooling. This is analogous to a successful program administered by El Paso Electric Company. SPS has filed and received approval for such a program for 2016.

1.5 Recommendations

The Evaluators' recommendations are as follows:

1.5.1 Home Energy Services

- **Add installing trade ally to program tracking.** Tracking data was largely comprehensive and allowed for recreation of savings calculations. Further, tracking data had full participant information (name, address, phone number). The Evaluators recommend that SPS add installing trade ally to program exports, so as to allow for comparison of performance by trade ally.

1.5.2 Low Income Home Energy Services

- **Update CFL technical assumptions to use EISA baselines and TRM hours of use.** This would apply a baseline of 43W and 53W instead of 60W and 75W, respectively. Further, this revises hours of use to 2.24 hours per day for residential CFLs.
- **Consider adopting low income measures used elsewhere in New Mexico.** This would include LED nightlights and advanced power strips.
- **Correct listed issues in program tracking data.** The issues were identified in Section 6.3.2.
- **Add an "exterior CFL/LED" line item for direct install projects.** Exterior lighting has signif9icantly higher hours of operation and does not provide peak kW reduction. If this portion of the CFL installation package were separated out (or done in addition to the current 10-pack), SPS could support using the

NM TRM Residential Exterior Lighting hours of use (3.1) instead of the weighted average (2.24).

- **Update refrigerator replacement deemed savings to utilize metered data collected by MFA.** Multiple years of refrigerator metering by the MFA have yielded early-replacement savings of 1,011 kWh and .115 kW%).

1.5.3 Refrigerator Recycling

- **Consider reducing the program incentive.** The program is only marginally cost-effective under the Utility Cost Test, with a score of 1.04. Given this, SPS may want to consider revising the program incentive downward to reduce UCT costs. As demonstrated in Table 7-16, incentives for appliance recycling are as low as $30 elsewhere in New Mexico.

1.5.4 Home Lighting

- **Only apply commercial hours for retail markdown in standard-income retailers and pizza distribution.** The program design and evaluation delineates between the net impacts of varied program channels. This has included the application of 100% NTGR for certain low income retailers due to their servicing low income residential customers. The commercial hours of use value is not appropriate for this subset of retailers, nor is it appropriate for the giveaway events which provide no-cost distribution of CFLs to residential customers. .
- **Apply ISRs as determined in this evaluation.** This includes ISRs of 96% for markdown CFLs, 100% for LEDs, and 88.1% distribution CFLs, and 100% for direct install.
- **Maintain festival giveaway events, despite leakage findings.** The Festival Giveaway event was found to have 4.6% out-of-state leakage. However, this is still a highly cost-effective event, in which program staff distribute a large amount of CFLs in a short time period.
- **Update program NTGRs based on evaluation findings.** The Evaluators found NTGRs specific to each delivery channel, detailed in Table 8-12. These NTGRs should be used in SPS technical assumptions in the years before the next evaluation.

1.5.5 Business Comprehensive

- **Process Cooling Projects should be treated as Custom Savings Projects.** Deeming savings for process loads creates the risk that the verified savings will differ substantially from the deemed expected savings. The reason for this risk is that plant operating schedules can vary substantially, making it difficult to develop accurate assumptions about operating hours. Additionally, process cooling applications are more energy intensive than the space cooling loads used as the basis for deemed savings values. It is recommended that all process cooling applications be treated as custom projects.

- **Consider basing verification requirements on project size rather than customer size.** Rather than basing the verification requirement on account size, consider limiting post-verifications to a random sample of projects below a certain energy savings threshold (e.g., a sample of 10% of projects below 200,000 kWh in expected savings), while verifying installation and post-retrofit conditions for all projects above that threshold. Invoices, equipment cut-sheets, and other customer provided documentation may prove sufficient for many prescriptive projects. Continue the requirement that the first five projects for a new contractor receive a verification visit.
- **Consider promotional materials targeting business types.** Consider providing quick, easily accessible materials that provide clear information about the benefits of energy efficiency and the incentives available for different building / business types such as retail, offices, grocery and convenience stores, and hotels. These materials could include case studies or fact sheets about energy saving opportunities for different types of customers.
- **Provide consistent contact information on website.** In order to present a unified, single point of contact to customers, consider listing all contact information as part of the Business Solutions Center with email contact information and local and 800 number calling options.
- **Consolidate prescriptive refrigeration incentive offerings.** It is recommended that the program consolidate prescriptive refrigeration incentives into a single application in order to present all relevant measure incentives to the customer in a single document and to prevent the customer from having to complete multiple applications for a single project. Additionally, program staff should consider offering a broader range of prescriptive refrigeration incentives such as auto door closers, motion sensors on LED cases, and floating pressure and floating suction controls.
- **Continue and enhance trade ally outreach:** Trade allies would likely benefit from continued program outreach and general communication. Some trade allies and program staff noted that there has been some incorrect information about the programs provided to trade allies in the past and they indicated some confusion about application form changes. Program staff should

continue their one-on-one outreach efforts, but should also consider other forms of communicating program changes and other information to trade allies such as monthly newsletters.

2. 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.

2.1 Glossary of Terminology

As a first step to detailing the evaluation methodologies, the Evaluators provide 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 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 (e.g. If the Evaluators verify 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 factoring off free-ridership, (erg., if Free-Ridership for low-flow showerheads = 50%, net savings = 300 kWh x 50% = 150 kWh)
- *Net-to-Gross-Ratio (NTGR)* = (1 – Free-Ridership %), also defined as Net Savings / Gross Savings
- *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
- *UCT* – Utility Cost Test, taking the ratio of net benefits over net utility costs.

2.2 Overview of Methodology

The Evaluators' methodology in the evaluation of the 2014 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, this 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.

2.3 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

2.3.1 Census of Participants

A census of participant data was used for select programs where such review is feasible. An example of this is the statistical analysis of billing data associated with the Energy Feedback Pilot. .

2.3.2 Simple Random Sampling

For programs with relatively homogenous measures (largely in the residential portfolio), the Evaluators 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. Coefficient of Variation (CV) is defined as:

$$CV = \frac{Mean_x}{Standard\ Deviation_x}$$

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, the Evaluators 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. The Evaluators applied finite population correction factors in instances of low participation in determining samples required for surveying or onsite verification.

2.3.3 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 2014 SPS Business Comprehensive Program had a CV of 4.19 at year's end. Using the base simple random sample function, this would call for a sample of 4,751. This program had 156 participating facilities, and as such, a finite population adjustment is needed. Adjusting for the population, the required simple random sample is 151, which would be prohibitively expensive.

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 this component of the Small Business Lighting program was reduced to 29, with one certainty stratum and 4 sample strata.

2.3.4 Free-Ridership

In determining ex post net savings for the SPS DSM portfolio, the Evaluators provide 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), the Evaluators 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, we then examine 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, the Evaluators then estimate the Net-to-Gross Ratio (NTGR), calculated as:

NTGR = 1 – % Free-Ridership

2.4 Data Collection

This subsection provides descriptions of The Evaluators' data collection procedures, including:

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

2.4.1 Telephone Surveying

The Evaluators conducted a large volume of telephone surveys in in this effort. 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.

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 & Polling, 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.

2.4.2 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, the Evaluators conducted onsite metering at facilities where factors contributing to energy savings, including lighting schedule and motor load factors, were subject to high uncertainty.

2.5 Cost Effectiveness Testing

The Evaluators performed the Total Resource Cost (TRC) and Utility Cost (UCT) tests as part of the 2014 EM&V effort.

2.5.1 Total Resource Cost Test

The TRC value is defined as:

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

The parameters for this equation are defined in Table 2-1.

Table 2-1 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.

2.5.2 Utility Cost Test

The UCT test is defined as:

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

Most terms in this equation are defined and calculated in the same manner as the components of the TRC test. Where the UCT 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 UCT 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 School Education Kits 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.

3. Residential Saver's Switch

3.1 Program Description

The Residential Saver's Switch Program (RSSP) is a direct load control program in which participants agree to have a Smart Switch attached to their refrigerated air unit. When SPS has a system critical peak, they can send a signal to the unit that will set a cycling rate on the compressor, turning it off for an interval of time during the hottest hours of summer weekday afternoons. It is not activated on weekends or holidays, and activation is not to last longer than four hours on a given day. Participants receive a $40 incentive for their participation.

3.2 M&V Methodology

Typically, demand reductions are evaluated metered data for a curtailed group with a baseline determined from adjusting usage on prior days. Reductions are calculated as:

$$Baseline\ kW = Mean\ kW(Baseline\ Days) * Offset\ Factor$$

Where,

Baseline Days = Three of the previous 5 non-weekend, non-holiday, non-event days displaying the highest average event-time load, and

Offset Factor = kW for the hour preceding curtailment / Average kW for this hour during baseline days

This is then translated to the entire population. What comes from these two methodologies is an "availability analysis", in which the in-season performance is multiplied by the number of installations at the end of the 2014 program year.

In 2014, there were no full-system events initiated by SPS. In conversations with SPS staff, it was found that only two events were initiated, and these events were not usable for program M&V for multiple reasons:

1) The events were localized to Hobbs, NM;
2) The events occurred on weekends; and
3) The events were the result of a local transmission & distribution (T&D) need, rather than a peak system load.

The Evaluators concluded that it is inappropriate to penalize the Saver's Switch program for not running events due to a lack of full system need. SPS staff operated in good faith in not utilizing the load control system in 2014 (it had been used for at least one event in the prior three program years). On this basis, the Evaluators verified total system value as follows:

1) The per-unit kW Factor from the 2013 evaluation was applied as a proxy value for 2014; and
2) This kW Factor was then multiplied by total 2014 installations.

3.3 Impact Evaluation Results

The approach intended by the Evaluators was to estimate the available critical peak reduction from the RSSP by analysis of metered data from the curtailment group on all event days in 2014. However, due to the lack of need for full-system events in 2014, load reduction was instead validated with proxy kW Factors, multiplied by the year-end device count. These inputs are as follows:

- kW Factor: .821 (from the 2013 program M&V results)
- Unit count: 3,756 active switches
- Total system kW: 3,083.67

The Evaluators concluded after reviewing metered data provided by SPS that there was insufficient sample to support kWh savings calculations, so no energy savings are credited this year. However, the effect of these savings would have been minimal. In 2013, with four full-system events, the Residential Saver's Switch Program had 15,690 kWh.

3.4 Conclusions

The Evaluators' conclusions are as follows:

- **SPS made the appropriate decision in not administering a full-system load control event in 2014.** In contrast to prior summer cooling seasons, SPS did not observe a system peak which would warrant calling a load control event. The Evaluators conclude that this is the appropriate decision to make, and that running a full-system event to support M&V would have been an unnecessary burden on SPS residential customers.

The Evaluators have no recommendations for the Residential Saver's Switch Program at this time.

4. Business Saver's Switch

4.1 Program Description

The Business Saver's Switch Program (BSSP) is analogous to the RSSP in providing incentives for the installation of direct load control devices on businesses' refrigerated air conditioning units. Businesses receive an incentive of $20 per enrolled ton of air conditioning, paid as a bill credit to their October energy bill after the close of the cooling season.

4.2 M&V Methodology

Typically, demand reductions are evaluated metered data for a curtailed group with a baseline determined from adjusting usage on prior days. Reductions are calculated as:

$$Baseline\ kW = Mean\ kW(Baseline\ Days) * Offset\ Factor$$

Where,

Baseline Days = Three of the previous 5 non-weekend, non-holiday, non-event days displaying the highest average event-time load, and

Offset Factor = kW for the hour preceding curtailment / Average kW for this hour during baseline days

This is then translated to the entire population. What comes from these two methodologies is an "availability analysis", in which the in-season performance is multiplied by the number of installations at the end of the 2014 program year.

In 2014, there were no full-system events initiated by SPS. In conversations with SPS staff, it was found that only two events were initiated, and these events were not usable for program M&V for multiple reasons:

1) The events were localized to Hobbs, NM;
2) The events occurred on weekends; and
3) The events were the result of a local transmission & distribution (T&D) need, rather than a peak system load.

The Evaluators concluded that it is inappropriate to penalize the Saver's Switch program for not running events due to a lack of full system need. SPS staff operated in good faith in not utilizing the load control system in 2014 (it had been used for at least one event in the prior three program years). On this basis, the Evaluators verified total system value as follows:

1) The per-unit kW Factor from the 2013 evaluation was applied as a proxy value for 2014; and

2) This kW Factor was then multiplied by total 2014 installations.

4.3 Impact Evaluation Results

Analogous to the Residential Saver's Switch findings, the Evaluators calculated total system size for the Business Saver's Switch Program by use of the 2013 kW Factor as a proxy value, multiplied by year-end installations. The results are:

- kW Factor: 1.19 (from the 2013 program M&V results)
- Unit count: 476 active switches
- Total system kW: 566.44

4.4 Conclusions

The Evaluators' conclusions are as follows:

- **SPS made the appropriate decision in not administering a full-system load control event in 2014.** In contrast to prior summer cooling seasons, SPS did not observe a system peak which would warrant calling a load control event. The Evaluators conclude that this is the appropriate decision to make, and that running a full-system event to support M&V would have been an unnecessary burden on SPS business customers.

The Evaluators have no recommendations for the Business Saver's Switch Program at this time.

5. Home Energy Services

5.1 Program Description

The Home Energy Services Program (HESP) 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. The main program provides services to all SPS residential customers. There is also a low income version of the program that provides a wider range of measures free of charge.

For the main HESP, the following is provided free-of-charge:

- Duct sealing;
- Infiltration improvement; and
- Low flow showerheads.

Ceiling insulation is provided with customer co-pay.

5.2 M&V Methodology

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

- Verifying participation through participant surveying;
- Verifying post-retrofit duct leakage and infiltration at a sample of participants; and
- Providing estimates of net-to-gross savings and free-ridership.

Table 5-1 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 5-1 Data Sources for Gross Impact Parameters –Home Energy Services

Parameter	*Source*
Home Specifications	Tracking Data & Onsite Verification
Post-installation Duct Leakage & Infiltration	On-site Measurement

5.2.1 Participation Summary

In 2014, the HESP provided services to 837 homes. Figure 6-1 summarizes the distribution of savings by measure category.

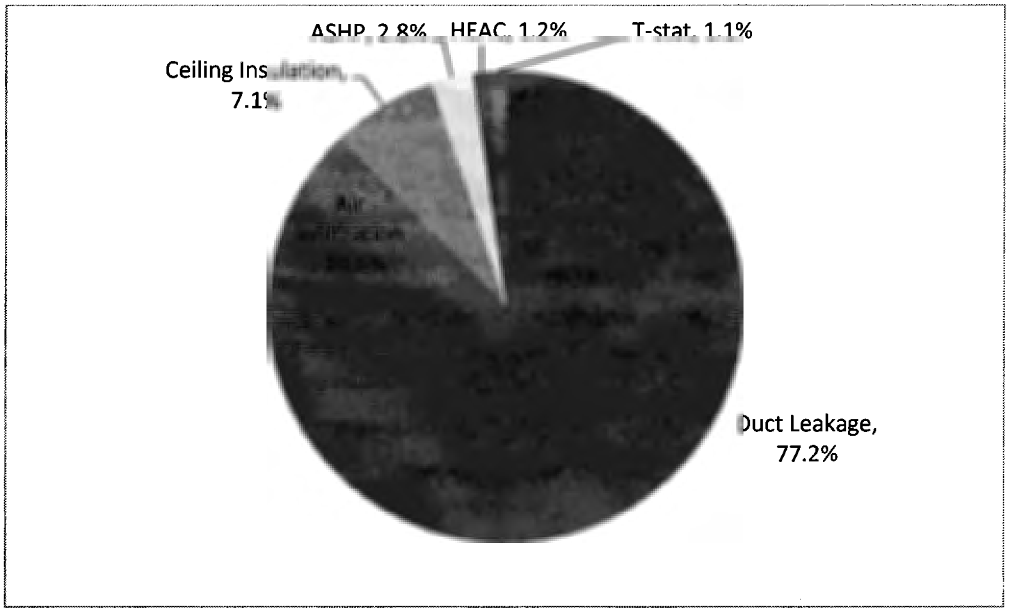


Figure 5-1 HESP Distribution of Savings by Measure

Participant homes received an average of 1.91 measures. Figure 5-2 summarizes the number of homes by number of measures installed.

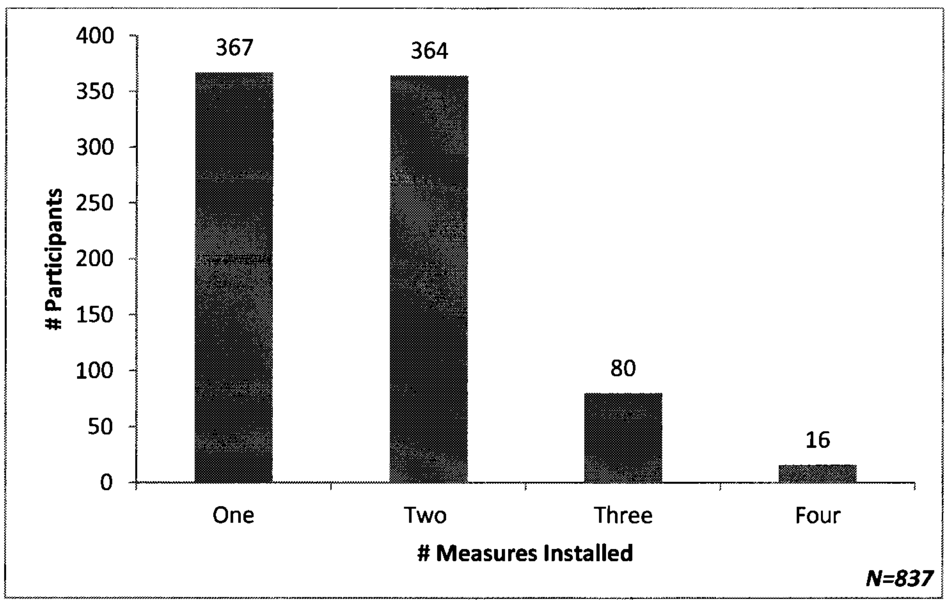


Figure 5-2 Distribution of Homes by Measure Count

The 2014 program differed from prior years as follows:

- **Air conditioning rebates.** 2014 saw the first instances of participation for the Central Air Conditioning (CAC) and Air Source Heat Pump (ASHP) measures, with 15 and 12 units rebates (respectively).
- **Programmable thermostats.** HESP added programmable thermostats, and 77 were installed through the program in 2014.

As in prior years, duct sealing accounted for most of the program savings (77.2%).

5.2.2 Review of Deemed Savings Estimates

The Evaluators reviewed the deemed savings estimates for measures rebated through the program in 2014. 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).

These values were verified based upon pre- and post-retrofit billing analysis of program participants.

5.2.3 Verification of Installed Measures

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

- Review of the tracking data presented; and
- On-site measurement of duct leakage, infiltration, and ceiling insulation

Duct sealing, air infiltration, and celling insulation combined to account for 94.9% of program savings. As a result, the Evaluators opted to focus M&V on these measures, and did not conduct any M&V for ASHPs, CACs, or programmable thermostats.

5.2.3.1 Data Review & Sampling

The Evaluators reviewed tracking data for anomalous entries and to ensure that all the necessary information for savings calculations was present.

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. This would require a sample of 78 measure verifications to meet precision requirements. The Evaluators visited a sample of 52 unique homes covering 91 measures for this evaluation. The sample is summarized in Table 5-2.

Table 5-2 Home Energy Services Sample Summary

Measure	# Homes
Ceiling Insulation	10
Duct Sealing	55
Infiltration Control	26
Total Homes Visited	52
Total Measures from Site Visits Home	91

5.2.3.2 On-Site Measurement Procedures

For all measure types requiring on-site measurements, the square footage and heating and cooling types were verified. This information is necessary for savings calculations using the New Mexico TRM. To verify ceiling insulation, the insulation type and measured depth were recorded.

To measure duct leakage, field staff performed duct pressurization testing (using Duct Blasters®) on the ducting for central air conditioning systems. System static pressure (SSP) on the duct system was first measured, where SSP is a measurement of static pressure at the supply side plenum of the duct system when the supply fan is on and operating with registers in their normal position. This pressure is unique for each system. The ducts were then pressurized by means of a Duct Blaster® connected to the return side of the system. Total duct leakage was measured with the registers sealed and the Duct Blaster® pressurizing the duct system. Total Duct leakage at 50 Pa was then recorded.

An additional step was required to measure duct leakage to unconditioned space. A Blower Door® was set up in an exterior doorway and used to pressurize the house to the same pressure as the ducts. This prevented any leakage to other conditioned spaces within the residence; all leakage measured, once the home was pressurized, would therefore be attributed only to unconditioned spaces. Duct leakage to unconditioned space was then measured at 25 Pa, where possible.

Finally, total home infiltration, measured in CFM, was calculated. One-time measurements of pressure differential between the conditioned and unconditioned space were taken to calculate a snap shot of total home infiltration, in CFM. However, this measurement of infiltration will not remain constant throughout the year, as it is a function of pressure differential between the interior and exterior of the home. As this pressure varies with changing wind and outdoor temperatures, so will infiltration of the residence's envelope.

5.3 Impact Evaluation Results

Program-level realization by measure category is summarized in Table 5-3 below.

Table 5-3 Home Energy Services Gross Realization Summary

Measure	Expected kWh	Verified kWh	Expected kW	Verified kW	Expected Lifetime kWh	Verified Lifetime kWh
Duct Leakage	2,201,485	2,246,966	327.1	333.9	39,626,730	40,445,380
Air Infiltration	301,733	301,009	64.7	64.6	3,319,063	3,311,097
Ceiling Insulation	202,998	202,998	98.2	98.2	5,074,950	5,074,950
ASHP	80,754	80,754	25.9	25.9	1,211,310	1,211,310
CAC	33,891	33,891	17.9	17.9	508,365	508,365
Programmable Thermostats	31,801	31,801	5.7	5.7	318,010	318,010
Total	2,852,662	2,897,418	539.6	546.2	50,058,428	50,869,112
Realization:	101.6%					

5.3.1 Home Energy Services Gross Savings Estimates

The Evaluators verified gross savings estimates for each measure type installed through the 2014 HESP. Measures installed in 2014 included:

- Duct sealing;
- Infiltration control;
- Ceiling insulation;
- High efficiency air conditioning; and
- Air source heat pumps.

5.3.2 TRM Review of Savings Estimates

In order to verify the savings for the Home Energy Services program, the New Mexico Technical Resource Manual for the Calculation of Energy Efficiency Savings was reviewed for each measure. The following table details the sections used to review the savings by measure type.

Table 5-4 TRM Sections by Measure

Measure	TRM Section
Ceiling Insulation	4.1.2
Duct Sealing	4.5.2
Infiltration Control	4.8.2

5.3.2.1 Ceiling Insulation

The New Mexico TRM provides tables in section 4.1.2 for kWh savings per square foot, dependent on geographical location and heating and cooling type. The measures sampled were all located closest to the Roswell TRM geographic location.

Table 5-5 TRM Table – Celling Insulation, Roswell NM

Existing R Value	Gas Heat with AC	Electric Resistance with AC	Heat Pump	Gas Heat with Evap Cooling	Electric Resistance Heat with Evap Cooling	Gas Heat
R-0	0.279	4.660	2.440	0.055	4.430	0.191
R-1 to R-4	0.148	2.470	1.290	0.029	2.350	0.102
R-5 to R-8	0.090	1.500	0.790	0.018	1.430	0.062
R-9 to R-14	0.046	0.770	0.400	0.009	0.730	0.032
R-15 to R-22	0.017	0.280	0.140	0.003	0.260	0.011

For sites where the existing insulation could be verified, the appropriate R-value category was used for savings calculations. This kWh savings per square foot value was multiplied by the verified square feet to determine a total ceiling insulation savings.

5.3.2.2 Duct Sealing

The New Mexico TRM provides the following algorithm for the energy savings from duct sealing:

$$Total\ kWh = Cooling\ Savings + Heating\ Savings$$

Where,

$$Cooling\ Savings = (DL_{baseline} - DL_{post}) \times 0.77 \times EFLH \times (h_{out} \times \rho_{out} - h_{in} \times \rho_{in}) \times 60 / (1000 \times SEER)$$

And

$$Heating\ Savings = (DL_{baseline} - DL_{post}) \times 0.77 \times HDD \times 24 \times 60 \times 0.018 / (ConvFactor \times Efficiency)$$

The following table provides the details of the assumptions for each variable.

Table 5-6 Duct Sealing Variables and Assumptions

Variable Name	Definition	Value
DLbaseline	Duct leakage baseline (CFM @25Pa)	Measured
DLpost	Duct leakage after install (CFM @25Pa)	Measured

0.77	Adjustment factor for partial AC usage	0.77
EFLH	Effective full load hours	Zone dependent
Hout	Outdoor air design specific enthalpy	29
Hin	Indoor air design specific enthalpy	25
Pout	Density of outdoor air at 95 degrees	0.0742
Pin	Density of conditioned air at 75 degrees	0.0756
60	Conversion factor from minutes to hours	60
1,000	Conversion factor from Wh to kWh	1,000
SEER	Efficiency of Cooling System	10 for HVAC pre-2006, 13 for HVAC post 2006
HDD	Heating Degree days	Zone Dependent
Convfactor	Conversion factor yielding kWh or therms	Dependent on Heating
Efficiency	Heating system efficiency	Dependent on Heating
0.018	Volumetric heat capacity of air	0.018

5.3.2.3 Infiltration Control

The New Mexico TRM provides the following algorithm for the energy savings from duct sealing:

$$\textit{Total kWh} = \textit{Cooling Savings} + \textit{Heating Savings}$$

Where,

$$\textit{Cooling Savings} = \frac{((CFMexist - CFMnew) / Nfactor) \times 60 \times CDH \times DUA \times .018}{(1000 \times nCool)}$$

And

$$\textit{Heating Savings (Gas)} = \frac{((CFMexist - CFMnew) / Nfactor) \times 60 \times 24 \times HDD \times .018}{(100{,}000 \times nHeat)}$$

or

$$\textit{Heating Savings (Elect)} = \textit{Heating Savings (Gas)} \times 29.31$$

The following table provides the details of the assumptions for each variable.

Table 5-7 Air Infiltration Variables and Assumptions

Variable Name	Definition	Value
CFMexist	Existing Cubic feet per minute @ 50Pa	Measured
CFMnew	New Cubic feet per minute @ 50Pa	Measured
Nfactor	Conversion factor to convert 50-pacal air flow to natural airflow	21.5
60	Constant to convert cubic feet per minute to cubic feet per hour	60
CDH	Cooling Degree Hours	Dependent on zone
DUA	Discretionary Use Adjustment	0.75
0.018	Volumetric heat capacity of air	0.018

nCool	Efficiency of Air Conditioner	10
24	Constant to convert days to hours	24
HDD	Heating degree days	Dependent on zone
nHeat	Average Net Heating System Efficiency	Dependent on heating
29.31	Constant to convert therms to kWh	29.31

5.3.3 Home Energy Services Net Savings Estimates

Based on prior-year evaluation findings, the Evaluators used prior findings of 93.0% NTGR in assessing net savings for the HESP. The resulting net savings are presented in Table 5-8.

Table 5-8 Home Energy Services Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	2,652,976	2,694,599	101.6%
Demand (kW)	501.8	508.0	101.6%
Lifetime Energy (kWh)	46,554,338	47,308,274	101.6%

5.4 Process Evaluation

Process evaluation activities were limited in 2014, due to more extensive process evaluation activities having been completed in 2013.

5.4.1 HES Longitudinal Performance

The HESP has been in implemented by SPS since 2009. Table 5-9 presents the annual net savings performance of the HESP since program inception.

Table 5-9 HESP Longitudinal Performance

2009	2010	2011	2012	2013	2014
3,925,493	11,012,797	5,198,267	2,764,951	2,204,557	2,694,599

The program peaked in 2010, and participation has fallen off sharply since then. Through 2014, the program has reached 11,933 homes. Savings have increased in 2014 compared to 2013. Thirty percent of the savings increase was attributable to measures that had no participation in 2013 (CAC, ASHP, programmable thermostats), and 70% was attributable to increased participation in the building envelope improvements (duct sealing, air infiltration, ceiling insulation).

5.4.2 Geographic Participation Summary

Figure 5-3 summarizes the percent of participation by city as well as that city's corresponding percent of Xcel's population overall (based on 2014 estimates).

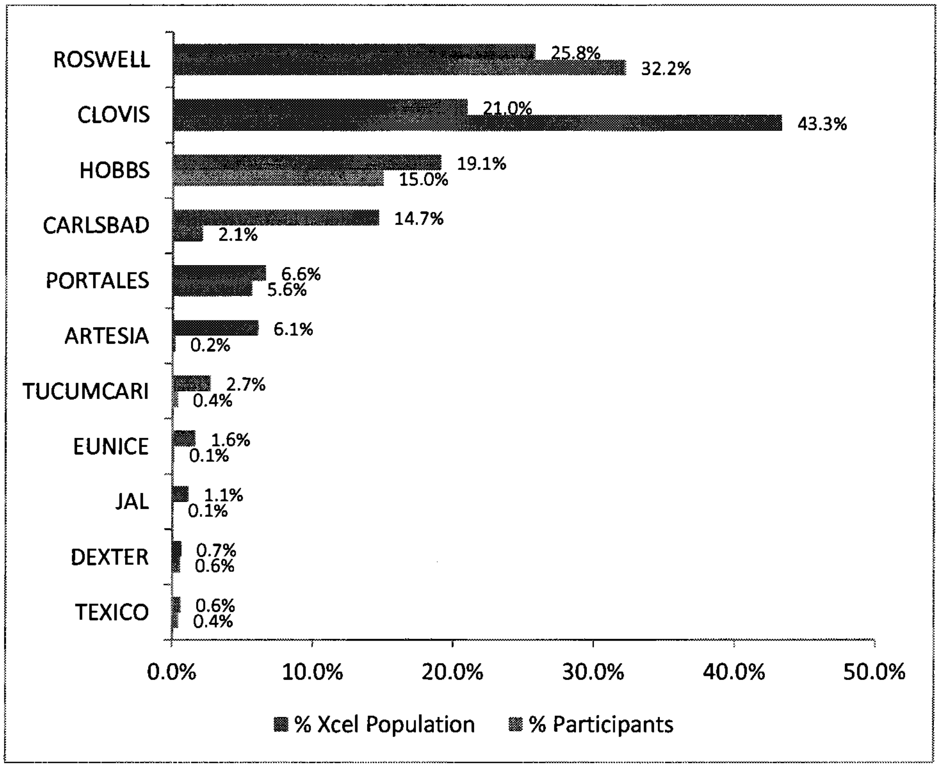


Figure 5-3 Participation by City

In 2014, program participation was characterized by outsized participation in Roswell and Clovis relative to their population share within Xcel NM's service territory.

5.4.3 Quality Assurance

In the 2013 evaluation it was found that the HESP had stringent QA/QC processes, and this was validated further in 2014 based on the Evaluators' M&V of duct sealing and air infiltration projects, in that it was found that measurements of leakage and infiltration differed by less than 3.0% in aggregate for the M&V sample.

5.4.4 Trade Ally Summary

The HESP currently has three registered trade allies. These trade allies are located in Albuquerque, Carlsbad, and Amarillo TX. The trade ally based in Amarillo was added to the program in 2013 and is by and large responsible for the outsized participation among homes in Clovis in 2014. Prior to participating in the HESP, this trade ally was active in SPS' Standard Offer Program in Texas, and was experienced with delivering the types of measures included in the HESP.

5.5 Conclusions & Recommendations

5.5.1 Conclusions

- **The HESP QA/QC procedures are rigorous and have been validated by M&V.** The Evaluators' sample of duct sealing and air infiltration deviated from listed measurements by less than 3% overall.
- **The 2014 program year marked the first year of participation for the HVAC retrofit measures.** 2014 saw the first instances of participation for the Central Air Conditioning (CAC) and Air Source Heat Pump (ASHP) measures, with 15 and 12 units rebated (respectively). There is still room for improvement in this, however, as participation for refrigerated air measures is still significantly lower than observed elsewhere in New Mexico.

5.5.2 Recommendations

- **Add installing trade ally to program tracking.** Tracking data was largely comprehensive and allowed for recreation of savings calculations. Further, tracking data had full participant information (name, address, phone number). The Evaluators recommend that SPS add installing trade ally to program exports, so as to allow for comparison of performance by trade ally.

6. Home Energy Services – Low Income

6.1 Program Description

The Low Income Home Energy Services Program (LIHESP) 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. This is a subset of the larger Home Energy Services Program, and provides a wider range of measures free of charge.

For the weatherization channel of the LIHESP, measures include:

- Duct sealing;
- Infiltration improvement;
- Ceiling insulation;
- Evaporative cooling;
- CFLs;
- Refrigerator replacement;
- Programmable thermostats; and
- Low flow showerheads.

Further, the program provides low income kits, providing customers with CFLs, faucet aerators, and showerheads for self-install.

6.2 M&V Methodology

Due to the relatively small program size and budget, the Evaluator's M&V approach was limited to a review of deemed calculations used by SPS.

6.2.1 Participation Summary

6.2.1.1 Weatherization

In 2014, the LIHESP provided services to 2,326 homes[3]. Figure 6-1 summarizes the distribution of savings by measure category.

[3] This counts multifamily complexes as multiple residences, even when listed as one participant in program tracking.

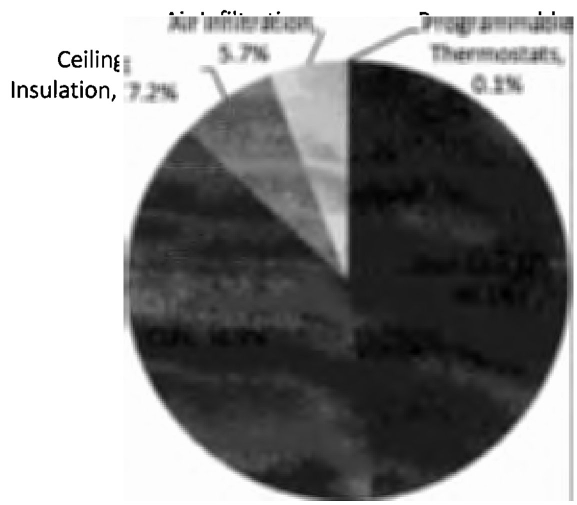


Figure 6-1 LIHESP Distribution of Savings by Measure

As in prior years, duct sealing accounted for most of the program savings (48.7%).

6.2.1.2 Self-Install Kits

The LIHESP delivered 448 self-install kits in 2014. The kits included:

- (4) CFLs (two 13W and two 18W);
- (1) kitchen aerator; and
- (1) bathroom aerator.

SPS conducted surveys with program participant to address the extent of measure installation. The Evaluators reviewed this survey data as well as SPS' application of survey findings to their deemed savings calculations in order to validate savings for this channel of the program.

6.3 Impact Evaluation Results

6.3.1 Home Energy Services Gross Savings Estimates

The Evaluators verified gross savings estimates for each measure type installed through the 2014 LIHESP. Measures installed in 2014 included:

- Duct sealing;
- Infiltration control;
- Ceiling insulation;
- Programmable thermostats;

- Direct install CFLs;
- Self-install kits; and
- CFL giveaways.

6.3.2 Tracking Data Review

The Evaluators reviewed tracking data for the LIHESP. This tracking data contained line items for each measure installed through the program. There were areas for potential improvement for tracking data, which include:

- **Limit the use of "NM Placeholder Value" entries.** 418,000 kWh of expected savings were under "NM Placeholder Value" entries, which were the aggregation of hundreds of installations of CFL 10-packs. Doing so limits the ability of the Evaluators to audit the data collected, though SPS did have back-up files available through their Salesforce CRM Portal to demonstrate where the installations occurred.
- **Correct measure spellings.** Under measure titles, lighting projects were listed as "CLFs" instead of "CFLs".
- **Add further contextual data pertaining to the type of residence.** This would include indicators such as whether the contact listed is an owner or landlord, and whether the property is single-family, multifamily, or a mobile/manufactured home.
- **Add apartment numbers to the addresses of multifamily participants.** This would allow for more precise sampling of residences for M&V and surveying.

6.3.3 TRM Review of Savings Estimates

In order to verify the savings for the Home Energy Services program, the New Mexico Technical Resource Manual for the Calculation of Energy Efficiency Savings was reviewed for each measure. The following table details the sections used to review the savings by measure type.

Table 6-1 TRM Sections by Measure

Measure	TRM Section
Ceiling Insulation	4.1.2
Low Flow Showerheads	4.2.2
Faucet Aerators	4.3.2
CFLs	4.4.2
Duct Sealing	4.5.2
Evaporative Cooling	4.7.2
Infiltration Control	4.8.2

6.3.3.1 Ceiling Insulation

The New Mexico TRM provides tables in section 4.1.2 for kWh savings per square foot, dependent on weather zone and heating and cooling type.

Table 6-2 TRM Table – Ceiling Insulation, Roswell NM

Existing R Value	Gas Heat with AC	Electric Resistance with AC	Heat Pump	Gas Heat with Evap Cooling	Electric Resistance Heat with Evap Cooling	Gas Heat
R-0	0.279	4.660	2.440	0.055	4.430	0.191
R-1 to R-4	0.148	2.470	1.290	0.029	2.350	0.102
R-5 to R-8	0.090	1.500	0.790	0.018	1.430	0.062
R-9 to R-14	0.046	0.770	0.400	0.009	0.730	0.032
R-15 to R-22	0.017	0.280	0.140	0.003	0.260	0.011

6.3.3.2 Duct Sealing

The New Mexico TRM provides the following algorithm for the energy savings from duct sealing:

$$Total\ kWh = Cooling\ Savings + Heating\ Savings$$

Where,

$$Cooling\ Savings = (DL_{baseline} - DL_{post}) \times 0.77 \times EFLH \times (h_{out} \times p_{out} - h_{in} \times p_{in}) \times 60 / (1000 \times SEER)$$

And

$$Heating\ Savings = (DL_{baseline} - DL_{post}) \times 0.77 \times HDD \times 24 \times 60 \times 0.018 / (ConvFactor \times Efficiency)$$

The following table provides the details of the assumptions for each variable.

Table 6-3 Duct Sealing Variables and Assumptions

Variable Name	Definition	Value
DLbaseline	Duct leakage baseline (CFM @25Pa)	Measured
DLpost	Duct leakage after install (CFM @25Pa)	Measured
0.77	Adjustment factor for partial AC usage	0.77
EFLH	Effective full load hours	Zone dependent
Hout	Outdoor air design specific enthalpy	29
Hin	Indoor air design specific enthalpy	25
Pout	Density of outdoor air at 95 degrees	0.0742
Pin	Density of conditioned air at 75 degrees	0.0756
60	Conversion factor from minutes to hours	60
1,000	Conversion factor from Wh to kWh	1,000
SEER	Efficiency of Cooling System	10 for HVAC pre-2006, 13 for HVAC post 2006
HDD	Heating Degree days	Zone Dependent

Convfactor	Conversion factor yielding kWh or therms	Dependent on Heating
Efficiency	Heating system efficiency	Dependent on Heating
0.018	Volumetric heat capacity of air	0.018

6.3.3.3 *Infiltration Control*

The New Mexico TRM provides the following algorithm for the energy savings from duct sealing:

$$\text{Total kWh} = \text{Cooling Savings} + \text{Heating Savings}$$

Where,

$$\text{Cooling Savings} = \frac{((CFMexist - CFMnew)/Nfactor) \times 60 \times CDH \times DUA \times .018}{(1000 \times nCool)}$$

And

$$\text{Heating Savings (Gas)} = \frac{((CFMexist - CFMnew)/Nfactor) \times 60 \times 24 \times HDD \times .018}{(100{,}000 \times nHeat)}$$

or

$$\text{Heating Savings (Elect)} = \text{Heating Savings (Gas)} \times 29.31$$

The following table provides the details of the assumptions for each variable.

Table 6-4 Air Infiltration Variables and Assumptions

Variable Name	Definition	Value
CFMexist	Existing Cubic feet per minute @ 50Pa	Measured
CFMnew	New Cubic feet per minute @ 50Pa	Measured
Nfactor	Conversion factor to convert 50-pacal air flow to natural airflow	21.5
60	Constant to convert cubic feet per minute to cubic feet per hour	60
CDH	Cooling Degree Hours	Dependent on zone
DUA	Discretionary Use Adjustment	0.75
0.018	Volumetric heat capacity of air	0.018
nCool	Efficiency of Air Conditioner	10
24	Constant to convert days to hours	24
HDD	Heating degree days	Dependent on zone
nHeat	Average Net Heating System Efficiency	Dependent on heating
29.31	Constant to convert therms to kWh	29.31

6.3.3.4 *Direct Install CFLs*

The Weatherization channel provides no-cost direct installation of (5) 13W CFLs and (5) 18W CFLs. The Evaluators found that the listed kWh savings for these measures did not account for updated EISA baselines for CFLs. SPS claimed 475 customer kWh for the low income CFL installations. With the kit configuration listed, the Evaluators calculated savings with the following inputs:

- Hours day: 2.24 (NM TRM)
- Days/r: 365
- Baseline watts (EISA):
  - 13W CFL: 43W
  - 18W CFL: 53W
- Quantity: (5) of each CFL
- Peak coincident factor: 10.17% (NM TRM)
- In-service-rate: 100%

The resulting savings were 265.72 kWh and .033 kWh per participant (55.9% realization).

6.3.3.5 Self-Install Kits

The Evaluators found that program tracking from SPS incorporated in-service rates from their participant survey and the territory average for percent of residential customers with electric water heating. Based on this, deemed savings provided by SPS were not revised.

6.3.4 Realization Summary

Program-level realization by measure category is summarized in Table 5-3.

Table 6-5 Low Income Home Energy Services Net Realization Summary

Measure	*Expected kWh*	*Verified kWh*	*Expected kW*	*Verified kW*	*Expected Lifetime kWh*	*Verified Lifetime kWh*
Weatherization						
Duct Leakage	770,551	770,551	114.4	114.4	13,869,918	13,869,918
Air Infiltration	91,869	91,869	39.6	39.6	1,010,559	1,010,559
Ceiling Insulation	115,435	115,435	12.5	12.5	2,308,700	2,308,700
CFLs	624,150	349,156	54.8	43.4	4,993,200	2,793,249
Programmable Thermostats	826	826	0.15	0.15	8,260	8,260
Self-Install Kits						
CFLs	29,630	29,630	2.7	2.7	207,410	207,410
Showerheads	175,594	175,594	0	0	1,755,940	1,755,940
Faucet Aerators	43,548	43,548	0	0	435,480	435,480
Total	1,851,603	1,576,609	224.2	212.8	24,589,467	22,389,516
Realization:	85.1%					

6.4 Areas for Program Expansion

The LIHESP is expanding to become a larger contributor the SPS portfolio. As SPS expands the scope of the program, the Evaluators would encourage SPS to leverage developments from other low income programs implemented elsewhere in New Mexico. Such developments have included:

- **Use metered data collected by the New Mexico Mortgage Finance Authority as the basis for enhanced deemed savings for refrigerator replacements.** The MFA has collected a library of pre-retrofit refrigerator energy use as part of their implementation of the Weatherization Assistance Program (WAP). This program is cofounded by PNM through their Low Income CFL & Refrigerator Replacement Program. This has resulted in savings of 1,011 kWh and .115 kW for refrigerator early replacement[4].
- **Consider adoption of new direct install measures**. Measures which are included in low income programs elsewhere in New Mexico that are not in the LIHESP include:
  - **Advanced Power Strips:** 58.8 kWh, .0065 kW[5]. This measure may be provided as direct install or through the mailer kit. Common program trade-offs when considering such a measure include (1) direct install could cause customer satisfaction issues if the installer does not reassemble a customer's entertainment system in the same manner as it was pre-retrofit versus (2) inclusion in a mailer kit will result in an in-service-rate less than 100%.
  - **LED nightlights.** 26.6 kWh and 0.0 kW[6]. This measure is suitable only for direct install, and should be allowed only when there is an existing nightlight to replace (so as to not constitute load building).

6.5 Conclusions

- **Savings for CFLs have not been updated to reflect EISA.** The Evaluators found that the deemed savings used for CFLs for the LIHESP were still using 60W and 75W baselines. These were revised to 43W and 53W (respectively) in accordance with EISA. Further, the Evaluators revised hours of use to reflect New Mexico TRM parameters.

[4] ADM Associates Inc. *Public Service Company of New Mexico EM&V Report: PY2013.* February 2014.

[5] Pennsylvania TRM V4.0 value for 5-plug power strips.

[6] SCE Work Paper SCE13LG029; 4.2012.

- **Deemed savings for programmable thermostats have not been validated.** However, this was low priority as this measure contributed less than .0001% of program savings.
- **Self-install Kits have added significant program savings.** The introduction of the self-install kits comprising CFLs and low flow devices added significant savings in 2014; the low flow kits accounted for 15.9% of program savings.

6.6 Recommendations

- **Update CFL technical assumptions to use EISA baselines.** This would apply a baseline of 43W and 53W instead of 60W and 75W, respectively.
- **Consider adopting low income measures used elsewhere in New Mexico.** This would include LED nightlights and advanced power strips.
- **Correct listed issues in program tracking data.** The issues were identified in Section 6.3.2.
- **Add an "exterior CFL/LED" line item for direct install projects.** Exterior lighting has significantly higher hours of operation and does not provide peak kW reduction. If this portion of the CFL installation package were separated out (or done in addition to the current 10-pack), SPS could support using the NM TRM Residential Exterior Lighting hours of use (3.1) instead of the weighted average (2.24).
- **Update refrigerator replacement deemed savings to utilize metered data collected by MFA.** Multiple years of refrigerator metering by the MFA have yielded early-replacement savings of 1,011 kWh and .115 kW.

7. Refrigerator Recycling

7.1 Program Description

The Refrigerator Recycling Program (RRP) is designed to help customers reduce their energy consumption by old second refrigerators and freezers from their homes to recycle them. The program targets two unit types:

- Primarily, the program targets secondary refrigerators and stand-alone freezers, in order to permanently remove these units from the grid. These units are generally older than primary units, and often located in unconditioned space (such as a garage).
- Further, the program allows for the recycling of older, primary units.

The goal of the program is to reduce the number of old, inefficient refrigerators and freezers 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 environmental and energy saving service.

In 2014, the program was configured as a turnkey, stand-alone energy efficiency initiative. The program was advertised to the public via multimedia ads, bill stuffers, the utility website, and flyers. Requirements for program participation include:

1. The refrigerator must be clean, empty, defrosted, and in working condition
2. The unit must be between 10-30 cubic feet.
3. There must be an active SPS account at the pick-up address
4. Participation is limited at two units per customer address per calendar year
5. The unit needs to be plugged in and operational on the day of pickup
6. The water line must be disconnected (if applicable)
7. The resident must provide clear and safe access to the unit.

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. The RRP recycled 440 units in 2014.

7.2 M&V Methodology

The M&V approach for the RRP is aimed at measuring the following:

- Numbers of refrigerators and freezers 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 2014

Table 7-1 summarizes the inputs needed for gross savings calculations and the source of each input.

Table 7-1 Data Sources for Gross Impact Parameters –Appliance 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.
Net –to-Gross-Ratio	Participant Surveying
Remaining Useful Life (RUL)	Based upon CA DEER 2008 estimates, RUL of: 5 years for refrigerators; 4 years for freezers.

7.2.1 Unit Energy Consumption

The Evaluators verified Unit Energy Consumption (UEC) using a degradation model that was developed for the Department of Energy (DOE) Uniform Methods Project (UMP) Refrigerator Recycling Protocol.[7] The UMP is a DOE initiative aimed at developing a consistent framework and set of protocols for determining the energy savings from specific energy efficiency measures and programs. The project represents a refinement of the body of knowledge supporting energy efficiency EM&V activities and each protocol was written by technical experts within the field and peer-reviewed by industry experts.

In accordance with the UMP protocol for Refrigerator Recycling, the statistical model for determining UEC considers the following independent variables:

- Unit age;

[7] http://energy.gov/sites/prod/files/2013/05/f0/53827-7.pdf

- Unit capacity (cubic feet);
- Dummy indicator for configurations (single-door, side-by-side, etc.)
- Primary/Secondary usage designation
- Location in conditioned/unconditioned space
- Weather (cooling degree days, heating degree days)

Table 7-2 Refrigerator Recycling Regression Model Coefficients

Variable	Coefficient (Daily kWh)
Intercept	.582
Age	.027
Pre-1990 Manufacture Date Dummy	1.055
Size (Cubic Feet)	.067
Side-by-Side Configuration Dummy	1.071
Single-Door Configuration Dummy	-1.977
Dummy – Primary Usage	.6054
Interaction: Located in Unconditioned Space X CDD	.020
Interaction: Located in Unconditioned Space X HDD	-.045

Location in conditioned versus unconditioned space was determined via average values from the participant survey. In this, it was found that 36.6% of units were used in conditioned space and 64.4% were used in unconditioned space.

7.2.2 Part-Use Value

The regression model detailed in Section 7.2.1 provides full-year kWh estimates. Many of the units recycled through this program are not used for the full year. The Evaluators estimated these units Part-Use Factors (PUFs) through two metrics:

1) If the customer would keep the unit in use, PUF is equal to the percent time of the year in which the unit was typically running
2) If the customer would transfer their unit, a PUF of 1 was assigned, under the assumption that a customer that receives a used refrigerator is likely to use it as their primary unit.

Combining these two values, the Evaluators determined a PUF value of 0.91 for all units recycled through the program. This results in annual hours of use of 8,541for the program.

With these data, annual savings for a specific unit are:

$$kWh\ Savings = UEC * Part - Use\ Factor$$

7.2.3 Location of Installation

The Evaluators surveyed 55 program participants in order to obtain the location in which the refrigerator or freezer was typically used, in order to determine what share of appliances 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[8]. Resultantly, the Evaluators calculated kW factors of .000127 and .000247 for conditioned and unconditioned space, respectively. Our survey results indicated that 36.6% of the recycled units were used in space conditioned with a refrigerated air system, with 63.6% used in space that was either conditioned with an evaporative cooling system or was unconditioned space. Weighting the kW factors by these proportions, the weighted average kW factor is 0.00020336.

7.2.4 Appliance Recycling Net Savings Estimation

Free-ridership on a program such as the Refrigerator Recycling Program is aimed at determining what customer behavior would have been with their secondary refrigerator or freezer in the absence of the program. This means determining what proportion of participants would have disposed of their refrigerators or freezers without the program in a way that would have removed the refrigerators permanently from the grid.

There are four categories for what could have happened to a refrigerator or freezer had it not been recycled through the program. These categories are:

- Unit is kept by the household but not used;
- Unit is kept by the household and still used;
- Unit is discarded by the household through a method in which the unit would be destroyed; and
- Unit is discarded by the household through a method in which the unit would be transferred and kept in use.

Of these four categories, two are indicative of free-ridership:

- Unit is kept by the household but not used; or

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

- Unit is discarded by the household through a method in which the unit would be destroyed.

These categories are indicative of free-ridership because the units would have been removed from the grid even if they had not been recycled through the program. Free-ridership is then addressed through participant and non-participant surveying.

7.2.4.1 Participant Surveying

A sample of 55 participants was surveyed in this evaluation effort. Questions addressing NTGR issues included:

Q-6 Did you attempt to sell or donate your refrigerator prior to participating in the Refrigerator Recycling Program?

Q-8 Was the old refrigerator still being used when it was picked up?

Q-13 When replacing a major appliance, what do you typically do with the old unit?

Q-14 What would you have done with your old refrigerator if you had not recycled it through SPS?

In addition, we asked what participants valued most about the program:

Q-15 How important was the rebate in your decision to participate in the Refrigerator Recycling Program?

Q-16 How important was the free pickup service in your decision to participate in the Refrigerator Recycling Program

The results from these surveys were used in providing a free-ridership probability score for each respondent. The process by which free-rider scores were assigned to survey respondents is summarized in Figure 7-1.

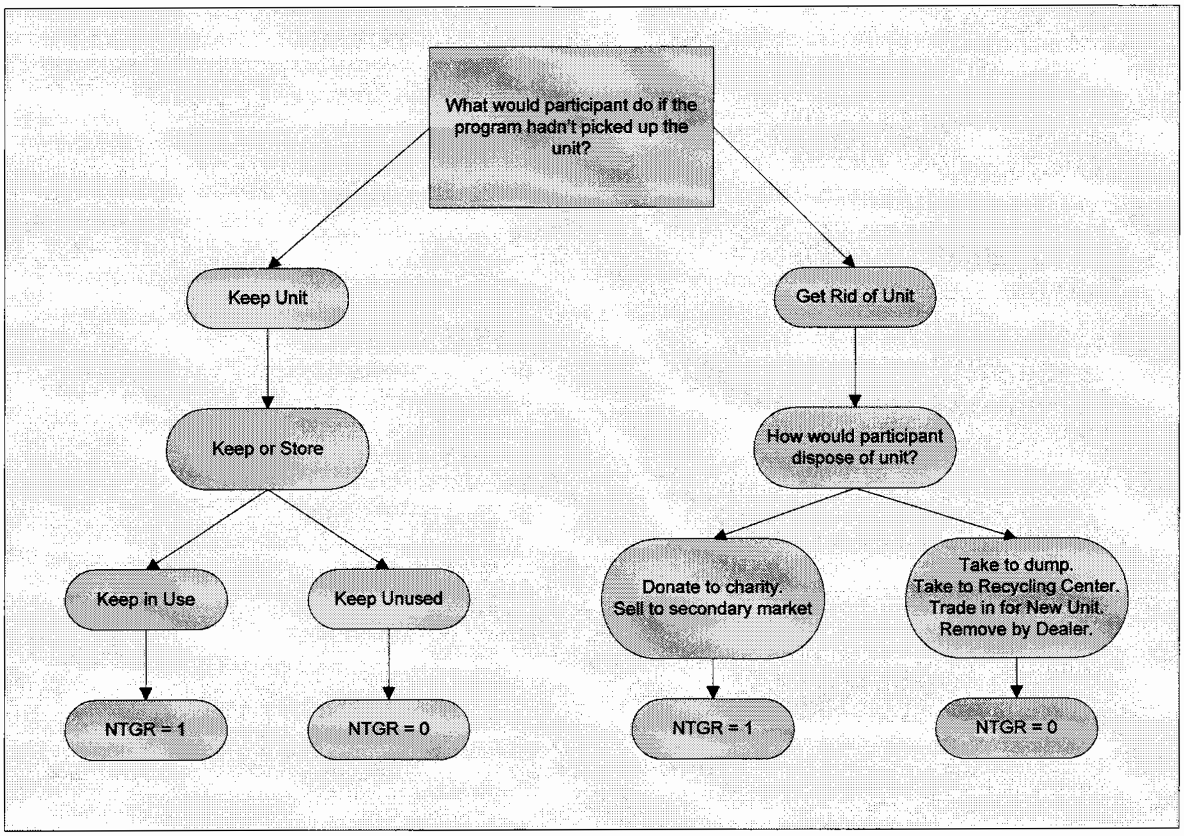


Figure 7-1 Appliance Recycling Free-Ridership Flowchart

7.3 Refrigerator Recycling Impact Evaluation

The Evaluators 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 through the Uniform Methods Project. The Evaluators achieved the required 90/10 precision for sampling by completing 55 customer surveys. The surveys were used for verifying recycling and addressing net-to-gross issues. The Evaluators then examined the tracking data and calculated unit-specific savings. Table 7-3 presents gross realization for the 2014 RRP.

Table 7-3 2014 RRP Gross Savings Summary

Peak Demand Reduction (kW)		Annual Energy Savings (kWh)		Lifetime Energy Savings (kWh)		Gross Realization Rate
Ex Ante	Ex Post	Ex Ante	Ex Post	Ex Ante	Ex Post	
35.4	101.8	499,221	500,573	2,496,105	2,502,865	100.3%

The Evaluators verified that average age for units recycled through the 2014 RRP was 23.6 years. Additionally, the Evaluators determined free-ridership for the 2014 RRP through participant surveying, providing a NTGR of 67.3% for all units. This was applied in discounting program savings. The resulting net savings are presented in

Table 7-4.

Table 7-4 2014 RRP Net Savings Summary

Peak Demand Reduction (kW)		Annual Energy Savings (kWh)		Lifetime Energy Savings (kWh)		Net Realization Rate
Ex Ante	Ex Post	Ex Ante	Ex Post	Ex Ante	Ex Post	
33.8	69.0	334,478	339,388	1,672,390	1,696,942	101.5%

7.3.1 Refrigerator Recycling Gross Savings Estimates

Using the regression methodology outlined in Section 7.2.1, the Evaluators calculated UEC based upon unit size, age, defrost type, and configuration. The distribution of savings of recycled units is presented in Figure 7-2 below.

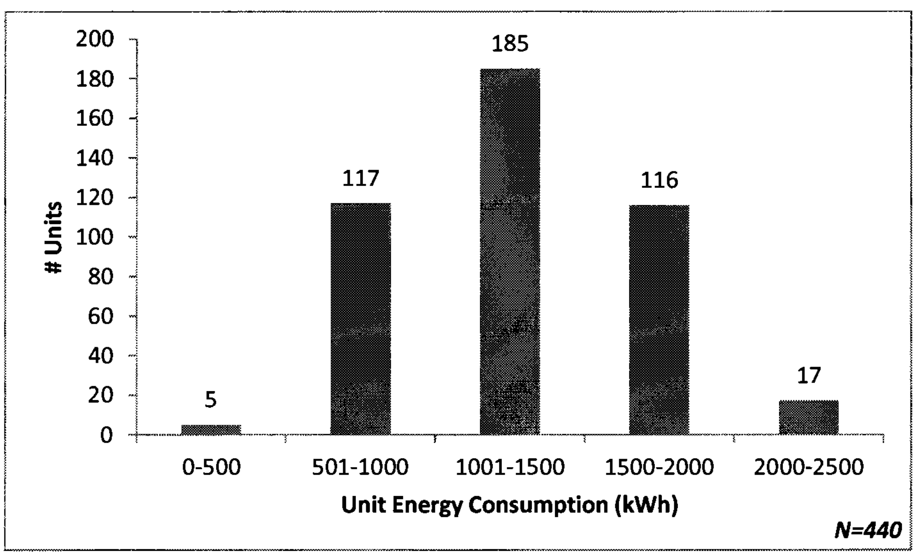


Figure 7-2 UEC Distribution in SPS 2014 RRP

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[9]. As a result, the Evaluators calculated kW factors of .000127 and .000247 for conditioned and unconditioned space, respectively. Our survey results indicated that 71% of the recycled units were used in conditioned space, with 29% used in unconditioned space. Weighting the kW factors by these proportions, the weighted average kW factor is 0.00020336 for all units recycled through the program. Multiplying this by the ex post kWh savings estimates by unit type provides gross peak demand reduction of 101.8 kW.

7.3.2 Refrigerator Recycling Net Savings Estimates

The Evaluators evaluated net by estimating free-ridership for the 2014 RRP using the methodology outlined in 7.2.4. To obtain net savings for the 2014 RRP, the Evaluators surveyed program participants to develop estimates of free-ridership. As detailed in Section 7.2.4, developing free-ridership estimates for the RRP is dependent upon survey questions addressing what is done to refrigerators absent the program.

7.3.2.1 Participant Behavior in the Absence of the Program

One way to assess the impact of the RRP is to examine what participants would have done with their refrigerators and freezers if the program were not in place. Customers to have options, including giving the unit away, selling on the secondary market, having the appliance dealer remove the unit when purchasing a new unit, or having the unit hauled away to a dump or landfill.

In the participant survey, respondents were asked what methods they had used in the past when getting rid of a major appliance, and what methods were they likely to consider for the refrigerator or freezer if the program were not available. Participants were first asked:

Did you attempt to sell or donate your refrigerator prior to participating?

If they did attempt to sell or donate, they were then asked:

Why didn't you follow through with selling or donating?

The results of these questions are summarized in Table 7-5. The reasons for not following through with the transaction are varied, but several respondents indicated that

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

they found themselves unable to sell the unit at their desired price or that the unit was not in good enough condition to sell.

Table 7-5 Customer Attempts at Selling or Donating Unit

Attempt to Sell or Donate?	% Indicated	Reason Indicated	% Reason Indicated
Yes	2%		
No	98%		
		Couldn't find interested buyer at the price I wanted	0%
		Couldn't find interested buyer/recipient because of the unit's condition	0%
		Decided recycling the unit was more important than selling it	100%
		Other	0%
		Don't Know	0%
n = 55		*n = 1*	

Participants are then asked what they have done in the past when disposing of major appliances. Questions addressing this include:

Have you ever needed to replace a major appliance before?

If the respondent indicates "Yes", they are then asked:

When replacing a major appliance, what do you typically do with the old unit?

The question is open-ended, with customers indicating a wide range of disposal practices. The results of questions pertaining to customer behavior in prior appliance disposals are presented in Table 7-6.

Table 7-6 Customer Behavior in Past Appliance Disposal

Specific Plans for Major Appliance?	% Indicated	Method Indicated	% Action Indicated
No	29%		
Yes	71%		
		Taken for recycling	9%
		Dispose at dump	16%
		Give to friend/family	11%
		Donate to charity	9%
		Have retailer haul away	9%
		Keep the unit	4%
		Sell the appliance	25%
		Have city pick up	2%
		Landlord removed it	2%
		Don't Know	13%
n = 55		*n = 55*	

Sixteen percent of respondents indicated than in past appliance disposals, they had taken the old unit to a dump or landfill. An additional 9% indicated having specifically had the unit recycled, and 9% stated that they had the retailer haul the old unit away. By past behavior, a summary of what occurs with the unit (kept on grid, taken off grid, or unknown), is provided in Figure 7-3.

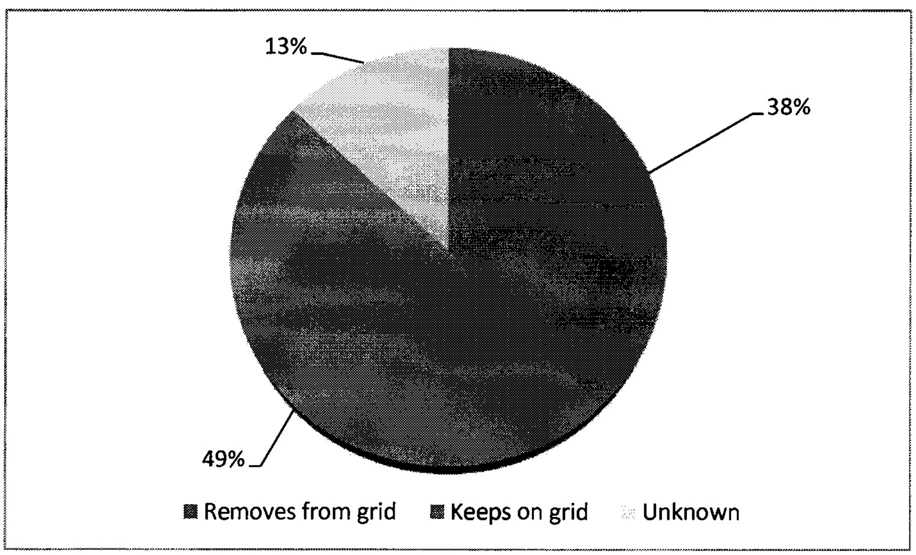


Figure 7-3 Result of Disposal Methods in Prior Appliance Disposals

Following this, respondents are then asked what they would have done with this particular unit in the absence of the program. Respondents are asked:

What would you have done with your old refrigerator if you had not recycled it through SPS?

Table 7-7 Participant Disposal of Units in Absence of Program

Method	% Indicated
Continued to use it	13%
Sold it	27%
Unplugged and stored it	4%
Disposed of it	27%
Given it away/donated to charity	24%
Don't Know	5%
N = 55	

When asked about the specific unit recycled, respondents indicated they were as likely to dispose of the unit as they were to sell it, dispose of it or give it to charity. This is due likely to units being eligible for the program being in better condition than those typically disposed of by program participants. Units belonging to customers who would have kept their unit, given it away, or sold it were likely to have remained on the grid. Units belonging to customers who would have had it hauled to the dump or used recycling companies are likely to have been disposed of. Figure 7-4 summarizes the end results of alternative disposal methods proposed by program participants in the survey.

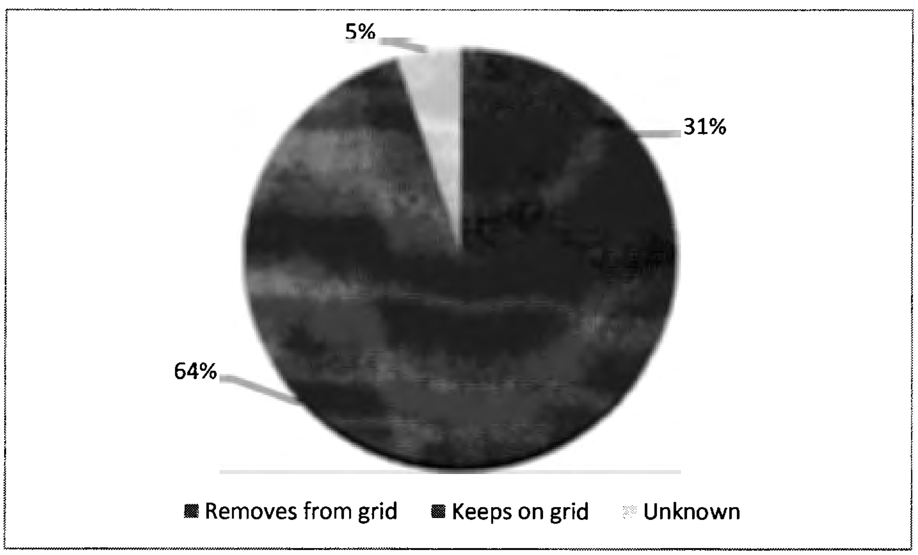


Figure 7-4 Result of Alternative Disposal Methods Indicated by Program Participants

7.4 Refrigerator Recycling Program Process Evaluation

The Evaluators surveyed 55 program participants in the evaluation effort for the 2014 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.

7.5 Data Collection Activities

The process evaluation of the Refrigerator Recycling Program included the following data collection activities:

- *SPS Program Staff Interviews*. The Evaluators interviewed staff at SPS involved in the administration of the program. These interviews collected initial background information on program history and implementation, as well as capturing any operational changes or new developments in the program.
- *Participant Surveying*. The Evaluators surveyed a sample of program participants.

Table 7-8 summarizes the data collection for this process evaluation effort. This includes the titles, role, sample sizes, timeframe of data collection.

Table 7-8 SPS Refrigerator Recycling Program Data Collection Summary

Target	Activity	N	Role
SPS/Xcel Program Staff	Interview	1	Overall administration of SPS Refrigerator Recycling program.
Program Participants	Survey	55	Residential customers that participated in the program, in having one or more refrigerators or freezers picked up and recycled.

7.5.1.1 Market Barriers

In reviewing the program offerings and theory, the valuators identified the following market barriers:

- **No driving need to act for primary refrigerators.** Recycling of primary refrigerators is dependent entirely upon SPS households purchasing new units. Given that, there is not a mechanism through with the program could create more transactions through outreach and marketing; the program has to rely upon transactions that would occur anyway, and then intervene to prevent the replaced unit from moving to the secondary market.

- **Competing with the usefulness of the second unit.** For many users of secondary refrigerators and freezers, the need for extra food storage is seen as being worth the cost. Prior research in these types of programs has found that typical program participants are adult-only residences, with a large share of adults without children living in their home that no longer need a second unit[10].
- **Perception of unit removal being a hassle.** Based on interviews with program participants, the Evaluators found that many program participants indicated that the process of preparing the unit for pick-up was perceived as a hassle. The unit must be cleaned out and defrosted, and some participants could not understand the need for that practice.
- **Competition with the secondary market.** When a household wants to dispose of a functioning secondary refrigerator, they may be inclined to sell in the secondary market or to donate to a friend, family member, or charity. The potential return from selling a secondary unit can be significantly higher than the program incentive ($50); as such the program's perceived benefit may lie more in the convenience of the pick-up and disposal.
- **Wide range of possible messaging to encourage participation.** Messaging for a program such as the RRP could focus on available incentives, the convenience of the pick-up service, savings on bills from removal of old units, or on the environmentally-safe disposal of refrigerant and other components. The receptiveness to each message may vary by market segment.

7.5.2 RRP Longitudinal Performance

The RRP has been implemented by since 2009. Table 7-9 presents the annual net savings performance of the RRP since program inception.

Table 7-9 RRP Longitudinal Performance

2009	*2010*	*2011*	*2012*	*2013*	*2014*
92,015	221,669	272,935	252,795	379,316	298,751

The program last received evaluation in 2010. Savings for 2011-2013 were estimated by taking the per-unit average from 2010.

[10] Innovologie LLC, 2010. "Process and Market Evaluation of Southern California Edison's Appliance Recycling Program, 2006-2008". Prepared for Southern California Edison.

7.5.3 Program Marketing

The marketing efforts for the SPS Residential Refrigerator Recycling Program contained many elements, including:

- Bill Inserts;
- Newspaper advertisements;
- The SPS website; and
- TV & Radio advertisements.

Figure 7-5 summarizes the sources of awareness indicated by program participants.

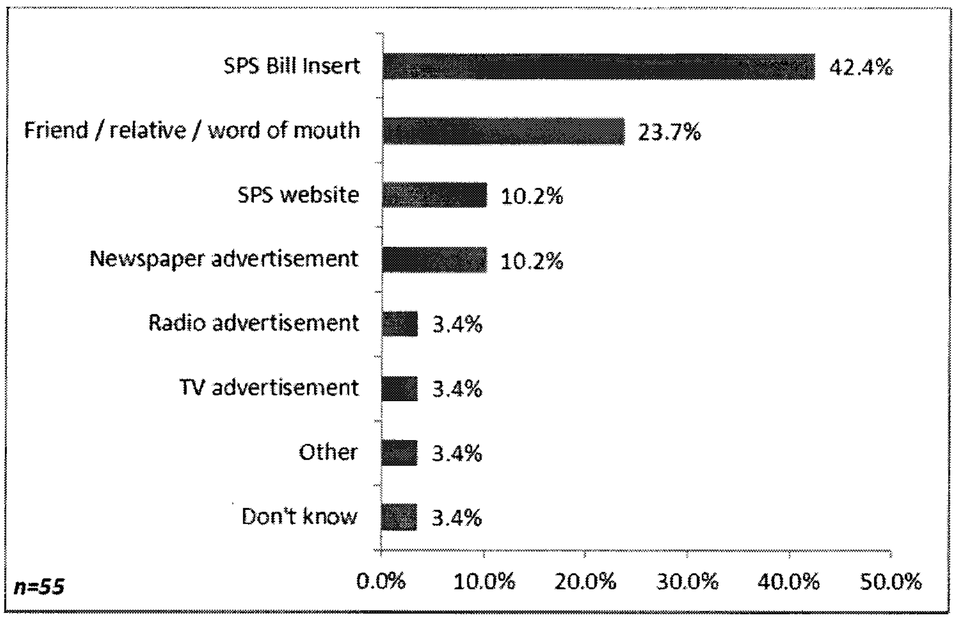


Figure 7-5 Source of Program Awareness – Program Participants

Forty-two percent of respondents indicated having learned of the program from SPS bill inserts. Following bill inserts, word of mouth from family and friends and family was the second-most commonly indicated source of awareness, indicated by 23.7% of respondents. Further, 10.2% of respondents indicated learned of the program from a newspaper advertisement and an additional 10.2% learned of the program from the SPS website.

7.5.4 Usage of Recycled Units

Respondents were asked questions related to the usage of the recycled unit. These questions addressed unit location, condition, and how many months a year the unit was in use. Table 7-10 summarizes these results for refrigerators and freezers.

Table 7-10 Location of Use of Recycled Units

Room	% indicated
Kitchen	42%
Den/Lounge	5%
Garage	40%
Outdoors	7%
Laundry Room	5%
n = 55	

Respondents were then asked to describe the working condition of the recycled refrigerator or freezer. Customers were asked if the unit:

- Was in good working condition;
- If it worked well but needed minor repairs, such as a handle or gasket;
- If it Worked but had serious problems, such as not defrosting properly; or
- If it didn't work at all.

The results are summarized in Table 7-11.

Table 7-11 Condition of Recycled Units

Condition	% indicated
In good condition	62%
Needed minor repairs	18%
Had serious problems	20%
Didn't work at all	0%
Don't Know	0%
n = 55	

Respondents whether also asked whether they had considered discarding their refrigerator or freezer prior to hearing about the program. Respondents were asked:

When did you learn about the SPS Residential Refrigerator Recycling Program and the available rebate?

As summarized in Table 7-12, an average of 89% of respondents learned of the program either before or during their decision to dispose of their refrigerator or freezer.

Table 7-12 Timing of Learning of Program Relative to Decision to Recycle

Timing of Learning of Program	% indicated
Before deciding to recycle	67%
While deciding to recycle	22%
After deciding to recycle	11%
Don't Know	0%
n = 55	

Sixty percent of the refrigerators were described as a secondary or spare unit. The main reason participants wanted to replace the unit is because they wanted a better working unit (33%) or wanted a newer unit (29%). Table 7-12 summarizes the reasons respondents chose to replace their units.

Table 7-13 Reasons for Replacement

Main Reason for Replacement	***% indicated***
Wanted a better working unit	33%
Wanted a newer unit	29%
Wanted a more efficient unit	19%
Wanted a different size/type	14%
I did not need it	5%
n = 55	

7.5.5 Motivation to Participate

Using participant survey data, the Evaluators developed profiles of customers' motivations for participating in the program and the various factors that influenced the decision. Participants are asked how they would have disposed of their appliances without the program and what influenced that decision.

One participant tried to sell the refrigerator before deciding to recycle it through the program. They eventually decided that recycling it was more important than selling it. Almost 30% of participants had a specific plan on how to dispose of their refrigerator before learning about the program. Typically, participants would try to sell a major appliance (25%), dispose at a dump (16%), or give it to a friend or family member (11%). Figure 7-5 shows what participants would typically chose to do when replacing a major appliance.

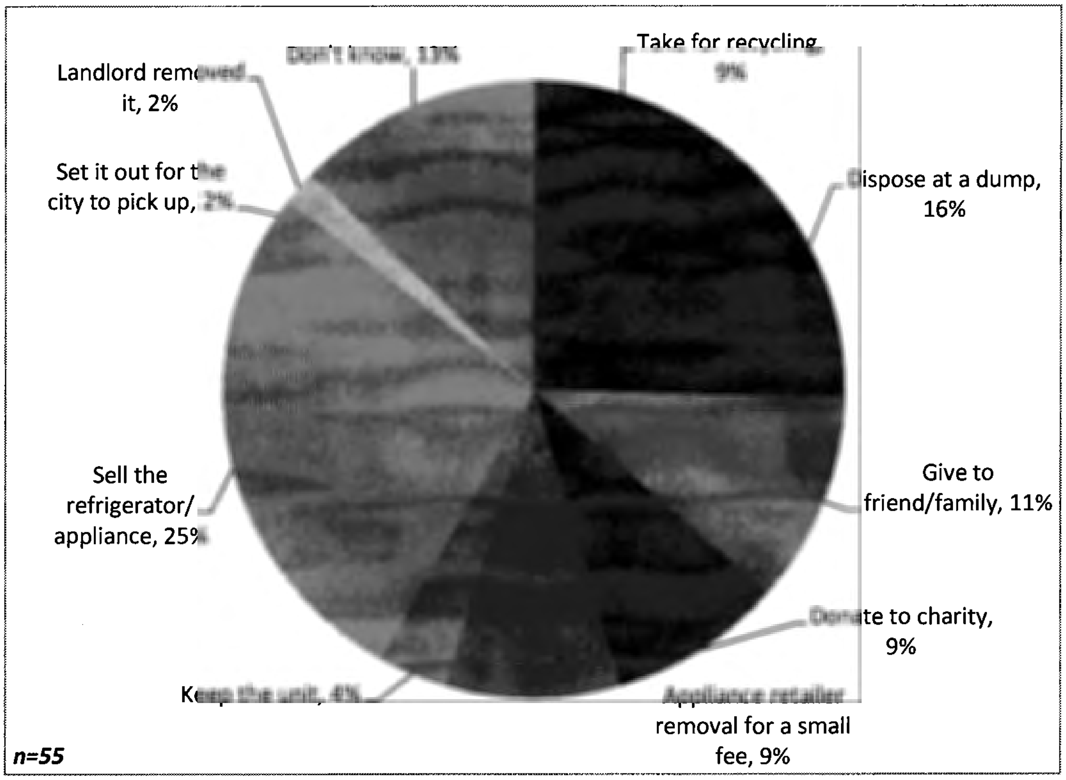


Figure 7-5 Ways of Replacing a Major Appliance without the Program

Those that would try to sell the appliance said they would prefer to sell to a private party over a used refrigerator/appliance dealer. If the program were unavailable, participants would have sold it or disposed of it. Twenty-four percent of respondents stated that they would have given away or donated the unit.

In the participant survey, respondents were asked an open-ended question where they were to indicate their reasons for participating in the program.

Table 7-14 summarizes the reasons given. The top two factors listed by program participants as motivators for program participation were the SPS rebate and the convenience of the free pickup. Reasons under "other" included:

> *"Didn't need it anymore."*
>
> *"Needed more room in my carport."*
>
> *"Model of appliance was insufficient."*
>
> *"Get it off the market."*

By and large, answers under "Other" focused around a desire to free up the space in the home, or the unit did not meet their needs anymore.

Table 7-14 Reasons Indicated for Program Participation

Motivation	***% indicated***
SPS rebate	39%
Convenience of free pickup	26%
Purchased new unit	9%
Good for the environment	8%
Energy cost savings	6%
Unit no longer worked	4%
Needed more room in my carport	2%
Didn't need it anymore	2%
Model of appliance was insufficient	1%
No other way of getting rid of it	1%
Get it off the market	1%
n = 55	

7.5.6 Rebate Feedback

Most participants received their rebate within three to four weeks after they recycled their refrigerator (47%) and almost one-third received their rebate within one to two weeks (31%). The remaining participants responded that they did not receive their rebates until five weeks after their unit had been picked up.

7.5.7 Program Satisfaction

The participant survey for the SPS Residential Refrigerator Recycling Program included questions addressing participant satisfaction with an array of specific issues and processes as well as for the program as a whole. Table 7-15 summarizes participant responses when asked to rate satisfaction a scale of 1 to 10, with 1 meaning "Very Dissatisfied" and 10 meaning "Very Satisfied".

Table 7-15 Participant Satisfaction with Program Components

Component	***Mean Score***	***Don't Know***
The scheduling process for recycling	8.55	0%
The service performed by staff that picked up your refrigerator	9.73	0%
The wait time between scheduling and pick-up of the refrigerator	8.00	5%
The wait time to receive the rebate	8.74	2%
The rebate amount	9.13	4%
Overall program experience	9.27	0%

Most of the participants rated all the statements with fairly high satisfaction, and were very satisfied with the service and overall program experience. A small number of respondents indicated dissatisfaction with wait times for scheduling. Those that were particularly unsatisfied with the scheduling process said that it was "hard to get scheduled" and "it took too long." Some respondents also said the wait time between scheduling and pickup was also too long as one respondent said it "took 6 weeks."

7.5.7.1 *Participant Narrative Commentary*

At the end of the survey, respondents were asked:

> **Do you have any specific comments or suggestions you would like me to relay to SPS about the Refrigerator Recycling Program?**

Responses to this included:

> *"Very satisfied and 'bragging it up'."*
>
> *"I think it's a good program and keeps refrigerators from going to the dump."*
>
> *"Excessive amount of calls to verify."*
>
> *"It would be nice if they would take a non-operating unit as well."*
>
> *"I wish they would allow more than two per year to be recycled."*
>
> *"The pick-up time was a little excessive."*
>
> *"I think when the guys that come and pick up the refrigerator, they should have a referral form."*
>
> *"It worked extremely well and was very convenient."*

7.5.1 Conclusions

Overall, the program appears to be operating effectively from the customer's perspective. Participants did not report many difficulties with the participation process, but some were dissatisfied with the wait time to receive their rebate and had issues with scheduling. Some participants said it took too long to receive their rebate stating that some had to wait over five weeks. Another area of concern was how long the scheduling process took to schedule pickup of the unit where some had to wait up to six weeks.

The utility's use of bill inserts has been effective in driving much of the program awareness to the program. Hearing about the program by word of mouth and through the website were also important means of learning of the program.

Overall satisfaction with the program overall and the individual components was high.

7.5.2 Tracking Data Review

The Evaluators received tracking data through requests to SPS's program manager. Participant updates are provided by ARCA to SPS. Each update is an .xls file which summarizes the unit and participant details.

The file contains data on each unit picked up, including size, year of manufacture, configuration, refrigerant type, usage pattern, and the quantity of materials recycled.

The data was very comprehensive and useful for the evaluation effort. No additional data was needed to support EM&V.

7.5.3 Comparison to Other NM Programs

The Evaluators compared program design for appliance recycling programs implemented by all three NM IOUs. Key findings are summarized in Table 7-16.

Table 7-16 Refrigerator Recycling Program Inter-Utility Comparison

	PNM	SPS	EPE
Program implementer	JACO	ARCA	JACO
Incentive	$50	$50	$30
Recycles primary units	Yes	Yes, as of 2013	Yes
Size range	10-27 cubic feet	10-30 cubic feet	10-30 cubic feet
Participation limit	Two/year	Two/year	Two/year
Advertised cost savings	$175	$100	Not advertised
Advertised relative savings	"Up to 3x"	Not advertised	"3-4x"
Advertised space savings/clutter	No	Yes	No
Advertised environmental message	No	Yes	Yes
Advertised free pick-up	No	Yes – bolded	Yes – not bolded
Advertised check delivery	4-6 weeks	Within 4 weeks	Not advertised
Market segments	Res & Comm.	Residential	Residential
Extra program components	None	CFL two-pack	None

7.6 Program Recommendations

- **Consider reducing the program incentive.** The program is only marginally cost-effective under the Utility Cost Test, with a score of 1.04. Given this, SPS may want to consider revising the program incentive downward to reduce UCT costs. As demonstrated in Table 7-16, incentives for appliance recycling are as low as $30 elsewhere in New Mexico.

8. Home Lighting

8.1 Program Description

The Home Lighting Program (HLP) is a multi-channel program designed to promote uptake of CFLs and LEDs. Program channels include:

- CFL markdown;
- LED markdown;
- Community event giveaway; and
- Direct installation.

8.2 Participation Summary

8.2.1 Retail Markdown

The retail markdown channel rebated 316,513 lamps in 2014. Within this, the markdown channel comprised:

- 301,791 CFLs;
- 12,896 LEDs; and
- 1,826 LED fixtures.

Three percent of rebated CFLs were specialty lamps (including high wattage lamps, reflectors, three-way lamps, and decorative lamps). Figure 8-1 summarizes the markdown CFL tallies by bulb type.

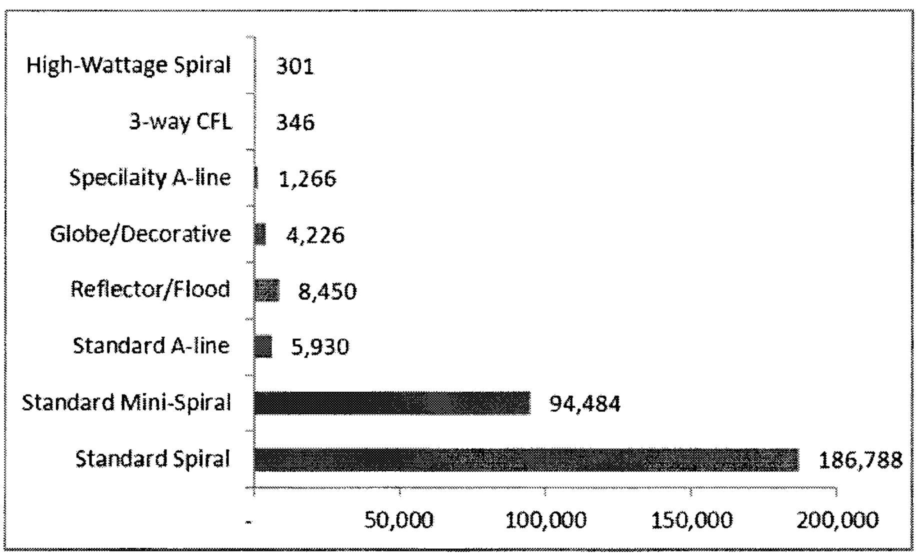


Figure 8-1 Summary of Markdown CFLs

Further, 14,722 LEDs were rebated through the retail markdown channel. This included:

- 8,679 A-line lamps;
- 4,217 reflector/flood lamps; and
- 1,826 LED fixtures.

Figure 8-2 summarizes the share of lighting markdown rebates by retailer type.

- Big Box Retailer comprises all large corporate chain stores (including large hardware store chains);
- Low Income Retailer comprises dollar stores and discount stores that primarily serve low income communities;
- Hardware includes small, independently-owned hardware retailers (including franchises); and
- Grocery includes retailers for whom food products are the primary product sold.

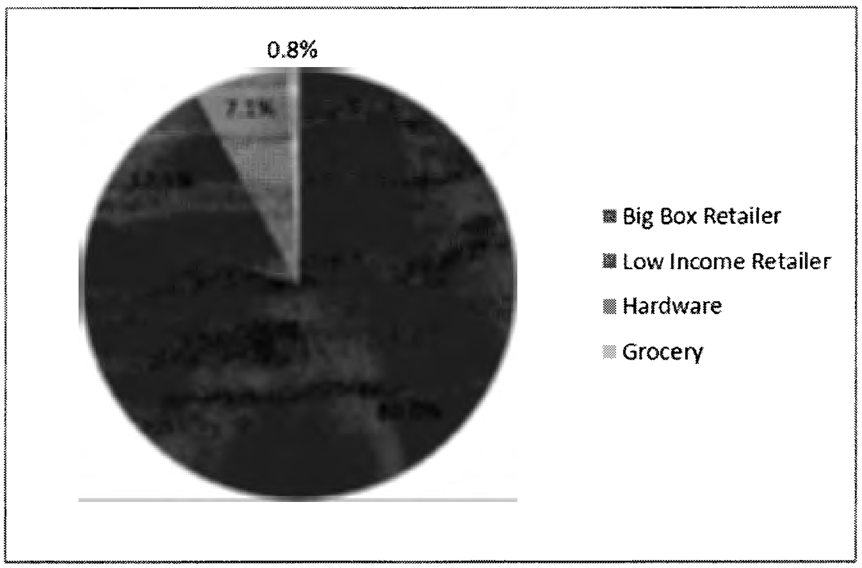


Figure 8-2 Distribution of Lighting Markdowns by Retailer Type

8.2.2 Lighting Giveaway

The Home Lighting Program distributed 190,354 CFLs and 1,000 LEDs in 2014. The distribution channels included:

- **Pizza Delivery.** SPS has agreements with participating pizza restaurants to include two-packs of 18W CFLs. These are provided to purchasers of pizzas from participating locations unless declined by the recipient.

- **Festival Giveaways.** SPS distributed 48,400 CFLs at the Eastern New Mexico State Fair held in Roswell. Festival recipients were provided two-packs of 18W CFLs at a booth maintained by WECC staff.
- **Food Bank Giveaways.** In August, WECC provided two-packs of 18W CFLs to a Clovis, NM food bank, which were then distributed to food bank users. This activity was targeted to provide CFLs to low income households.
- **School Giveaways.** In August, WECC organized CFL giveaways at school registration events. The giveaway events were held at 23 schools:
  - 14 in Carlsbad;
  - 7 in Roswell;
  - 1 in Clovis and
  - 1 in Hobbs.
- **Other Giveaways.** Miscellaneous giveaway activities included coordination with United Way offices in Hobbs, Roswell, and Clovis and small community giveaways held by SPS.
- **Direct Install.** The Home Lighting program provided direct install in low income housing as well as through the Second Refrigerator Recycling Program. In the latter channel, staff from ARCA would install two CFLs in the homes of participants during the pickup of a refrigerator.

Figure 8-3 summarizes the CFLs and LEDs distributed by channel.

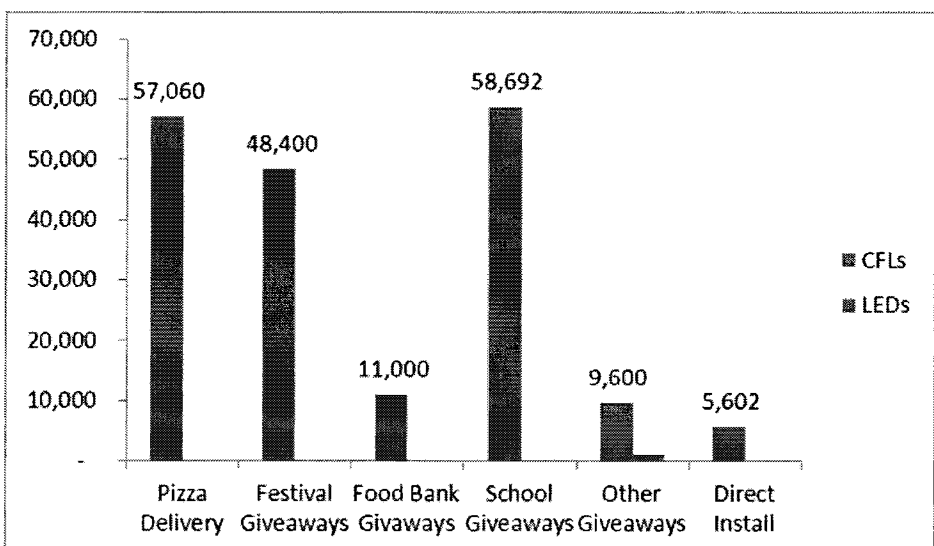


Figure 8-3 Summary of Lighting Distribution by Channel

8.3 M&V Methodology

The M&V approach for the HLP is aimed at the following:

- Verifying the numbers of CFLs/LEDs sold, distributed, and installed as a result of the program;
- Determining the percentage of distributed CFLs/LEDs that are actually installed; and
- Estimating the rate at which installed CFLs/LEDs are replacing older, inefficient lighting.

Table 8-1 below summarizes the inputs needed for gross savings calculations and the source of each input.

Table 8-1 Sources for Gross Impact Parameters – HLP

Parameter	Source
CFL Quantities & Specifications	Program tracking data
Hours of Use Per Day	New Mexico TRM
CFL Installation Rate	Surveys with participants via random digit dial and intercept surveying
Baseline Wattage	New Mexico TRM

8.3.1 HLP Review of Deemed Savings Estimates

The Evaluators reviewed the deemed savings estimates used by SPS for the 2014 HLP. This review included recalculation of savings by line item in SPS program tracking data using New Mexico TRM parameters.

Changes in customer behavior after having learned of the program.

8.3.2 HLP Verification of Installation

The Evaluators verified installation through the following survey efforts:

- For the retail markdown channel, the Evaluators conducted a random digit dial survey. 104 RDD surveys were completed, of which 71 were found to be SPS customers that purchased CFLs in the prior year.
- The Evaluators completed intercept surveying at the Eastern New Mexico State Fair. In this effort, respondents were recruited at the state fair after having received CFLs. A follow-up survey was completed two months later. 38 follow-up surveys were completed.

This survey data is then used to developing gross and net savings estimates.

8.3.3 HLP Net Savings Estimates

Evaluation of net savings from the HLP requires determination of free-ridership through participant surveying. To obtain net savings for the 2014 HLP, the Evaluators surveyed program participants to develop estimates of free-ridership and spillover. Developing free-ridership estimates for the HLP 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. The methodology for calculating NTGR is detailed in this section.

8.3.3.1 Net-to-Gross Estimation Methodology

Determining the net effects of the lighting discounts requires estimating the percentage of energy savings from efficient lighting purchases that would have occurred without program intervention. Ideally, participating retailers could provide light bulb sales data for non-program time periods or from similar non-program retail locations. This data would provide adequate information from which to calculate the lift in CFL and LED sales attributable to the program price mark downs. However, retailers are reluctant to release sales data for this purpose because of the possibility that the data may be exposed to competitors or otherwise misused.

As a result, evaluating the net effects of the price discounts requires estimating free ridership without non-program sales data. This evaluation relies on self-report survey data from random digit dial surveys. The surveying effort was conducted by dialing randomized households within the SPS service territory.

Survey respondents were asked a series of questions to elicit feedback regarding influences to their light bulb purchasing decisions. Each respondent was then assigned a free ridership score based on a consistent free ridership scoring algorithm. The free ridership scoring algorithm for the participant surveys is shown in greater detail in Section 8.4.2 and 8.4.3.

8.4 Home Lighting Program Impact Evaluation

Table 8-2 presents gross realization for the 2014 HLP.

Table 8-2 HLP Gross Realization Summary

Measurement	Expected Gross Savings	Realized Gross Savings	Gross Realization Rate
Annual Energy (kWh)	18,820,856	15,021,833	79.8%
Demand (kW)	1,459.25	2,184.8	149.7%
Lifetime Energy (kWh)	114,705,909	100,681,107	87.8%

Additionally, the Evaluators estimated free-ridership for the HLP via participant surveying and analysis of whether each program channel services the low income community. The resulting net savings are presented in Table 8-3.

Table 8-3 HLP Net Realization Summary

Measurement	Expected Net Savings	Realized Net Savings	Net Realization Rate
Annual Energy (kWh)	13,860,507	12,218,999	88.2%
Demand (kW)	1,074.66	1,769	164.6%
Lifetime Energy (kWh)	84,474,482	83,956,768	99.4%

8.4.1 Gross Savings Estimates

- 301,791 CFLs;
- 12,896 LEDs; and
- 1,826 LED fixtures.

The program sold 309,791 CFLs through participating retailers in 2014. Lighting purchasers were reached via random digit dial. Through this, 71 lighting purchasers were reached. Further, 38 recipients at the Eastern New Mexico State Fair were recruited for an intercept and follow-up survey. Gross savings estimates for residential CFLs require the following parameters:

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

8.4.1.1 In-Service Rate

In-service rates (ISRs) are estimated as follows:

- **Retail markdown.** For retail markdown CFLs, the Evaluators applied a long-term ISR of 96%, detailed in the Kema CFL Metering Study. LEDs were deemed with an ISR of 100%.
- **Lighting Giveaway.** In-service rates for the lighting giveaway channels were determined through follow-up surveys with recipients from the Festival Giveaway event. The Evaluators found an ISR of 88.2% from this survey, and applied this ISR to all CFL distribution channels. LEDs distributed through giveaway events were deemed with an ISR of 100%.
- **Direct Install.** Direct install CFLs were deemed with an ISR of 100%.

8.4.1.2 Hours of Use

The Evaluators applied hours of use to the impact analysis by applying the hours of use listed in the New Mexico TRM. The TRM uses 2.24 hours per day for residential lighting.

In addition, it is estimated that 6.0% of CFLs sold through the program are installed in commercial facilities. The Evaluators applied this to markdown CFLs and LEDs from mass-market retailers (those that do not serve the low income community exclusively).

8.4.1.3 Out-of-Territory Leakage

The Evaluators typically have not applied out-of-territory leakage values for the HLP. This has been due to:

1) All investor-owned utilities in NM sponsor a lighting markdown program, which would indicate that leakage between IOUs is off-setting;
2) Much of SPS' service territory is geographically isolated; and
3) The rural co-ops which border SPS have low numbers of residential accounts.

However, the Eastern New Mexico State Fair giveaway event drew high levels of out-of-state attendance. The Evaluators found in on-site intercept survey that 4.6% of recipients sampled were from Texas. On this basis, savings for Festival Giveaway CFLs were reduced by 4.6%.

8.4.1.4 Baseline Wattage

Baseline wattage is dependent upon CFL wattage and configuration, i.e., spiral, flood, globe, or candelabra. The Evaluators researched each model number listed in the program tracking data for residential lighting programs run by each of the three New Mexico investor-owned electric utilities to find the appropriate baseline for the model. These results are presented in Table 8-4.

Table 8-4 CFL Baseline Wattage Table

CFL Wattage	CFL Configuration	Baseline Wattage
7	Spiral	25
7	Candelabra	40
9	Spiral	40
9	A-Lamp	40
9	Globe	40
10	Spiral	40
11	Globe	40
11	Candelabra	40
11	Flood	50
12	Globe	60/43
13	Spiral	60/43
13	Candelabra	60/43
14	Spiral	60/43
14	A-Lamp	60/43
14	Flood	65
15	Globe	60/43

15	Spiral	60/43
15	Flood	65
16	Flood	65
18	Spiral	53
18	Flood	90
19	Spiral	53
20	Spiral	53
23	Spiral	53
23	Flood	90
24	Spiral	72
26	Spiral	72
26	Flood	120
27	Spiral	72
28	Spiral	72
29	Spiral	72
32	Spiral	150
40	Spiral	150
42	Spiral	150
55	Spiral	300

Units marked as "60/43" reflect the code change from the Energy Independence and Security Act of 2007 (EISA). Beginning January 1st 2014, manufacture of 60W incandescent lamps was officially ceased. the Evaluators has opted to mimic the approach to the EISA adopted in the Pennsylvania TRM, where EISA baselines take affect 6 months after implementation, in order to account for retailers selling through back-stock. As such, this baseline takes effect for 13-15W CFLs on and after July 1st, 2014.

Table 8-5 summarizes the baseline changes, effective dates for M&V, and their expected impact on savings per-unit for the HLP.

Table 8-5 CFL Baseline Updates & Effective Dates

CFL Wattage	Baseline Wattage	New Baseline Wattage	Legal Effective Date	M&V Effective Date	% Reduction in Savings
26-30W	100W	72W	1/1/2012	7/1/2012	37.8%
18-23W	75W	53W	1/1/2013	7/1/2013	40.7%
13-15W	60W	43W	1/1/2014	7/1/2014	36.9%
9-12W	40W	29W	1/1/2014	7/1/2014	37.9%

This resulted in the use of a 43W baseline for 13-15W non-specialty CFLs sold as of July 1st, 2014.

The Evaluators applied these same assumptions to calculated baseline assumptions and savings for LEDS. Baseline assumptions for all LEDs sold through the HLP in 2014 are given in Table 8-6 below.

Table 8-6 LED Baseline Wattage Table

LED Wattage	LED Type	Baseline Wattage
6-9W	Standard	29W
10-14W	Standard	43W
15-23W	Standard	73W
7-9W	Specialty	40W
10-16W	Specialty	60W
18-23W	Specialty	70W

8.4.1.5 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. Based upon the KEMA CFL Metering Study, the Evaluators found that the PCF defined for this period is 10.17%, which the Evaluators have applied in the analysis for residential applications.

For CFLs found to be sold to commercial end-users, a PCF of 88% was applied.

8.4.2 Home Lighting Net-to-Gross Evaluation - Markdown

To obtain net savings for the 2014 HLP, the Evaluators surveyed program participants to develop estimates of free-ridership. As detailed in Section 8.3.3, developing free-ridership estimates for the HLP 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 8-7 through Table 8-9 below summarizes the responses to questions addressing free-ridership for the 2014 HLP.

Table 8-7 "Prior Experience" Results

Component	Question	Incandescent	CFL	Mixture of lamps	New Fixture or Socket
Prior Experience	Question 7: Regarding the light bulbs being replaced, what type of bulbs are they? *n = 71*	70.4%	19.7%	5.6%	1.4%
	Question	**Yes**	**No**	**Don't Know**	
	Question 9: Have you purchased this type of bulb before (i.e. CFL or LED)? *n = 71*	71.8%	25.4%	2.8%	

Table 8-8 "Behavior without Discount" Results

Component	Question	Definitely Would've Still Purchased	Probably Would've Still Purchased	Probably Wouldn't Have Still Purchased	Definitely Wouldn't Have Still Purchased
Behavior Without Discount	Question 19: If the CFLs that you selected cost $1.20 more per bulb, would you still choose CFLs as opposed to cheaper incandescent/halogen options? *n = 63*	50.8%	34.9%	9.5%	4.8%
	Question 20: If the LEDs that you selected cost $9 more per bulb, would you still choose LEDs as opposed to cheaper CFLs or incandescent/halogen options? *n = 24*	16.7%	8.3%	41.7%	33.3%
	If respondent question 19 and/or 20 = Definitely or probably would've, then:	**Yes, different quantity.**	**No, same quantity.**	**Don't Know**	
	Question 19a: Do you think you would have purchased fewer CFLs today at that price? *n = 54*	14.8%	75.9%	9.3%	
	Question 14: Do you think you would have purchased fewer LEDs today at that price? *n = 6*	16.7%	50.0%	33.3%	
	If respondent question 19 and/or 20 = Definitely or probably would've, then:	**Less than one year**	**More than one year**	**Don't Know**	
	Question 19b: When would you have purchased similar CFLs? *n = 54*	55.6%	18.5%	25.9%	
	Question 20b: When would you have purchased similar LEDs? *n = 6*	50.0%	50.0%	0%	

Table 8-9 "Importance of Program" Results

Component	Question	Yes	No	Don't Know
Importance of Program (Mitigating FR factor)	Question 25: Are you aware that SPS is sponsoring discounts on energy efficient light bulbs in this retail store? *n = 71*	25.4%	71.8%	2.8%
	Question 27: Do you recall purchasing any light bulbs that you knew were discounted by SPS? *n = 18*	22.2%	77.8%	0%
	If respondent question 25 = Yes, then:	**1-3 = Not Important**	**4-7 = Somewhat Important**	**8-10 = Very Important**
	Question 28: [On a scale of 1 to 10] How important would you say the actual SPS sponsored price discount was to your decision to purchase the bulbs you have selected? 1 = Not important at all, 10 = Very important *n = 4*	0%	25.0%	75.0%

Respondents were scored as follows:

- **Prior Experience.** Each respondent was assigned a prior experience score. This is addressed via the questions pertaining to the type of bulb replaced and whether the respondent had purchased CFL or LED lighting in the past. Scores for this component are as follows:
    - Replaced incandescent bulbs
        - + has not purchased prior CFLs/LEDs: 0%
        - + has purchased prior CFLs/LEDs: 50%
    - Replaced burnt out CFLs
        - + has purchased prior CFLs/LEDs: 75%
        - + has not purchased prior CFLs/LEDs: 25%
    - Replaced LEDs: 100%
- **Behavior without discount.** A second score is assigned to each respondent based on stated alternate behavior. Scores for this component are as follows:
    - "Definitely would not have purchased": 0%
    - "Probably would not have purchased": 25%
    - "Probably would have purchased"
        - +"same quantity" + "within one year": 75%
        - +"same quantity" + "in more than one year": 0%
        - +"different quantity" + "within one year": (1-%fewer) * 75%
        - +"different quantity" + "in more than one year": 0%
    - "definitely would have purchased"
        - +"same quantity" + "within one year": 0%
        - +"same quantity" + "in more than one year": 100%
        - +"different quantity" + "within one year": (1-%fewer)
        - +"different quantity" + "in more than one year": 0%
- **Mitigating Factor.** There is a final mitigating factor applied based on respondent awareness of the program discount and stated importance of the discount:
    - Aware of SPS discounts + has knowingly purchased program-discounted bulbs
        - + "discount scored 8-10": 0%

- + "discount scored 4-7": 50%
- + "discount scored 0-3": 100%

- Not aware of SPS discounts: 100%

The respondent's free-ridership score is then calculated as:

$$FR\% = (.3 * Prior\ Experience + .7 * Beavior\ without\ Discount) * Mitgating\ Factor$$

This resulted in free-ridership of 33.6%.

Subsequently, the Evaluators addressed participant spillover by asking if respondents that were aware of the program had also purchased CFLs or LEDs which had not been incentivized, and to rate the importance of the program information and incentives in this purchase. Respondent spillover was calculated as follows:

- **Spillover Presence:**
  - Respondent purchased CFLs/LEDs w/o rebate + program scored > 6 out of 10: 100%
  - Else: 0%
- **Spillover Magnitude:**
  - Quantity of non-program CFLs/LEDs purchased divided by quantity of program CFLs purchased

The respondent's spillover score is then calculated as:

$$Spillover\% = Spillover\ Presence * Spillover\ Magnitude$$

This resulted in spillover of 7.2% for the retail markdown channel.

These two parameters aggregate to a NTGR of 73.6% for the general retail markdown channel. For targeted low income retailers (such as dollar stores), the Evaluators applied 100% NTGR.

8.4.3 Home Lighting Net-to-Gross Evaluation – Distribution

A separate analysis was performed to summarize NTGRs of the lighting distribution channels. The approach to each channel is detailed in subsections to follow.

8.4.3.1 Festival Giveaways

The Evaluators conducted intercept surveying at the Eastern New Mexico State Fair in order to address free-ridership associated with CFL distribution at this event. The survey responses contributing to Festival Giveaway NTGR are summarized in Table 8-10 and Table 8-11.

Table 8-10 "Prior Experience" Results

Component	Question	Very Familiar	Somewhat Familiar	Somewhat Unfamiliar	Very Unfamiliar
Prior Experience	Question Would you say you are very familiar, somewhat familiar, not too familiar, or not at all familiar with currently available household light bulb technologies? *n = 38*	18.4%	60.5%	13.2%	7.9%
	Question	**Incandescent**	**CFL**	**Mixture of lamps**	**New Fixture or Socket**
	Question 4: Regarding the light bulbs being replaced, what type of bulbs are they? *n = 35*	62.9%	22.9%	11.4%	2.9%

Table 8-11 "Behavior without Giveaway" Results

Component	Question	Definitely Would've Still Purchased	Probably Would've Still Purchased	Probably Wouldn't Have Still Purchased	Definitely Wouldn't Have Still Purchased
Behavior Without Giveaway	Question 5: How likely would you have been to install new CFLs if SPS has not provided them free of charge? *n = 35*	28.6%	42.9%	28.6%	0%
	If respondent question 5 = Definitely or Probably would've, then:	**Less than one year**	**More than one year**	**Don't Know**	
	Question 6: When would you have installed similar CFLs? *n = 26*	62.5%	18.75%	18.75%	

Respondents were scored as follows:

- **Prior Experience.** Each respondent was assigned a prior experience score. This is addressed via the questions pertaining to the type of bulb replaced and whether the respondent had purchased CFL or LED lighting in the past. Scores for this component are as follows:
  - Replaced incandescent bulbs
    - + "very familiar" or "somewhat familiar" with CFLs: 50%
    - + "somewhat unfamiliar" or "very unfamiliar" with CFLs: 0%
  - Replaced burnt out CFLs
    - + "very familiar" or "somewhat familiar" with CFLs: 100%
    - + "somewhat unfamiliar" or "very unfamiliar" with CFLs: 50%
  - Replaced LEDs: 100%

- **Behavior without discount.** A second score is assigned to each respondent based on stated alternate behavior. Scores for this component are as follows:
    - "Definitely would not have purchased": 0%
    - "Probably would not have purchased": 25%
    - "Probably would have purchased"
        - + "within one year": 75%
        - + "in more than one year": 0%
    - "definitely would have purchased"
        - + "within one year": 100%
        - + "in more than one year": 0%

The respondent's free-ridership score is then calculated as:

$$FR\% = (.3 * Prior\ Experience + .7 * Beavior\ without\ Discount)$$

This resulted in free-ridership of 46.6%.

Subsequently, the Evaluators addressed participant spillover by asking if respondents that were aware of the program had also purchased CFLs or LEDs which had not been incentivized, and to rate the importance of the program information and incentives in this purchase. Respondent spillover was calculated as follows:

- **Spillover Presence:**
    - Respondent purchased CFLs/LEDs w/o rebate + program scored > 6 out of 10: 100%
    - Else: 0%
- **Spillover Magnitude:**
    - Quantity of non-program CFLs/LEDs purchased divided by quantity of program CFLs received (2)

The respondent's spillover score is then calculated as:

$$Spillover\% = Spillover\ Presence * Spillover\ Magnitude$$

This resulted in spillover of 17.1% for the retail markdown channel.

These two parameters aggregate to a NTGR of 70.5% for the Festival Giveaways.

8.4.3.2 Pizza Delivery

The Pizza Delivery channel provided the same configuration of CFL two-pack as the Festival Giveaway. As a result, the Evaluators applied the Festival Giveaway NTGR to this channel.

8.4.3.3 Food Bank Giveaways

Due to food bank giveaways targeting low income customers, the Evaluators applied 100% NTGR to this channel.

8.4.3.4 School Giveaways

School Giveaways target a mix of low income and standard income households, in providing CFLs to students and their families during school registration. Program staff collected existing information on subsidized lunch participation for schools included in the giveaway channel, finding that 26.6% of recipients were low income households.

In the survey sample for the Festival Giveaways, the Evaluators found that 33.3% of respondents were low income households[11]. On this basis, the Evaluators concluded that the population in the School Giveaway channel does not differ from the Festival Giveaway channel in a statistically significant manner and thus the Festival Giveaway NTGR of 70.5% was applied to School Giveaways.

8.4.3.5 Other Giveaways

Other Giveaways were subset by the Evaluators in the following manner:

1) United Way giveaways – 100% NTGR due to targeting of low income customers
2) Miscellaneous giveaways – Use Festival Giveaway NTGR of 70.5% due to the channel reaching a representative group of SPS customers.

8.4.3.6 Direct Install

For the Direct Install CFLs, the Evaluators applied 100% NTGR.

8.4.4 Impact Summary

Table 8-12 summarizes impact parameters by program channel.

[11] This was developed by cross-referencing income ranges with household size, using 2014 federal guidelines for 150% of the poverty line. For income ranges which were uncertain, the Evaluators use the midpoint value of the range (such as assuming $40,000 annual income for customers that indicated household income of $30,000 - $49,999).

Table 8-12 Home Lighting Impact Parameters Summary

Program Channel	# Bulbs	EUL	Install Rate	Leakage Rate	Hours / Year	Peak Coincident Factor	NTGR
Retail Markdown CFLs – General Retail	263,508	5.74	96%	0%	1,031.3	14.84%	73.6%
Retail Markdown CFLs – Low Income Retail	38,283	7.00	96%	0%	817.6	10.17%	100%
Retail Markdown LEDs	14,722	16.93	100%	0%	1,031.3	14.84%	100%
Festival Giveaway	48,400	7.00	88.1%	4.6%	817.6	10.17%	70.5%
Pizza Delivery	57,060	7.00	88.1%	0%	1031.3	14.84%	70.5%
Food Bank Giveaway	11,000	7.00	88.1%	0%	817.6	10.17%	100%
School Giveaway	58,692	7.00	88.1%	0%	817.6	10.17%	70.5%
United Way Giveaway	3,900	7.00	88.1%	0%	817.6	10.17%	100%
Miscellaneous Giveaway	5,700	7.00	88.1%	0%	817.6	10.17%	70.5%
LED Giveaway	1,000	20.00	100%	0%	817.6	10.17%	100%
Direct Install	5,602	7.00	100%	0%	817.6	10.17%	100%

These values were then applied to each line item listed in program tracking data provided by SPS. The resulting net savings are summarized in Table 8-13.

Table 8-13 Home Lighting Impact Summary

Program Channel	# Bulbs	Gross kWh	Gross kW	Gross Lifetime kWh	Net kWh	Net kW	Net Lifetime kWh
Retail Markdown CFLs – General Retail	263,508	8,713,047	1,305.9	50,023,544	6,412,802	961.2	36,817,329
Retail Markdown CFLs – Low Income Retail	38,283	913,399	118.4	6,393,794	913,399	118.4	6,393,794
Retail Markdown LEDs	14,722	618,735	89.0	10,476,456	618,735	89.0	10,476,456
Festival Giveaway	48,400	1,164,069	164.4	8,148,480	1,025,544	144.8	7,178,811
Pizza Delivery	57,060	1,814,593	296.4	10,417,984	1,598,657	261.1	9,178,244
Food Bank Giveaway	11,000	277,318	39.2	1,941,224	277,318	39.2	1,941,224
School Giveaway	58,692	1,479,666	208.9	10,357,663	1,303,586	184.1	9,125,101
United Way Giveaway	3,900	98,322	13.9	688,252	98,322	13.9	688,252
Miscellaneous Giveaway	5,700	141,180	19.9	988,259	124,379	17.6	870,656
LED Giveaway	1,000	26,981	3.4	539,616	26,981	3.4	539,616

Direct Install	5,602	150,595	18.7	1,054,162	150,595	18.7	1,054,162
Total	507,867	15,397,905	2,278.1	101,029,434	12,550,318	1,851.4	84,263,645

The resulting overall gross realization for the HLP is 81.8%. The parameters which affected realization are as follows:

- Most of the reduction in savings was attributable to reduced application of commercial operating hours. Program staff assumed that 6% of program CFLs would be installed in commercial applications, based on evaluation work completed in their Colorado service territory. The Evaluators agree that this is a plausible finding and appropriate value, but that it should only be applied to retail markdown lighting and pizza delivery CFLs. The other direct distribution channels used in the HLP are unlikely to provide for commercial installation as they are targeting residential end-users through avenues which are not likely to produce incidental commercial installation.
- Secondarily, the Evaluators revised residential calculations to use TRM hours of operation of 2.24 daily. SPS had used 2.50 hours, based on prior evaluation of the HLP. However, SPS programs need to comply with New Mexico TRM values where applicable, and as a result the Evaluators applied TRM hours of operation.
- Furthermore, the Evaluators applied in-service-rates to some of the larger program channels, including a 96% ISR for retail markdown CFLs and 88.1% for most distribution channels. SPS technical assumptions did not include ISRs.
- Finally, a small amount of savings was lost to leakage from Festival CFLs being installed out-of-state.

It should be noted however, that the Evaluators did revise specific line item baseline wattages, and this revision did increase savings. Figure 8-4 summarizes the gross impact effects of these parameters (where negative values decrease realization and positive values increase realization).

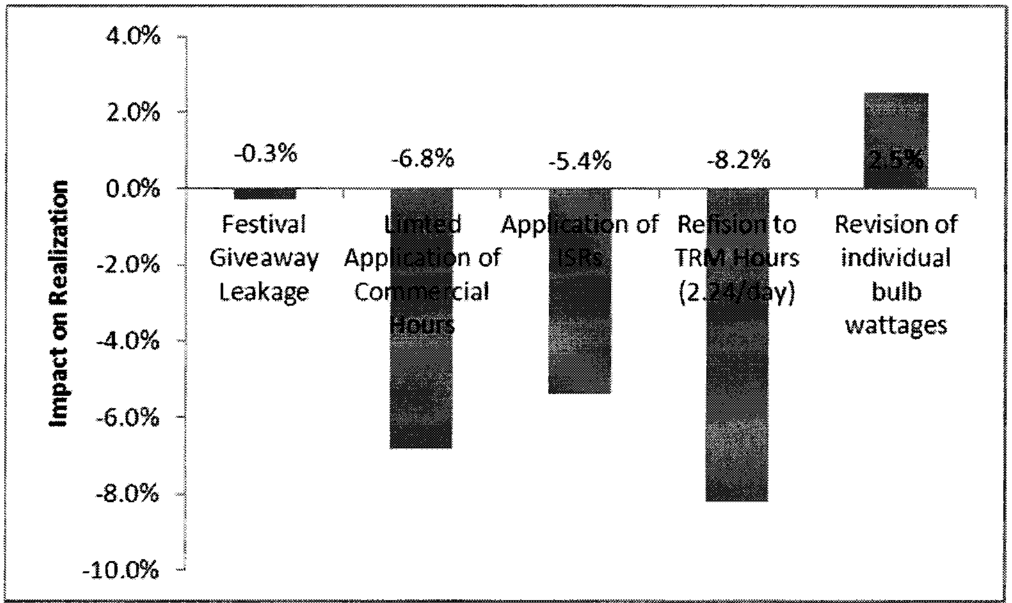


Figure 8-4 Gross Impact Parameters – Home Lighting

When examining net impacts, the Evaluators found that net realization was higher than gross realization, due to:

1) Changes in HLP program approach to target more low income participation channels;
2) Examination of spillover estimates for these channels.

SPS net savings estimates utilized prior-evaluated NTGRs (these estimates include 80% NTGR for retail markdown and 62.5% NTGR for lighting distribution). The result of this is that net realization (evaluated net savings divided by expected net savings) is 90.5%.

8.5 Conclusions

The Evaluators' conclusions for the HLP are as follows:

- **New program channels have improved the net savings from CFL distribution.** The last evaluation of the HLP occurred in the 2010 program year. Since then, the HLP has added numerous distribution channels, including giveaway events at food banks, school registration events, and increased recruitment of low income retailers.
- **Some HLP technical assumptions are inappropriate.** Specifically, the HLP used an assumption that 6% of all lighting rebated through the program would be installed in commercial applications. The Evaluators found this to be inappropriate for some program channels. Additionally, the HLP technical assumptions were not updated to incorporate New Mexico TRM impact

parameters.

8.6 Recommendations

The Evaluators' recommendations for the HLP are as follows:

- **Only apply commercial hours for retail markdown in standard-income retailers and pizza distribution.** The program design and evaluation delineates between the net impacts of varied program channels. This has included the application of 100% NTGR for certain low income retailers due to their servicing low income residential customers. The commercial hours of use value is not appropriate for this subset of retailers, nor is it appropriate for the giveaway events which provide no-cost distribution of CFLs to residential customers. .
- **Apply ISRs as determined in this evaluation.** This includes ISRs of 96% for markdown CFLs, 100% for LEDs, and 88.1% distribution CFLs, and 100% for direct install.
- **Maintain festival giveaway events, despite leakage findings.** The Festival Giveaway event was found to have 4.6% out-of-state leakage. However, this is still a highly cost-effective event, in which program staff distribute a large amount of CFLs in a short time period.

9. Energy Feedback Pilot

The Energy Feedback Pilot is an educational program run by Opower, a third party implementer for SPS. The program provides educational materials to a sample of SPS residential customers, in which their usage is compared against similar households. The program is designed to encourage behavioral change and program participation on the part of the recipients of the Home Energy Report.

9.1 Control Group Validity Testing

The Evaluators tested the recipient and control group of the Energy Feedback Pilot program for statistically significant differences in the pre-delivery period in order to ensure the validity of the comparison. This testing examined the data for a statistical difference in mean kWh usage by month. Each month has a resulting T-Stat and p-Value to check for any difference. There were no statistical differences in usage by month at the p = 0.05 (95% confidence) level. The resulting calculations are detailed in Table 9-1.

Table 9-1 Control Group Validity Testing Results

Month	Control kWh	Control Standard Error	Treatment kWh	Treatment Standard Error	T-Stat (Control - Trt)	PR >T
1	1901.5	8.17	1897.08	8.10	0.38	0.37
2	1868.55	9.04	1862.27	8.92	0.49	0.35
3	1310.33	6.10	1303.38	6.02	0.81	0.29
4	1017.47	3.82	1012.82	3.82	0.86	0.28
5	1126.68	4.20	1126.43	4.23	0.04	0.40
6	1597.3	5.70	1593.44	5.65	0.48	0.36
7	2045	7.01	2031.11	6.96	1.41	0.15
8	2035.85	6.53	2032.79	6.57	0.33	0.38
9	1755.38	6.52	1749.72	6.50	0.61	0.33
10	1179.07	4.67	1177.04	4.66	0.31	0.38
11	1129.73	4.35	1129.50	4.29	0.04	0.40
12	1755.79	8.16	1745.88	7.97	0.87	0.27

9.2 Data Cleaning Procedures

All screening procedures exist to reduce variability in the model and ensure an accurate savings estimate. The procedure to remove duplicate observations consists of checking for duplicate observations for each customer that appear on the same date, and ensuring only one of those observations remains. This does not remove any customers from the sample, but will remove observations as necessary. Further, Observations with abnormally short or long meter read cycles were filtered from the model. This procedure removed observations where the meter read length was less than 10 or greater than 70 days.

9.3 Regression Model Specification & Results

The Evaluators utilized a post-only model with pre-usage controls. Other model specifications were tested (including fixed effects), but the post-only model was found to provide the highest precision level in results. The model specification applied uses one year of pre-treatment data to construct control variables which capture the primary drivers of a household's energy use.

The model specification is as follows:

$$
\begin{aligned}
Usage_{it} = \alpha_0 + \beta * treatment_i \\
&+\alpha_1 * PreUsage_i \\
&+\alpha_2 * PreSummer_i \\
&+\alpha_3 * PreWinter_i \\
&+\gamma * mm_t \\
&+\delta_1 * mm_t * PreUsage_i \\
&+\delta_2 * mm_t * PreSummer_i \\
&+\delta_3 * mm_t * PreWinter_i \\
&+\varepsilon_{it}
\end{aligned}
$$

Where

- i denotes the ith customer
- t denotes the first, second, third, etc. month of the post-treatment period
- $Usage_{it}$ is the average daily use for read t for household i during the post-treatment period
- $PreUsage_i$ is the average daily usage across households *i's* available pre-treatment billing reads.
- $PreWinter_i$ is the average daily usage over the months of December January, February, and March over household *i's* available pre-treatment meter reads.
- $PreSummer_i$ is the average daily usage over the months of June, July, August, and September over household *i's* available pre-treatment meter reads.
- mm_t is a vector of month-year dummies

And parameter definitions are:

- α_0 is an intercept term
- α_1, α_2 , α_3 are effects of control variables $PreUsage_i$, $PreWinter_i$, $PreSummer_i$ on $Usage_{it}$ in the reference month.
- $\delta_1, \delta_2, \delta_3$ are the effect of the control variables in each month-year (mm_t) of the post period.
- ε_{it} is an error term.

The results of the regression model are listed in Table 9-2.

Table 9-2 Regression Coefficients & Model Details

Variable Description	Regression Coefficient	Standard Error	T-Stat	PR > |T|
INTERCEPT	6.5939	.4059	16.24	<.0001
AVG_PREUSAGE	.65426	.0282	23.24	<.0001
AVG_PREUSAGE_SUMMER	-.26636	.0154	-17.32	<.0001
AVG_PREUSAGE_WINTER	.48725	.0092	53.26	<.0001
TREATMENT	-.7077	.0715	-9.90	<.0001
Jan	-.57736	.5514	-1.05	.2951
Feb	-1.6995	.5830	-2.92	.0036
Mar	-1.2039	.5626	-2.14	.0324
Apr	-.27457	.5540	-4.96	<.0001
May	-.47532	.5653	-8.41	<.0001
Jun	-.3088	.5622	-5.49	<.0001
Jul	1.0799	.5597	1.93	.0536
Aug	2.2437	.5679	3.97	<.0001
Sep	-.3723	.5669	-.66	.5114
Oct	-2.9568	.5543	-5.33	<.0001
Nov	-1.6588	.5984	-2.77	.0056
Jan_Pre	.4939	.0381	12.96	<.0001
Feb_Pre	.1864	.0409	4.56	<.0001
Mar_Pre	.6381	.0391	16.33	<.0001
Apr_Pre	.4668	.0384	12.15	<.0001
May_Pre	.2734	.0393	6.96	<.0001
Jun_Pre	-.1745	.0390	-4.47	<.0001
Jul_Pre	-.0557	.0387	-1.44	.1501
Aug_Pre	.1412	.0393	3.59	.0003
Sep_Pre	.5668	.0393	14.41	<.0001
Oct_Pre	.4407	.0382	11.53	<.0001

Variable Description	Regression Coefficient	Standard Error	T-Stat	PR > |T|
Nov_Pre	-.0699	.0425	-1.65	.0996
Jan_Summer_ Pre	-.3032	.0209	-14.50	<.0001
Feb_Summer_ Pre	-.1628	.0223	-7.31	<.0001
Mar_Summer_ Pre	-.3194	.0214	-14.96	<.0001
Apr_Summer_ Pre	-.1116	.0210	-5.33	<.0001
May_Summer_ Pre	.1722	.0215	8.02	<.0001
Jun_Summer_ Pre	.6779	.0213	31.76	<.0001
Jul_Summer_ Pre	.7476	.0212	35.27	<.0001
Aug_Summer_ Pre	.6045	.0215	28.12	<.0001
Sep_Summer_ Pre	.2952	.0215	13.74	<.0001
Oct_Summer_ Pre	.1006	.0210	4.80	<.0001
Nov_Summer_ Pre	.1766	.0229	7.71	<.0001
Jan_Winter_ Pre	.1303	.0124	10.55	<.0001
Feb_Winter_ Pre	.1974	.133	14.82	<.0001
Mar_Winter_ Pre	-.2782	.0127	-21.92	<.0001
Apr_Winter_ Pre	-.5087	.0125	-40.79	<.0001
May_Winter_ Pre	-.6153	.0128	-48.20	<.0001
Jun_Winter_ Pre	-.5804	.0127	-45.80	<.0001
Jul_Winter_ Pre	-.6586	.0126	-52.49	<.0001
Aug_Winter_ Pre	-.7115	.0129	.55.66	<.0001
Sep_Winter_ Pre	-.8129	.0128	-63.66	<.0001
Oct_Winter_ Pre	-7261	.0125	-58.34	<.0001
Nov_Winter_ Pre	-.3428	.0138	-24.88	<.0001

9.4 kWh Savings Results

The Evaluators were provided a summary of monthly opt-outs and active accounts for the EFP. Regression results from Table 9-2 were converted to kWh savings on a monthly basis using past savings load shapes and monthly recipient tallies. The resulting monthly savings are summarized in Table 9-4.

Table 9-3 Energy Feedback Pilot Monthly Savings

Month	# Recipients	kWh Savings
January 2014	12,794	563,686
February 2014	12,725	428,644
March 2014	12,639	350,084
April 2014	12,559	217,621
May 2014	12,491	235,726
June 2014	12,389	200,472
July 2014	12,299	221,916
August 2014	12,226	400,498
September 2014	12,139	84,816
October 2014	12,049	163,662
November 2014	11,979	203,242
December 2014	11,947	298,003

These program savings are summarized in Table 9-4.

Table 9-4 Energy Feedback Pilot Savings Summary

2014 kWh Savings (Per Participant)	2014 Participants	2014 Program kWh Savings	kW Savings
258.31	12,353	3,211,232	355.35

10. Business Comprehensive

The Business Comprehensive Program (BCP) is the aggregation of Business Lighting, Small Business Lighting, Business Cooling, Business Custom, Business Computers, and Business Motor & Drive Efficiency.

10.1 Business Comprehensive Program

SPS' business portfolio was disaggregated into separate programs by measure category. Beginning in 2012, these programs were aggregated into Business Comprehensive. In 2014, Small Business Lighting was aggregated into Business Lighting, and no longer identified as a discrete program channel. As presently constituted, this aggregated the following programs:

10.1.1 Business Lighting Efficiency

SPS is offering the Lighting Efficiency product 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

In addition, the Business Lighting channel provides technical assistance and increased

10.1.2 Business Cooling Efficiency

The Business Cooling Efficiency Program 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.

10.1.3 Business Custom Efficiency

The Business Custom Efficiency Program 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. SPS targets customers with aggregated annual consumption greater than 7 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.

10.1.4 Business Motor and Drive 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; and
  - 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.

10.1.5 Business Computer Efficiency

The Business Computer Efficiency Program provides incentives for high efficiency plug loads. Measures eligible for the program include:

- High efficiency desktop PCs;
- High efficiency servers;

- Network PC management software; and
- Virtual Desktop Infrastructure.

10.2 M&V Methodologies

10.2.1 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 10-1.

Table 10-1 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

10.2.1.1 Business Lighting Efficiency Gross Savings Estimates

The 2014 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.

10.2.1.2 Gross Savings Methodology for High Efficiency Lighting Retrofits

To calculate annual savings from lighting retrofits, the Evaluators applied the following equation:

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

Parameters for this equation are defined in Table 10-2.

Table 10-2 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, the Evaluators calculated peak kW savings. This is based upon an 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 10-3.*

Table 10-3 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

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

The 2014 BLEP provided rebates to participating facilities for energy efficient lighting in new construction applications. 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 10-4.

Table 10-4 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, the Evaluators then calculated 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 10-5.

Table 10-5 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

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

The methodology to be detailed encompasses The Evaluators' 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:

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

When occupancy sensors and interior daylighting controls are present, post operating hours are derived with the following equation:

$$\text{OperatingHours}_{\text{POST}} = \text{OperatingHours}_{\text{BASE}} * (1 - \text{ControlFactor})$$

Lighting Controls Reduction in Operating Hours

Occupancy Sensor	30%
Daylighting, continuous dimming	30%
Daylighting, multi-step dimming	20%
Daylighting, On/Off	10%

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 dissynergies (i.e., a simultaneous lighting retrofit and lighting control installation saves less than each of the two measures would have individually). The Evaluators 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.

10.2.2 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 10-6

Table 10-6 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 the Evaluators 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

10.2.2.1 Business Cooling Efficiency Gross Savings Estimates

As stated above, gross savings estimates for facilities participating in the 2014 BCEP are evaluated by one of two methodologies:

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

10.2.2.2 DOE-2 Simulation Modeling

In evaluating the 2014 BCP, the Evaluator performed DOE-2 simulation modeling of large cooling retrofits for a range of facility types using eQuest software. 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, the Evaluator 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 PNM observes its typical system peaks.

10.2.2.3 EFLH Calculations

For simpler cooling measures, including Package Terminal Heat Pumps (PTHPs) and Roof Top Units (RTUs), the Evaluators applied deemed EFLH values along with specifications of installed capacity and efficiency in evaluating savings. Parameters for EFLH calculations are defined in Table 10-7.

Table 10-7 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's technical assumptions for business cooling measures. The Evaluators tested 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.

10.2.3 Business Custom Efficiency

Projects in Business Custom Efficiency have site-specific measurement and verification (M&V) plans developed, in a manner appropriate for the specific project's level of uncertainty and expected savings. One large custom project was selected for M&V in 2014, due to particularly high expected savings. The project was a retrofit of chillers, VFDs, and lighting at an industrial facility. This project's expected savings is almost 4 GWH. The methodology for this project is detailed in the site-level report provided in Appendix A.

10.2.4 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 10-8.

Table 10-8 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 the Evaluators 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

10.2.4.1 Business Motor & Drive Efficiency Gross Savings Estimates

The 2014 BMEP provided rebates to participating facilities for projects including:

- NEMA Premium Efficiency Motors;

- Pump-Off Controllers (POCs);
- Variable Frequency Drives (VFDs) for Air Handler Units (AHUs) in HVAC Applications;
- VFDs in industrial pumping applications; and
- VFDs for compressed air systems.

10.2.4.2 Gross Savings for NEMA Premium Efficiency Motors

Savings from NEMA Premium Efficiency Motors are calculated as:

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

Parameters for this equation are detailed in Table 10-9.

Table 10-9 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 the Evaluators determined to be reasonable estimates of PCF. Demand savings are calculated as:

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

10.2.4.3 Gross Savings for HVAC VFDs

Savings from VFDs are calculated as:

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

Parameters for this equation are detailed in Table 10-10.

Table 10-10 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 the Evaluators determined to be reasonable estimates of PCF. Demand savings are calculated as:

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

10.2.4.4 Gross Savings for VFDs in Industrial Applications

The 2014 BMEP had numerous participants install VFDs on industrial pumps. These applications included mining, oil pumping, and food processing. Typically, the Evaluators treated these projects as custom, in that savings were calculated from end-use monitoring. Such sites were large savers, and in the sample frame were certainty sites, making the analysis constitute a one-off "case study".

10.3 Impact Evaluation Results

The main features of the approach used for the impact evaluation are as follows:

- Data for the study have been collected through review of program materials, on-site inspections, and end-use metering. Based on data provided by SPS, sample designs were developed for on-site data collection for the impact evaluation. Sample sizes were determined that provide savings estimates for the program with ±10% precision at the 90% confidence level.
- On-site visits were used to collect data for savings impacts calculations. The on-site visits were used to verify installations and to determine any changes to the operating parameters since the measures were first installed. Facility staff were interviewed to determine the operating hours of the installed system and to locate any additional benefits or shortcomings with the installed system. For some sites, monitoring of lighting or HVAC equipment was conducted to obtain more accurate information on operating characteristics.

Gross savings were estimated using proven techniques, including engineering calculations using industry standards and verification of computer simulations developed by program contractors to determine energy savings. Table 10-11 summarizes the total participation in the 2014 BCP.

Table 10-11 2014 BCP Participation Summary

Program	# Projects	Expected kWh	Expected kW
Cooling	*39*	3,594,664	246.5
Custom	*32*	3,255,183	687.8
Lighting	*66*	1,494,956	355.0
Motors	*60*	3,949,786	567.0
Computers	-	358,179	48.1
Total	197	12,652,768	1,904.4

Data provided by SPS showed that during 2014, there were 274 projects in total for all program components, which were initially expected to provide gross savings of 12,652,768 kWh. The resulting overall sample is presented in Table 10-12.

Table 10-12 BCP Sample Summary

Component	# Sites in Population	Site Visit Sample Size	# Interviews
Business Lighting	74	8	9
Business Cooling	75	9	11
Business Custom	33	5	9
Business Motors & Drives	59	9	6
Business Computers	33	0	0
Total	274	32	35

10.3.1 BCP Gross Savings Estimates

Sampling for evaluation of SPS's BCP was developed using the Stratified Random Sampling procedure detailed in Section 2.3.3. This procedure provides 90% confidence and +/- 10% precision with a significantly reduced sample than random sampling would require, by selecting the highest saving facilities with certainty, thereby minimizing the variance that non-sampled sites can contribute to the overall results.

Due to the diversity of participation in the BCP, the Evaluators opted to develop samples stratified first by measure category and then by expected kWh savings. This approach constrains the extrapolation of results from a sampled project only to non-sampled projects for the same or similar technology.

All measure-level samples provided for 90% confidence and +/- 15% precision. When aggregated to the program-level, achieved precision is +/- 6%.

10.3.1.1 Sample Design – Business Cooling

Table 10-13 summarizes the sample for Business Cooling projects.

Table 10-13 Business Cooling Sample Design

	Stratum 1	Stratum 2	Stratum 3	Totals
Strata boundaries (kWh)	<20,000	20,001 – 100,000	>100,000	
Number of sites	21	16	2	39
Total kWh savings	151,699	603,273	2,840,692	3,594,664
Average kWh	7,224	37,642	1,420,346	92,171
Standard deviation of kWh savings	5,879	17,812	1,795,061	427,813
Coefficient of variation	.81	.47	1.26	4.64
Final sample	2	5	2	9

10.3.1.1 Sample Design – Business Custom

Table 10-16 summarizes the sample for Business Motors projects.

Table 10-14 Business Custom Sample Design

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Totals
Strata boundaries (kWh)	<50,000	50,001 – 150,000	150,001 – 400,000	>400,000	
Number of sites	24	4	2	2	32
Total kWh savings	432,021	407,849	539,707	1,882,604	3,262,181
Average kWh	18,001	101,932	269,854	941,302	101,943
Standard deviation of kWh savings	11,112	16,045	48,337	376,068	239,753
Coefficient of variation	.62	.16	.18	.40	2.35
Final sample	1	1	1	2	5

10.3.1.1 Sample Design – Business Lighting

Table 10-15 summarizes the sample for Business Lighting projects.

Table 10-15 Business Lighting Sample Design

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Totals
Strata boundaries (kWh)	<25,000	20,001 – 50,000	50,001 – 100,000	>100,000	

Number of sites	42	17	4	3	66
Total kWh savings	296,539	556,853	269,446	372,118	1,494,956
Average kWh	7,060	32,756	67,362	124,039	22,651
Standard deviation of kWh savings	3,794	7,593	13,991	15,273	28,648
Coefficient of variation	.54	.23	0.21	.12	1.26
Final sample	4	2	1	1	8

10.3.1.2 Sample Design – Business Motors

Table 10-16 summarizes the sample for Business Motors projects.

Table 10-16 Business Motors Sample Design

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Stratum 5	Totals
Strata boundaries (kWh)	<20,000	20,001 – 45,000	45,001 – 95,000	95,001 – 250,000	>250,000	
Number of sites	25	15	10	7	3	60
Total kWh savings	240,089	477,534	732,468	1,035,139	1,464,556	3,949,786
Average kWh	9,604	31,836	73,247	147,877	488,185	65,830
Standard deviation of kWh savings	8,313	7,071	19,349	58,445	238,479	117,831
Coefficient of variation	.87	.22	.26	.40	.49	1.79
Final sample	1	1	2	2	3	9

10.3.1.3 Sample Design –Computers

It was decided to exclude Business Computers from the general stratification scheme and treat this component as a distinct population. This component was a very small contributor to program savings (accounting for only 2.83% of expected savings) and the level of effort required to conduct M&V would have been inappropriate given the size and participation level.

10.3.1.4 Site-Level Realization

Sites chosen within each stratum are visited in order to verify installation of rebated measures and to collect data needed for calculation of ex post verified savings. The realization rates for sites within each stratum are then applied to the non-sampled sites within their respective stratum. Table 10-17 presents results at the site level.

Table 10-17 Expected and Realized Savings by Project

Project ID(s)	Facility Type	Program Category	Expected kWh Savings	Realized kWh Savings
OID2142402	Industrial	Cooling	2,689,646	635,714
OID2054580	Retail	Cooling	151,046	151,148
OID2059013	Retail	Cooling	80,558	76,705
OID1828582	Hotel/Motel	Cooling	44,355	31,887
OID1828119	Hotel/Motel	Cooling	31,609	22,724
OID1827110	Hotel/Motel	Cooling	25,491	0
OID1822744	Hotel/Motel	Cooling	19,373	8,357
OID1827013	Hotel/Motel	Cooling	9,177	6,597
OID2078958	Industrial	Cooling	3,682	2,919
OID1893645	Industrial	Custom	1,207,222	1,207,222
OID1969160	Industrial	Custom	675,382	647,150
OID1719344	Office	Custom	235,674	241,219
OID1878293	Industrial	Custom	117,472	140,952
OID1901028	Hotel/Motel	Custom	40,406	39,677
OID1798148	University	Lighting	132,140	52,818
OID1831483	Retail	Lighting	86,036	75,948
OID1438223	Restaurant	Lighting	43,147	46,178
OID1794610	Industrial	Lighting	24,917	20,448
OID1831615	Industrial	Lighting	10,603	0
OID2058406	Retail	Lighting	9,677	9,603
OID1958635	Retail	Lighting	4,213	13,033
OID1944692	Industrial	Lighting	3,477	1,675
OID1800813	Industrial	Motors	762,118	868,938
OID2044824	Industrial	Motors	375,571	480,730
OID1885998	Industrial	Motors	326,867	309,231
OID2127757	Industrial	Motors	223,244	206,681
OID1885985	Industrial	Motors	97,679	99251
OID1885991	Industrial	Motors	94,791	98498
OID1504559	Industrial	Motors	88,595	46,309
OID1883639	Industrial	Motors	28,170	28,219
OID1910951	Industrial	Motors	4,592	7,199

From these site-level analyses, realization rates by measure category were developed. These are summarized in Table 10-18 and Table 10-19 for kWh and kW, respectively.

Table 10-18 Gross kWh Realization by Measure Category

Program Category	Expected kWh Savings	Realized kWh Savings	Realization Rate
Cooling	3,594,664	1,317,106	36.6%
Custom	3,255,183	3,313,816	101.8%

Lighting	1,494,956	1,189,619	79.6%
Motors	3,949,786	4,079,428	103.3%
Computers	358,179	358,179	100.0%
Overall	12,652,768	10,258,148	81.1%

Table 10-19 Gross kW Realization by Measure Category

Program Category	Expected kW Savings	Realized kW Savings	Realization Rate
Cooling	246.5	201.9	81.9%
Custom	687.8	953.7	138.7%
Lighting	319.8	221.8	69.4%
Motors	540.4	772.2	142.9%
Computers	48.1	48.1	100.0%
Overall	1,842.60	2,197.70	119.3%

10.3.2 Business Comprehensive Net Savings Estimates

In evaluating the 2014 BCP, the Evaluators were 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 the energy efficient measures 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 quartiles, 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.

10.3.2.1 Financial Ability

For Part 1, customers were asked:

> Question 14: 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 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.

10.3.2.2 Prior Planning

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

> Question 19: When did you learn of SPS's energy efficiency program?
>
> Question 9: 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.

10.3.2.3 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 standard vs. high efficiency equipment. To address this, we examined responses to the following two questions:

> Question 5: How important was SPS' rebate in your decision to buy high efficiency equipment?
>
> Question 8: Before participating in the energy 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 8 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

10.3.2.4 Likelihood of Installing Similar Equipment without Rebate

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

> Question 17: 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 18: 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 22: How did availability of information and financial incentives through the Business Comprehensive 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 17 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 18 and 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.

10.3.2.5 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 Quartiles, 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 10-20 presents the associated free-ridership score for each permutation of answers in the four free-ridership components. The table provides scoring at the individual participant level. Program-level free-ridership is then derived by aggregating the participant-level scores.

Table 10-20 Free-Ridership Scoring

Financial Ability	Prior Planning	Rebate Was Important	Likely to Install w/o Rebate	Aggregated Category	Free-Ridership Score
Y	N	Y	N	YNYN	0
N	N	Y	N	NNYN	0
N	N	Y	N	NNYN	0
Y	N	Y	N	YNYN	0
Y	Y	N	N	YYNN	0.67
Y	N	Y	N	YNYN	0
N	N	Y	Y	NNYY	0
Y	N	N	Y	YNNY	0.67
Y	N	Y	N	YNYN	0
Y	N	Y	N	YNYN	0
Y	N	Y	N	YNYN	0
Y	N	Y	Y	YNYY	0.33
N	N	N	Y	NNNY	0
Y	Y	N	N	YYNN	0.67
Y	N	N	N	YNNN	0.33
N	N	Y	N	NNYN	0
Y	N	Y	N	YNYN	0
Y	N	Y	N	YNYN	0
Y	N	N	N	YNNN	0.33
N	N	Y	N	NNYN	0
N	N	Y	N	NNYN	0
N	N	N	N	NNNN	0
Y	N	N	Y	YNNY	0.67
Y	N	N	Y	YNNY	0.67
N	Y	N	N	NYNN	0
Y	N	N	N	YNNN	0.33
Y	N	Y	N	YNYN	0
N	N	Y	N	NNYN	0
Y	Y	N	N	YYNN	0.67
Y	N	N	Y	YNNY	0.67
Y	N	Y	N	YNYN	0
Y	Y	N	Y	YYNY	1
N	N	Y	N	NNYN	0
Y	N	N	Y	YNNY	0.67
N	N	Y	Y	NNYY	0

10.3.3 Business Comprehensive Net Savings Estimates

The Evaluators estimated net savings for all SPS business programs via detailed participant surveying of a representative sample of decision makers from each program. These questionnaires were used to provide estimates of free-ridership, with a separate estimate developed for each measure category. The subsections to follow will present the Evaluators' NTGR estimates by measure category for each program component, and the associated net savings. With verified savings compiled by stratum and by measure, the Evaluators then applied measure-category NTGRs to estimate program net savings. These are summarized in Table 10-21. For this table, the Custom Efficiency projects were calculated with the NTGRs associated with the larger measure category, but then separated into the Custom Efficiency line item.

Table 10-21 Verified Net Savings by Component

Program	Expected NTGR	Verified NTGR	Verified Net kWh	Verified Net kW
Cooling	87.50%	87.55%	1,153,126	176.8
Custom	80.00%	90.22%	2,989,725	860.4
Lighting	75.00%	91.25%	1,085,527	202.4
Motors	80.00%	87.45%	3,567,460	675.3
Computers	88.00%	88.00%	315,198	42.3
Total	80.79%	88.84%	9,111,036	1,957.2

After evaluating the program components, the Evaluators compiled net savings to provide an overall net realization rate. These results are summarized in Table 10-22.

Table 10-22 SPS Business Comprehensive Net Realization Summary

Component	Peak Demand Reduction (kW)		Annual Energy Savings (kWh)		Lifetime Energy Savings (kWh)		Net Realization Rate
	Ex Ante	Ex Post	Ex Ante	Ex Post	Ex Ante	Ex Post	
Cooling	215.7	176.8	3,145,331	1,153,126	44,363,323	28,628,536	36.7%
Custom	550.2	860.4	2,604,146	2,989,725	15,335,859	32,753,244	114.8%
Lighting	239.9	202.4	1,121,217	1,085,527	11,433,652	11,424,552	96.8%
Motors	432.3	675.3	3,159,829	3,567,460	57,862,232	65,622,030	112.9%
Computers	42.3	42.3	315,198	315,198	1,260,790	1,260,790	100.0%
Total	1,480.4	1,957.2	10,345,721	9,111,036	130,255,856	139,689,152	88.1%

10.4 Process Evaluation Findings

This chapter presents the results of the process evaluation of the Business Comprehensive Program.[12] The process evaluation focuses on aspects of program policies and organization, as well as the program delivery framework.

The process chapter begins with an overview of the program and the key program changes that occurred during the 2014 program year. This is followed by 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 strategic planning and process

[12] "Business Comprehensive" is an aggregation of Business Lighting, Business Cooling, Business Custom, and Business Motors & Drives programs.

recommendations, and concludes by highlighting key findings from the surveys of trade partners and customer participants.

10.4.1 Program Overview

The Business Comprehensive Program offers rebates and incentives for the following types of equipment:

Computers

Incentives for efficient computers are provided through rebates to end-users as well as upstream incentives to manufacturers. End-users can receive rebates for desktop virtualization software and remote PC power management. Specifically, rebates of $60 per thin or zero client installed are available for desktop virtualization and rebates of $5 per controlled workstation are offered. These rebate offers are managed by SPS staff.

For the upstream component, the program contributes incentives to Ecova, who implements a program called 80 Plus. The 80 Plus program is funded by three other utility partners, EnergyTrust of Oregon, Efficiency Vermont, and New Jersey's Clean Energy Program. The 80 Plus program works with electronics manufacturers to provide more efficient technologies. The computers component that SPS funds, encourages computer power supply manufacturers to develop more efficient power supplies and to encourage PC manufacturers to incorporate the efficient power supplies in their products and to make them available to consumers. Savings for this program component are based on sales of PCs with qualifying power supplies in the SPS service territory.

The equipment incentives for the program are segmented into three components: cooling efficiency, lighting efficiency, and motor and drive efficiency.

Cooling

The cooling efficiency component offers prescriptive rebates for a variety of HVAC and refrigeration equipment including chillers, direct evaporative cooling units, direct expansion units, electrically commutated motors for use on refrigerated display cases, freezer display cases, and walk-in refrigerators, and walk-in-freezers, and hotel room controllers.

Lighting

The lighting efficiency component includes prescriptive and custom lighting incentives. Incentives are available for retrofit and new construction projects. Additionally, the programs provide prescriptive incentives for the replacement of incandescent signals with LED signals.

Motors & Drives

The motors and drives component of the program offers incentives for NEMA and enhanced NEMA premium motors, prescriptive incentives for VFDs on 200 hp motors or smaller and custom incentives on motors greater than 200hp, electronically commutated motors (ECM) installed on refrigeration equipment for constant speed motor controllers, air compressor equipment, and oil pump off controllers.

Custom

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.

Technical Assistance

In addition to incentives, the SPS also provides other services to help customers identify energy saving opportunities. These services include a new building tune-up program and funding assessments of large commercial and industrial study sites, and free lighting assessments through the Lighting Efficiency component. Additionally, the program website contains a variety of information energy saving technologies.

10.4.2 Key Program Changes

The 2014 program year saw a number of changes made to the Business Comprehensive Program.

10.4.2.1 New Implementation Contractor

The evaluation of the 2013 program year uncovered several verification issues that resulted in a low realization rate for hotel projects. The Evaluators review of the QA procedures determined that the implementation contractor's QA process was detailed and sufficient, but was not consistently adhered to. In the short term, SPS responded to the verification findings with a series of steps including banning the contractors associated with the verification issues, requiring additional review of lighting projects, and providing greater oversight of the implementation contractor. Ultimately, SPS contracted with a new firm, CLEAResult, to provide implementation support. CLEAResult's contract began in July of 2014.

10.4.2.2 Changes in Incentive Levels

Another noteworthy change that occurred during 2014 was a reduction of the incentive levels for most of the prescriptive lighting measures. For most measures, the incentive amount was reduced by about one-third. These reductions occurred because program staff updated the incremental costs for the measures and subsequently cut the rebate amounts in order to keep them under 60% of the incremental cost.

Because program activity slowed during the summer during the transition to CLEAResult, SPS offered a bonus incentive of 30% for Business Comprehensive projects to increase program activity. Customers who submitted applications and invoices for projects completed between September 15th and December 19th received the bonus. The total project rebate was capped at 75% of the project cost.

10.4.2.3 Prescriptive Measures Added

New prescriptive refrigeration and lighting measures were added to the program in 2014. The prescriptive refrigeration measures were included in the Cooling Efficiency, Lighting Efficiency, and Motors and Drives Efficiency components. The types of refrigeration incentives offered and the program component that they are listed under is displayed in Table 10-23.

Table 10-23 Prescriptive Refrigeration Measures and Program Component

Measure	Program Component		
	Cooling	Lighting	Motors and Drives
ECM for Motors for Refrigerated and Freezer Display Cases	X		X
ECM for Walk-in Refrigerator and Freezer	X		X
Refrigerated LED Case Strip Lighting		X	
No Heat Case Doors	X		
Anti-sweat Heater Control	X		

Prescriptive incentives for LED lighting were added to the Lighting Efficiency component. The new measures include interior lamps and luminaires, parking garage fixtures, wall pack fixtures for exterior and garage installations, and exterior LED canopy and soffit fixtures. Additionally, rebates were added for screw in compact fluorescent lamps, and bi-level stairwell fixtures with integrated sensors.

10.4.2.4 Additional Program Component

A Building Tune-Up program will be added to the program, but has not yet been implemented. This component will include several measures related to improving the efficiency of HVAC systems. The program will offer rebates for studies and the implementation of the measures.

10.4.3 Transition to CLEAResult

As previously noted, the program implementation transitioned from Franklin Energy to CLEAResult. A midyear transition of this nature can disrupt the delivery of an efficiency program for several reasons including severing of existing relationships, interruption of project applications processing and addressing customer inquiries, and lost knowledge capital pertaining to the market and utility customers from staff changes. Several steps were taken to facilitate a successful transition of the program implementation contractor from Franklin Energy to CLEAResult.

10.4.3.1 Staffing

CLEAResult's contract began July 1st, 2014. CLEAResult staff noted that they had some lead time prior to the start of the contract to prepare and hire staff for the program, but that the month of July was a transition period. SPS staff noted that additional staff was needed in the service territory and CLEAResult was preparing to onboard an additional staff member.

CLEAResult also utilized staff who had worked with the program when it was implemented by Franklin Energy to ensure adequate staffing and preserve knowledge of the market and ongoing projects. Specifically, two staff were contracted with to work as consultants during the initial transition period. One of the two consultants brought extensive experience in working with large accounts for oil and potash mine operations.

10.4.3.2 Establishing Relationship with Trade Partners

A key transition task identified by CLEAResult was establishing relationships with the trade partners operating in the SPS service territory. To do this, CLEAResult staff held one-on-one meetings with contractors and conducted outreach events at the major towns in the service territory in August. Because the program does not maintain a list of official trade partners, CLEAResult developed contact lists for trade partners from data in the Salesforce system used to track program activity.

10.4.3.3 Correcting Misinformation

SPS staff and CLEAResult staff noted that the some trade partners had been given misleading information about the program. In particular, in interviews with the Evaluators, staff from program trade allies indicated that they had been told that was ending once the Franklin contract ended. Additionally, SPS staff noted that one Franklin employee was providing some incorrect information about who they could speak with to get more information about the incentives available. CLEAResult staff validated this, having indicated to the Evaluators that they had to spend time correcting this misinformation with program trade allies. Additionally, similar feedback was provided to the Evaluators from large customers during our survey effort (many of whom had participated in SPS business efficiency programs in prior years). Aside from those issues, staff reported that they had not heard other concerns expressed by trade partners. CLEAResult and SPS staff stated that they have been reaching out to trade partners to clarify these matters.

10.4.3.4 Customer Project Continuity

CLEAResult staff noted that they had followed up with customers to ensure continuity in the participation process for those who had active projects when the transition took place. The Salesforce database was the primary source of information used to identify active projects. The database includes notes about customer interactions and project documentation. However, if project status information was not entered into the database, CLEAResult may not have been aware of it.

CLEAResult also worked with SPS account managers to supplement the information provided in the database. SPS assigns account managers to customers with an electric load of more than 400 kW. These account managers had knowledge of some project details and information about projects in the pipeline that was not captured in the database. Additionally, CLEAResult has begun weekly meeting with SPS call center staff and account managers to keep current on customer interest in efficiency projects and other related issues.

10.4.3.5 Slower Activity in the Summer

SPS staff noted that the program activity did slow during the transition to the new implementation contractor. The amount of slowing was generally consistent with staff expectations. However, SPS staff indicated that they expect improved performance in the future.

10.4.4 Overall Program Success

The SPS business portfolio saw a decline in program activity in terms of expected kWh savings. As in 2013, the Business Motors & Drive Efficiency program accounted for the largest share of expected savings (accounting for 39.9% of business-sector verified net savings).

As shown in Table 10-24, participation declined across all segments with the exception of Business Computers (which displayed a 3.3% increase in net savings). The SPS portfolio is distinguished in the low percentage of savings provided by lighting. In many business rebate programs, it is not uncommon to see lighting account for 70% or more of expected savings. In 2014, lighting accounted for 11.6% of verified savings for SPS. This diversity of participation will help ensure consistent savings from the portfolio in coming program years.

Table 10-24 Business Program kWh Savings by Year

Program	Program Year						
	2008	2009	2010	2011	2012	2013	2014
Cooling	34,217	72,936	359,605	708,151	325,401	1,339,369	1,153,126
Custom	28,719	-	111,137	465,361	312,199	3,303,928	2,989,725
Lighting	72,441	4,384,067	1,162,038	1,246,656	2,415,760	1,515,020	1,085,527
Motors	-	260,023	524,117	9,843,831	7,719,667	7,720,707	3,567,460
Computers	-	-	-	-	13,494	305,276	315,198
Small Business Lighting	-	359,039	1,174,220	3,363,376	3,222,968	2,452,470	-
Total kWh Savings	135,377	5,076,065	3,331,117	15,627,375	14,009,489	16,636,770	9,111,036

Figure 10-1 displays the weekly and cumulative savings for the 2014 program year. The shaded area is the period during which the program offered a 30% bonus incentive for completed projects (September 15th – December 19th). The large increase in December was due to a single project completion that accounted for 26% of the incentive program activity. More generally, the chart shows how much of the program savings were driven by spikes in the project savings in the winter, spring, early summer, and at the end of the year. The period during which the program transitioned to a new implementer saw generally flat program activity.

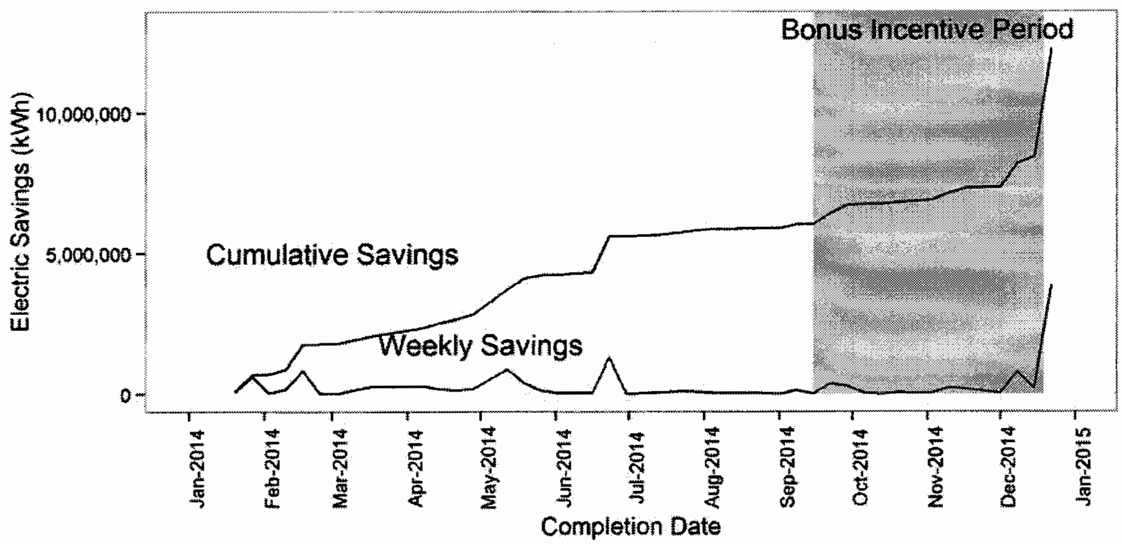


Figure 10-1 Weekly and Cumulative kWh Savings

The weekly number of projects completed during the program year is shown in Figure 10-2. The rate was fairly stable during the year.

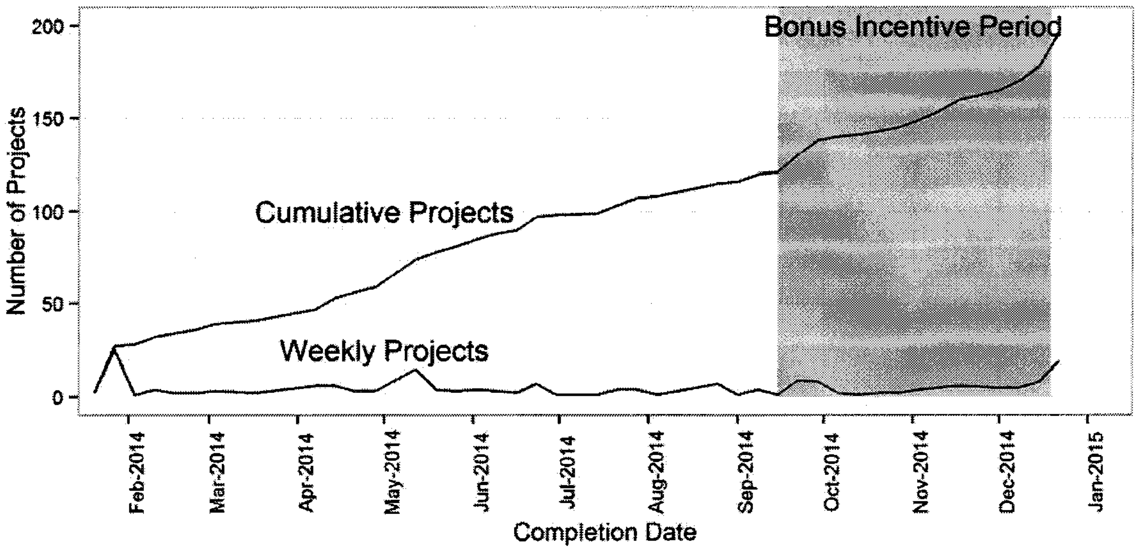


Figure 10-2 Weekly and Cumulative Project Completions

The Business Comprehensive Program had 142 participating facilities in 2012.[13] Figure 10-3 presents the distribution of participants by facility type.

[13] Based on the number of unique premise IDs in the program tracking data.

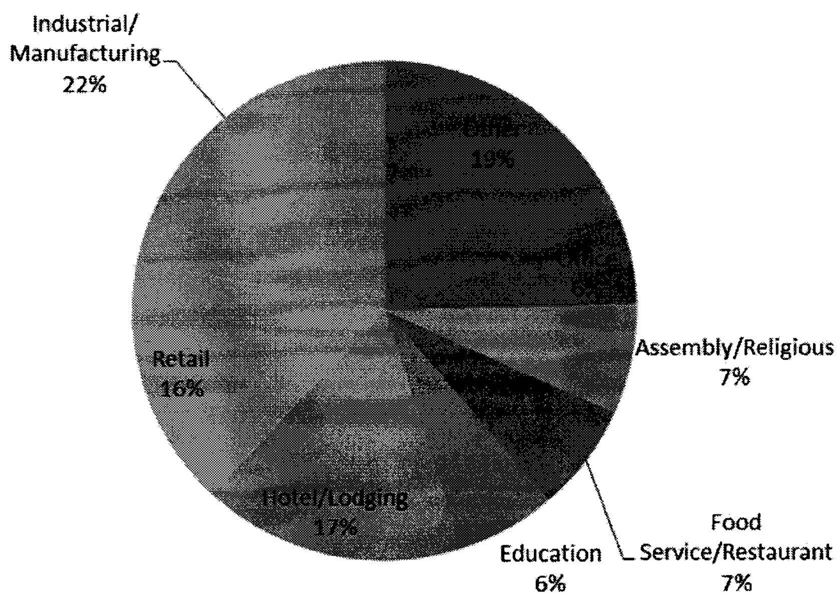


Figure 10-3 Business Comprehensive Distribution of Projects by Facility Type

The distribution of savings did not match the distribution of facilities, in that industrial facilities displayed exceedingly high savings per-project. Figure 10-4 summarizes the distribution of expected savings by facility type.

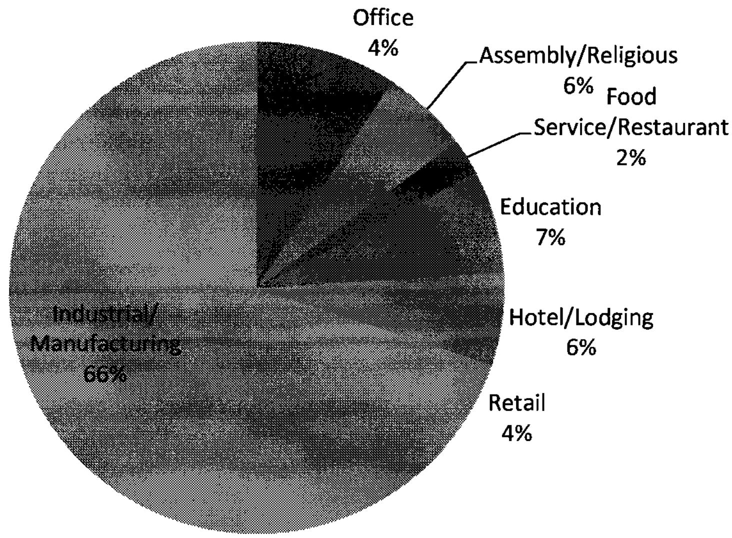


Figure 10-4 Business Comprehensive Distribution of Expected Savings by Facility Type

Table 10-25 displays the project characteristics for each of the Business Comprehensive Program components.

Table 10-25 Project Characteristics by Program Component

Program Component	*Number of Projects*	*Average kWh*	*Minimum kWh*	*Maximum kWh*	*Average Rebate*	*Minimum Rebate*	*Maximum Rebate*
Cooling	53	67,824	123	2,689,646	$3,389	$136	$31,094
Custom	32	101,724	2,539	1,207,222	$8,229	$242	$63,844
Lighting	127	11,493	106	126,557	$1,813	$25	$21,875
Motors	213	18,544	58	375,571	$2,543	$220	$31,500

Electric kWh savings are shown by measure type in Table 10-26. Chillers accounted for the largest share of program savings followed by pump off controllers (used on oil well rod pumps). This is consistent with prior program years that have seen the oil industry accounting for a large share of program savings. In comparison to other efficiency programs, the SPS program realized a relatively small share of its savings from lighting projects.

Table 10-26 kWh Savings by Measure Type

Measure Type	Number of Projects	kWh Savings	Percent of kWh Savings
Chiller	3	2,779,240	22.6%
Pump Off Controller	28	2,499,934	20.3%
Custom Lighting	29	1,694,815	13.8%
Custom Cooling	3	1,560,368	12.7%
Variable Frequency Drive	17	1,353,439	11.0%
Hotel Room Controller	19	508,804	4.1%
Linear Fluorescent	30	466,292	3.8%
Interior LED	25	436,415	3.5%
CFL	5	303,689	2.5%
Refrigeration - Controls	2	231,604	1.9%
Metal Halide	2	138,866	1.1%
Motors	15	96,413	0.8%
Exterior LED	5	94,697	0.8%
HVAC	15	75,016	0.6%
Lighting Controls	4	32,984	0.3%
Refrigeration - Lighting	5	17,124	0.1%
Exit Signs	3	4,889	0.0%

10.4.5 Quality Assurance & Verification Procedures

Quality assurance and verification processes (QA) are split between SPS and CLEAResult. Generally, SPS staff defines what information is to be collected during verification visits and CLEAResult staff performs the site visits. The specific QA procedures used are:

- The first five projects associated with a new contractor receive a post-inspection. CLEAResult treated all contractors as "new" during the program year regardless of prior activity in the program.
- All projects coming from managed accounts (electric load of more than 400kW) receive pre- and post-inspections for custom projects and post-inspection for standard projects.
- Problem contractors identified in the prior year's evaluation are banned from the program. CLEAResult performs checks on the limited liability corporation name and the person's name.

CLEAResult utilized staff that work on other utility programs to complete the verification visits during the program year to complete the verifications.

The contract with CLEAResult is structured such that the performance dollars are based on verified savings as opposed to program estimated savings. This structure brings CLEAResult's and SPS's objectives into alignment and reduces the risk of the program verification lapses that occurred during program year 2013.

10.4.6 Program Marketing

The Business Comprehensive Program is marketed through multiple channels. A key component of the strategy is for trade partners to promote the programs. To assist and encourage trade partners to promote the incentives, SPS provides materials to promote the program, a phone number for trade partners to receive assistance, and trade partner incentives. Table 10-27 displays the trade partner incentives offered.

Table 10-27 Trade Partner Incentives

Program Component	Trade Partner Incentives
Cooling Efficiency	25% of customer rebate for all qualifying equipment
Custom Efficiency	$100 for submitting Custom Efficiency pre approval applications
Lighting Efficiency	$25 per kW of approved customer rebate
Motors Efficiency	$5 to $2,500 depending on motor size

Additionally, part of CLEAResult's role is to promote the program face-to-face with customers. During staff interviews, CLEAResult staff noted that this type of contact and the process of building relationships with SPS customers are particularly important for engaging small businesses. Additionally, CLEAResult has been building relationships with Chambers of Commerce to promote the programs among their membership.

SPS program staff also promotes the program through a variety of channels targeted direct mailings, email campaigns, and newsletters. Mass-market media, including radio and newspaper placements, is another strategy that SPS has used promote its efficiency programs. Another component of program outreach that SPS staff engaged in was "neighborhood sweeps" to promote lighting technologies.

Overall the program marketing strategy is robust with trade partners and CLEAResult, and SPS staff each playing a role in promoting the incentives available.

The program website and associated materials are also key materials for promoting the program offerings and energy efficiency more generally. The website includes a number of informational materials including:

- Descriptions of the incentive offerings including the benefits of installing each type of equipment, program details, and as site and measure qualifications.
- Business Energy Advisor which provides information for different types of business on end-use consumptions and suggestions for how to save energy.

- Webinars about business efficiency.
- Cooling Efficiency, Lighting Efficiency, Motor Efficiency, and VFD sheets that provide information on the incentives available, the improved efficiency of new equipment, non-energy benefits of equipment, and tips for planning a project. Additionally, the VFD sheet discusses applications that are not likely to result in energy savings.
- A motor maintenance guide that also promotes motor and drive incentives.
- A case study for pump off controllers for use on oil wells that includes the amount of the rebate received and the cost and energy savings realized.
- Information on motor efficiency standards that only references rebate options for 2010 and 2011.
- Information on ENERGY STAR® computers that discusses the benefits of more efficiency computers.
- Information on the incentives available for PC Power Management and Desktop Virtualization a well as the energy and non-energy benefits of these measures.

Overall, the promotional materials and website have a number of strengths. These include:

- Multiple forms of messaging including information about cost savings, energy savings, and non-energy benefits such as reduced maintenance costs and comfort.
- Information on incentives and measure types;
- The rebate applications are easy to locate; and
- Telephone numbers for additional assistance are easy to identify.

In addition to these strengths, some potential areas for improving the program website and promotional material were identified:

- Lighting incentives for trade partners can be found on the Lighting Efficiency page, but this is not the case for Cooling Efficiency or Motor Efficiency. Additional consistency may be beneficial.
- The contact information provided for customers to get additional information is inconsistent across the program components. For example, the Business Solution Center Email address is not provided on the Lighting Efficiency page or the Motor and Drive Efficiency page, but is included on the Cooling Efficiency page.

- None of the informational materials address refrigeration equipment as an end-use despite the addition of these prescriptive incentives this year.
- Most of the informational materials are present information about different measure types rather than the types of measures applicable to a type of business. A business trying to learn more about energy efficiency would not find much material that would speak directly to the opportunities in his or her type of business.

10.4.7 SPS Market Penetration

In order to gauge the Business Comprehensive Program's effectiveness at reaching various market segments, program activity was compared to data available from the 2012 County Business Program (CBP) survey. The CBP collects data on business types by number of employees and provides estimates for the number of businesses in different industries for each zip code.[14]

As shown in Table 10-28, the program has been highly successful with Industrial/Manufacturing sites, largely because of its success in the oil industry. Hotel and lodging sites has also seen high levels of participation relative to the share of buildings they account for in the market. Comparatively, the program has had less success with office buildings. However, the share of office buildings in the market may have been overestimated. That said, relatively few of the completed projects during the year were implemented in office buildings.

[14] The CBP data classifies businesses using the North American Industry Classification System (NAICS). The evaluator classified these business types into likely building types using, in large part, a crosswalk developed by the U.S. Energy Information Administration.

Table 10-28 Distribution of Projects and Buildings in Market by Building Type

Building Type	Share of 2014 Projects	Buildings in Market
Assembly/Religious	7%	6%
Education	6%	1%
Food Sales	0%	1%
Food Service/Restaurant	7%	7%
Health Care/Medical	2%	8%
Hotel/Lodging	17%	2%
Industrial/Manufacturing	22%	14%
Office	6%	35%
Other	11%	1%
Retail	16%	11%
Service	4%	9%
Warehouse/Storage	2%	6%

As shown in Table 10-29, the distribution of projects across cities in the SPS service territory was similar to the distribution of buildings in the service territory. Areas where there may be additional potential opportunity include Carlsbad and Clovis.

Table 10-29 Distribution of Projects and Buildings in Market by City

City	Share of 2014 Projects	Buildings in Market
Artesia	6.3%	6.4%
Carlsbad	21.1%	28.7%
Clovis	8.5%	16.3%
Dexter	0.7%	5.6%
Eunice	4.2%	3.2%
Hagerman	0.0%	0.4%
Hobbs	16.9%	6.9%
Jal	2.8%	0.2%
Lake Arthur	0.0%	0.4%
Loving	2.1%	0.1%
Malaga	0.0%	0.2%
Otis	0.0%	0.5%
Portales	2.8%	1.8%
Roswell	23.9%	28.0%
Texico	0.7%	0.2%
Tucumcari	9.9%	1.0%

10.4.8 Customer Outcomes

A survey was conducted during September and October 2014 to collect data about customer decision-making, preferences, and perspective of the Business Comprehensive Program. In total, telephone information was available for 56 decision makers. Of these decision makers, 35 completed the survey. As shown in Table 10-30, survey respondents represented a variety of business types. The most common type was hotel and lodging. Additionally, 86% of survey respondents indicated that their organizations owned the participating facility(s).

Table 10-30 Survey Respondent Self-Reported Organization Types

Organization Type	Percent of Respondents (n=35)
Industrial	14%
Restaurant (not fast food)	6%
Fast food restaurant	0%
Retail	14%
Office	3%
Grocery and convenience	0%
School	0%
Lodging	29%
Warehouse	3%
Farm	3%
Bowling Alley	3%
Library	3%
Movie theater	3%
Municipal government	3%
Dry cleaning/laundry	3%
Oil & gas	6%
Church	3%
Golfing facility	3%
Food manufacturing	3%

As shown in Table 10-31, survey respondents participated in all of the Business Comprehensive Program components.

Table 10-31 Program Components for Respondents

Program Component	Percent of Survey Respondents
Cooling Efficiency	29%
Custom Efficiency	23%
Motors Efficiency	17%
Lighting Efficiency	25%
Custom Efficiency and Lighting Efficiency	3%
Cooling Efficiency and Custom Efficiency	3%

10.4.8.1 Program Awareness

SPS uses varied channels to promote the Business Comprehensive Program equipment incentives including trade partners (vendors and contractors), direct outreach, email communications, targeted mailings, and the utility website. As is typical for a business program, contractors and vendors are key drivers of program activity. As shown in Figure 10-5, the largest share of survey respondents indicated that they learned of the program from vendors and contractors (29%) followed by direct contact by SPS staff (23%). A relatively large share of customers also heard of the program via word of mouth (20%). The SPS website was also a key driver of program awareness, with 14% of participating customers indicating that they learned of the program from the website.

Overall these findings suggest that direct personal contact methods seem to be driving awareness of the program.

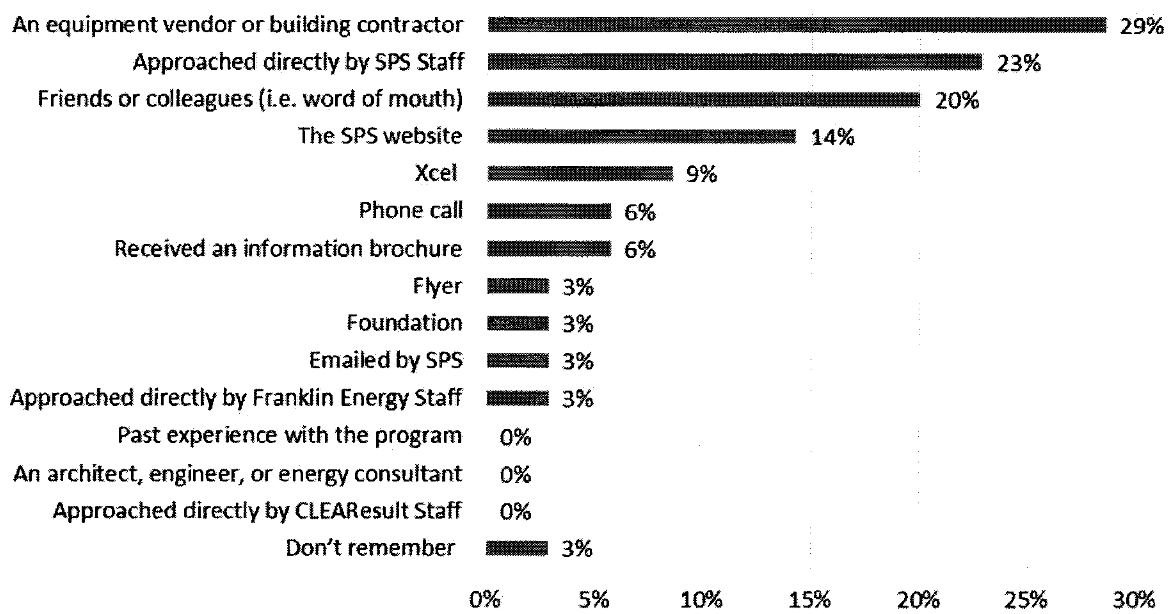


Figure 10-5 BCP Participant Sources of Program Awareness

In terms of preferred medium for communication about the program, participants favored email contact (43%) over other forms of communication. Email is preferred because it is less disruptive, but it is also likely relatively less effective than other forms of program promotion. Visits by program representatives and others were the second most preferred method (20%).

Table 10-32 Preferred Methods of Contact Indicated by Program Participants

Potential Contact Sources	*Percent of Respondents (n=35)*
Email	43%
Visits from program reps/staff/vendors	20%
Bill or bill inserts	14%
Direct Mail	14%
Phone	11%
Newspaper	3%
Discount from Xcel	3%
Don't know	0%

An important question is when respondents learned about the program. As shown in Table 10-33, 57% of the customers learned about the program before they planned equipment replacements, and 20% learned about it during planning equipment replacement. Nine percent indicated that they had learned about the program after the equipment had been specified and/or installed and 14% responded *"Don't know."*

Table 10-33 When Customer Decision Makers Learned about the Program

When did you learn of the Business Comprehensive Program?	*Percent of Respondents (n=35)*
Before planning for replacing the equipment began	57%
During your planning to replace the equipment	20%
Once equipment had been specified but not yet installed	6%
After equipment was installed	3%
Don't know	14%

10.4.8.2 Customer Decision-Making

When asked if the respondent had any difficulties internally or externally with purchasing and installing energy efficiency upgrades, 40% said they had no difficulties at all with those purchases. Financial aspects of the project were among the most frequently mentioned project barriers. These included lack of funding (17%), lack of financing (17%), equipment costs (17%), payback periods that are too long (9%), and project cost effectiveness (3%).

Despite the financial barriers noted by participants, only 3% of respondents indicated that the rebates available were not high enough. This suggests that the rebates are effective at reducing initial costs as a barrier to participation.

Prior to participating in the Business Comprehensive Program, 40% of respondents had installed efficient equipment similar to the rebated measure at their facility. Forty-nine percent of respondents indicated that they did have plans to install the equipment before participating in the program. Of those respondents, 88% stated that would have installed the equipment without the program rebates and 75% stated that their project would have included the same equipment without the rebates.

Twenty percent of respondents reported that they had previous experience with SPS energy efficiency programs prior to this project. Of those, 43% said the previous experience with the program was very important in their decision to install the energy efficiency equipment.

Respondents were then asked to rate their likelihood of installation in the absence of a program incentive. Twenty percent stated that they "Definitely would have installed", 43% stated that they "probably would have installed", 29% stated that they "probably would not have installed", and 6% stated that they "definitely would not have installed" the same equipment without the program rebate.

Respondents were then asked to identify what their course of action would have been without the program incentive. Their responses are summarized in Table 10-34.

Table 10-34 Project Installation without Program Incentives

If the rebate through the Business Efficiency Program were not available for this project, what would you have done differently?	*Percent of Respondents (n=35)*
Would have done nothing differently	38%
Would have delayed the project	27%
Would have installed a lower efficiency level of equipment	5%
Would have installed lower cost equipment	5%
Would have done it in stages	5%
Would have installed a lower quantity of equipment	3%
Would not have done the project	3%
Don't know	14%

10.4.8.3 Program Application Process and Measure Implementation

This section summarizes responses to questions about the various parts of the project implementation process, and incentive checks.

As shown in Table 10-35, approximately one-third of survey respondents (37%) completed the application for the program incentives. These survey respondents were asked additional questions about their experience with the program application process.

Table 10-35 Who Completed Program Application

Which of the following people worked on completing your application for the program incentives?	*Percent of Respondents (n=35)*
Yourself	37%
Another member of your company	23%
A contractor	31%
An equipment vendor	0%
A designer or architect	0%
Someone else?	0%
Don't know	9%

Most participants stated that the information available on how to complete the application process was clear or completely clear. However, three respondents (15%), indicated that the process was somewhat clear. Two of the respondents elaborated on why this process was not entirely clear. One respondent indicated that the installation of 25 drives required that they complete 20 applications (possibly because he or she was installing drives at 20 different sites), while another indicated that there was some ambiguity about what equipment qualified.

Table 10-36 Clarity of Information on Application Process

Thinking back to the application process, please rate the clarity of information on how to complete the application? Would you say the information was...	*Percent of Respondents (n=13)*
Not at all clear	0%
Somewhat clear	15%
Mostly clear	8%
Completely clear	62%
Don't know/won't say	15%

The respondents who indicated that the application process was not somewhat clear were asked additional questions about their experience with the application process. These questions asked about the ease of finding information about the incentives, the amount of time and effort required to complete the application, and the overall acceptability of the application process. Only one participant indicated that any part of the application process was unacceptable. This participant indicated that the amount of effort required for the application was unacceptable. All of the respondents indicated that they had a clear sense of who to go to for additional assistance with the application.

Sixty-three percent of respondents said that they worked directly with a retailer to purchase the incentivized equipment. These respondents were asked how long they had to wait to receive the program qualified equipment. As shown in Table 10-37, more than one-third of customers (41%) stated that they waited less than two weeks for the program qualified equipment, while approximately another one-third stated (37%) they waited three to six weeks for program qualified equipment. Twenty-three participants stated that they waited more than six weeks. A review of the tracking data associated with these respondents indicated that the equipment installed was unrelated to the wait time, suggesting that the long wait was due to the specific vendor they worked with or their idiosyncratic experience rather than a lack of availability of a specific measure type.

Table 10-37 Wait Time for Program Qualified Equipment

How long did you have to wait for the program-qualified equipment?	*Percent of Respondents (n=22)*
Immediately available	0%
Less than 1 week	9%
1 - 2 weeks	32%
3 - 4 weeks	32%
5 - 6 weeks	5%
More than 6 weeks	23%
Don't know/won't say	0%

Seventy-four percent of respondents had their equipment installed by a contractor, while the remaining 26% self-installed the equipment. All respondents said the installation went smoothly.

Most of these respondents, 77%, stated that the measure met or exceeded their expectations. One of these respondents indicated that they were disappointed with the performance of their equipment because they had not seen the savings they expected. Additionally, one other respondent stated that the pump they installed had stopped working and another said that four of the heaters they installed had burned out.

Few of the survey respondents experienced problems with getting paper work approved or receiving the incentive check. The issues noted by respondents were that the application was initially denied and then later approved and that the incentive check took longer to receive than expected. Additionally, three participants reported that they had not yet received their incentive check.

Table 10-38 Prevalence of Issues with Paperwork and the Incentive Check

	Were there any issues with getting the paperwork approved? (n=35)	Were there any issues with receiving the incentive check? (n=35)
Yes	11%	11%
No	86%	86%
Don't know/won't say	3%	3%

10.4.8.4 Interactions with Program Staff

Less than one-quarter (23%) of participants reported that they had interactions with program staff during the course of completing their project. The majority of survey respondents indicated that they were satisfied with the amount of time it took to get a response and the thoroughness of the response. However, some did report dissatisfaction with these aspects of their interactions.

Table 10-39 Satisfaction with Interactions with Program Staff

How satisfied or dissatisfied were you with...	How long it took program staff to address your questions or concerns? (n=8)	How thoroughly program staff addressed your questions or concerns? (n=8)
Very dissatisfied	13%	13%
Dissatisfied	25%	13%
Neither satisfied nor dissatisfied	0%	0%
Satisfied	13%	38%
Very satisfied	50%	38%
Don't know/won't say	0%	0%

10.4.8.5 Verification Visits

Survey respondents were asked questions about pre- and post-verification visits that may have been performed for the rebated projects. Among survey respondents, 57% said that a program representative performed a pre-inspection verification visit for their project. As displayed in Table 10-40, these respondents found the inspector to be courteous and efficient.

Table 10-40 Views of the Pre-Inspection Process

The inspector was courteous.	*The inspector was courteous (n=20)*	*The inspector was efficient (n=20)*
Completely agree	90%	70%
Somewhat agree	5%	25%
Neither agree nor disagree	0%	0%
Somewhat disagree	0%	0%
Completely disagree	0%	0%
Don't know/won't say	5%	5%

Forty-nine percent of respondents reported that their project received a post-inspection. As displayed in Table 10-41, respondents stated that the inspector was courteous and efficient.

Table 10-41 Views of Post-Inspection Process

The inspector was courteous.	*The inspector was courteous (n=17)*	*The inspector was efficient (n=17)*
Completely agree	88%	88%
Somewhat agree	12%	12%
Neither agree nor disagree	0%	0%
Somewhat disagree	0%	0%
Completely disagree	0%	0%
Don't know/won't say	0%	0%

Overall Program Satisfaction

Respondents were asked about their levels of satisfaction with the program overall and several specific aspects of it on a scale of 1 to 10, where 1 is very dissatisfied and 10 is very satisfied. Table 10-42 shows the results.

Table 10-42 Customer Decision Maker Satisfaction with Selected Elements Program Experience

Element of Program Experience	Mean Score	% Indicated "Don't Know"
Performance of the equipment installed	8.9	0%
Quality of work by your contractor	8.8	6%
Information provided by your contractor	8.7	20%
Information from SPS account rep	8.4	34%
Overall program experience	8.2	0%
Incentive Amount	8.1	11%
Savings on monthly bill	7.7	26%
The elapsed time until you received the incentive	7.6	14%
The effort required for the application process	7.5	20%
n=35		

The average of the satisfaction scores for the program overall was 8.2 and no individual aspect average score was below 7.5. Respondents were particularly satisfied with the quality of work by their contractor and the performance of the equipment installed. The lowest level of satisfaction was with the effort required for the application process. Respondents that scored individual elements less than 5 were asked to explain their dissatisfaction with the element. In total, five survey respondents provided reasons for their dissatisfaction. Three respondents mentioned the length of time to receive the incentive check or that they had yet to received it. One mentioned that they had disconnected the measure because it caused problems with their equipment operations and did not result in savings. The last respondent, who installed hotel room controllers, indicated that they caused problems for their guests.

10.4.8.6 Impact on Company Policy and Future Efficiency Plans

Forty percent of respondents said that their company's perspective on energy efficiency has changed since participating in the program. Five respondents mentioned a greater focus on energy efficiency. Some examples of these responses are:

> *"More conscious of trying to save energy."*
>
> *"Understand it costs money to save money. In some cases long term investment."*
>
> *"Saving as much energy as possible."*

Four respondents stated that the program rebates helped them do more. For example,

> *"Our energy efficiency has not changed but enhanced. I took initiative and we got $[large rebate amount] that has comeback to [company]"*

"Able to participate due to awareness/programs"

Two respondents stated that they had installed additional lighting because of their participation in the program and another said they plan to do additional projects. One respondent mentioned that they were concerned with saving energy because of its impact on the environment.

Twenty-percent of the survey respondents spoke favorably about the program when provided an opportunity to comment on the program overall. Some examples of these comments were:

"A great program."

"We are grateful for the incentive they have and would like to see more."

"It was a very good program."

A large number of survey respondents stated that they would probably (43%) or definitely (43%) install energy efficient equipment and apply for a program rebate in the next two years. As shown in Table 10-43, one-half of these customers stated that they would install lighting equipment. HVAC equipment was mentioned by 9% of respondents. A relatively large share (16%) indicated that they did not know what they would install.

Table 10-43 Type of Equipment Likely to Install

What type of equipment are you most likely to install through the Business Comprehensive Program?	*Percent of Respondents (n=30)*
Lighting	50%
HVAC/Air Conditioning/Heating	9%
Variable frequency drive	6%
Motors	3%
Pumps	3%
Refrigerators/Coolers	3%
Pump controller	3%
Food Service Equipment	0%
Water Heating Equipment	0%
Laundry Equipment	0%
Office Equipment (computers, servers, etc.)	0%
Other	6%
Don't know	16%

10.4.8.7 Conclusions

Overall, the program appears to be operating effectively from the customer's perspective. Participants did not report many difficulties with the participation process including completing and submitting application materials. Most participants who complete the application paperwork found it to be clear and few had issues getting the paperwork approved or receiving the incentive check. Additionally, assessments of the verification inspector were positive. The most frequent area of concern was the time and quality of response from program staff and in particular, the length of time required to get a response.

Contractors and Vendors are driving much of the program awareness followed by direct contact from SPS staff. Hearing about the program by word of mouth and through the website were also important means of learning of the program.

Email was noted as the most frequently preferred method of contact. However, this may be preferred because it is not an intrusive form of contact and may be less effective at encouraging customers to complete projects.

Overall satisfaction with the program overall and the individual components was high.

10.4.9 Trade Ally Perspectives

The Evaluators contacted 20 trade allies who had completed Business Comprehensive Program projects for interviews to assess their experience with the program. Of the 20 trade allies, nine responded to the request and agreed to an interview, although one respondent discontinued approximately one-half of the way through the interview. The interviews were completed during October of 2014.

Of the nine trade allies interviewed, eight were small companies with less than nine employees and one had over 30 employees. Fifty-six percent were electrical contractors and the remaining 44% were distributors.

Five of the nine trade allies participate in incentive programs provided by other utilities. Some of the utilities listed were: El Paso Electric, Pacific Gas and Electric, and Southern California Edison.

The following sections summarize the findings from the interviews.

10.4.9.1 Program Awareness

Trade allies were asked how they first learned of the SPS Business Comprehensive Program. Four trade allies stated they learned of the program from a Franklin Energy representative, two from their SPS Energy specialist, and three learned of the program through their own research.

10.4.9.2 Benefits of Business Comprehensive Program and Impact on Business

Trade allies were asked about the benefits of the Business Comprehensive Program. As shown in Table 10-44, a majority of trade partners indicated that the programs were very beneficial or somewhat beneficial to broadening their customer base, increasing their sales, and as a source for information on energy saving technologies.

Table 10-44 Perceived Benefits of the Program

Please indicate how beneficial the program is for each of the following:	*Very beneficial*	*Somewhat beneficial*	*Not at all beneficial*
Broadening your customer base (n=9)	56%	11%	33%
Increasing your sales (n=9)	56%	11%	33%
As a source of information on new technologies or measures that could save energy for you customers (n=9)	44%	11%	44%

Trade allies were also asked about the potential impact that the program had on the services and equipment they offer. Sixty-three percent of trade allies said their involvement in the incentive program did affect the types of equipment or services that they provide. When asked how their participation in the program has affected the types of equipment or services their firms provide, 60% said they now offer more energy efficient equipment or services while the remaining 40% said they now offer new types of energy efficient equipment or services.

10.4.9.3 Client Awareness and Completion of Incentive Projects

Trade allies were asked a series of questions related to the process of working with their clients to implement an incentive project. Respondents were asked about their marketing effort, the level of clients' awareness of the incentives, clients' acceptance of energy efficient equipment, and clients' willingness to apply for incentives. The responses to these questions may provide insights to where the programs could more effectively reach their target markets.

A substantial share of trade allies, 78%, reported that they actively market the programs to expand their customer base. Trade allies were asked to discuss the most effective strategies used to promote the adoption of energy efficient equipment. Their categorized responses are shown in Table 10-45. Most often, trade allies indicated that messaging about reduced costs from the incentives and energy savings were effective strategies. Fewer (63%) indicated that messaging about reduced maintenance costs was an effective strategy and even fewer (13%) thought that providing audits or other forms of technical assistance were effective. Overall, fewer respondents indicated that non-energy benefits (e.g., reduced maintenance costs, aesthetics, or comfort) were effective strategies for promoting the program. However, this may be because they are generally less aware of this as a sales strategy for promoting equipment options.

Table 10-45 Most Effective Strategies for Promoting Energy Efficient Equipment

Response	Percent of Respondents* (n=8)
Cost savings from incentives/rebates	100%
Cost savings from reduced energy use	100%
Reduced maintenance costs	63%
Providing facility audits/technical assistance for developing energy saving projects	13%
Environmental benefits of energy savings	0%
Other	0%

A large share of trade allies reported relatively low levels of awareness of the Business Comprehensive Program incentives among their client base. Specifically, one-third said that less than 40% of their clients were aware previously aware of the incentives offered by SPS.

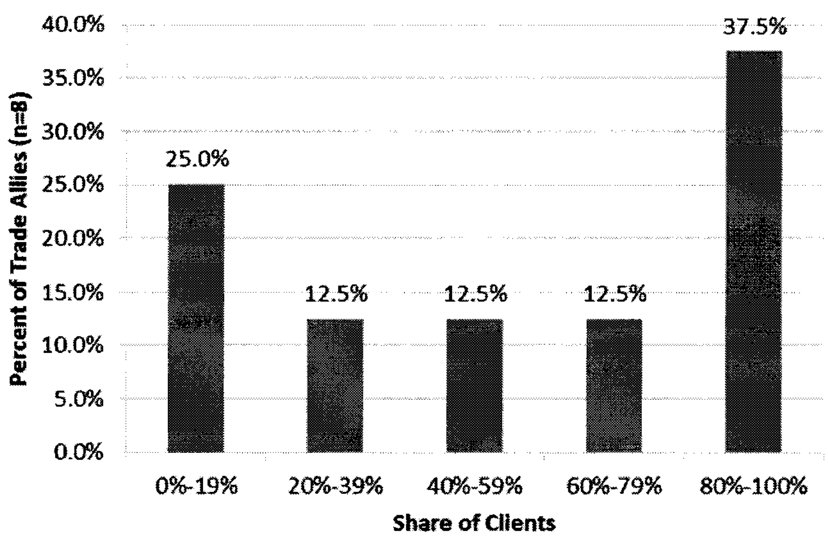


Figure 10-6 Share of Clients Previously Aware of Incentives

To gauge the extent to which trade allies promote energy saving equipment options, respondents were asked what share of the jobs that they completed in the last year for which they proposed equipment that would qualify for Business Comprehensive Program incentives. Figure 10-7 shows that one-half of trade allies stated that 80%-100% of the projects proposed to or discussed with clients involved equipment that qualified for Business Comprehensive incentives. However, close to 13% of trade allies stated that less than one-third of the projects discussed with clients involved equipment that qualified for Business Comprehensive incentives. Overall, this suggests that the interviewed respondents frequently propose energy saving equipment options to their clients.

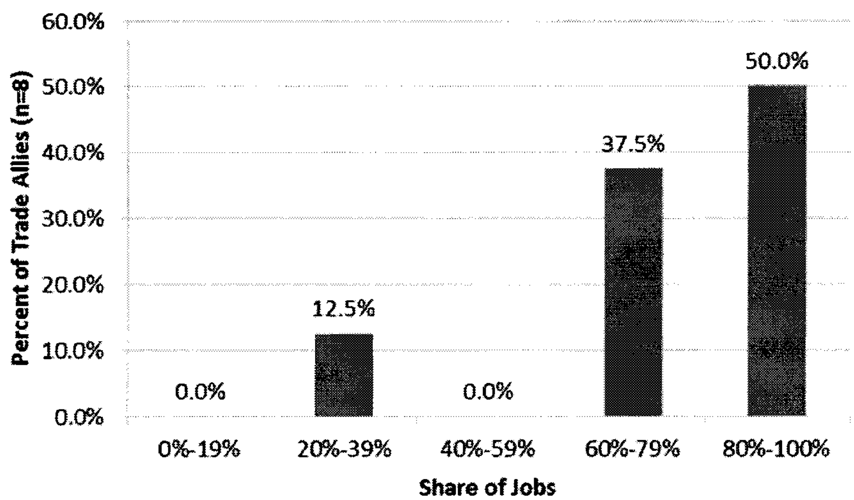


Figure 10-7 Share of Jobs for which Trade Allies Proposed Qualifying Equipment

The trade allies were also asked about the percentage of jobs for which clients agreed to most of the proposed qualifying equipment proposed. As shown in Figure 10-8, 50% of respondents noted that 80-100% of clients agreed to their proposed qualifying equipment. None of them stated that less than 40% of their clients agreed to implement most of the proposed qualifying equipment.

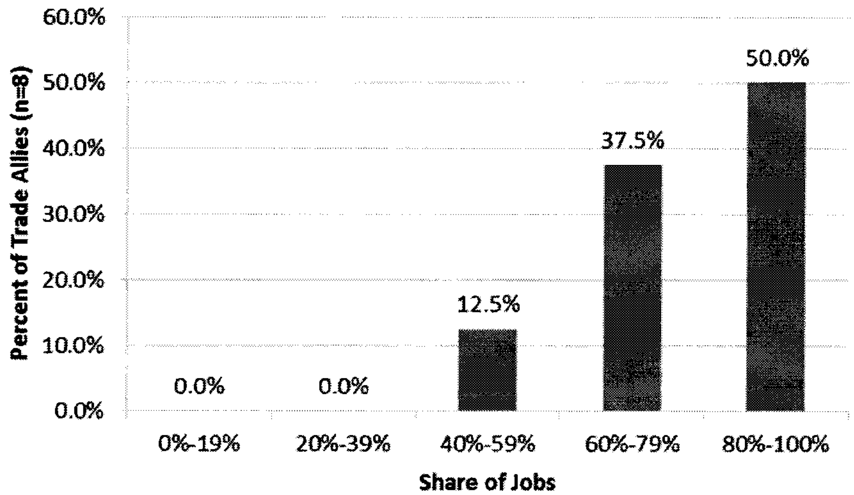


Figure 10-8 Share of Jobs where Client Agreement to Proposed Qualifying Equipment

Trade allies were asked the reasons clients gave for not installing the incentive qualifying equipment. As shown in Table 10-46, cost was the most frequently noted reason given by clients for not installing energy efficient equipment.

Table 10-46 Reasons for Not Installing Qualifying Equipment

	Response	*Percent of Respondents* (n=8)*
For those clients that didn't agree to install most of the incentive qualifying equipment, what reasons did they give?	Cost of energy efficient equipment	100%
	Age or operating condition of existing equipment	13%
	Uncertainty about potential energy savings	0%
	Other	0%
	Don't know	0%

**The sum of the percentages in the table above exceeds 100% because respondents were able to select more than one response.*

Finally, the respondents were asked to describe what percentage of clients that accepted the qualifying equipment chose to apply for an SPS Business Comprehensive Program incentive. As shown in Figure 10-9, 62% of trade partners stated that majority of their clients applied for an incentive. All of the trade allies said the reason for clients not applying for an incentive was because paperwork or qualifications were burdensome.

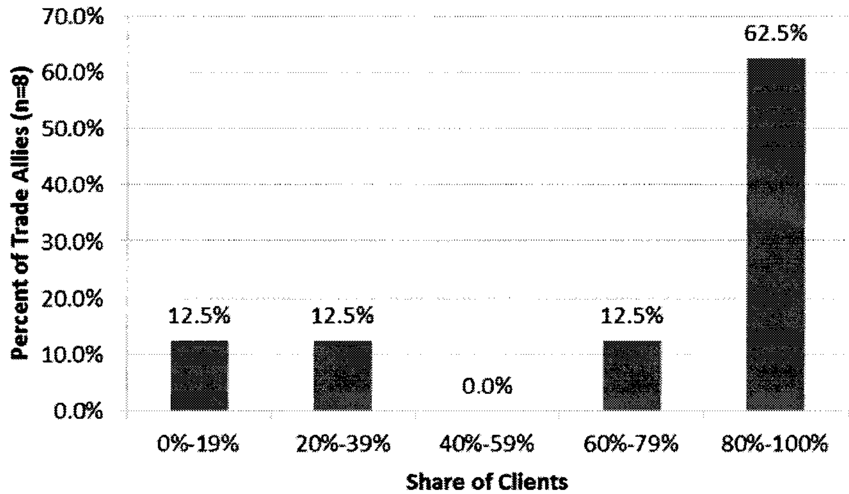


Figure 10-9 Clients Applying for SPS Business Comprehensive Incentives

Respondents were also asked if there were any types of equipment that should be included in the program not currently included. One trade ally indicated that the program should offer building automation controls and another suggested that incentives for agriculture, such as motors and drives for agricultural equipment, should be offered.

10.4.9.4 Assessment of Implementer Transition and Other Program Processes

As previously noted, a key program change during 2014 was the transition to a new implementation partner. Trade allies were asked a series of questions about their awareness of the transition, what they had heard about the status of the programs, and the impact of the change in implementation contractor. Seventy-eight percent (seven) of the respondents were aware that a new company is helping Xcel Energy implement the program.

Five trade allies, who had completed projects when Franklin Energy was the implementation contractor, were asked how they found out that a new company was taking over the implementation of the program. Four of the five answered that their former Franklin Energy representative had notified them that they would no longer be the point of contact. One of the respondents heard of the change from their Xcel representative. All of the respondents reported hearing about the transition around the time it occurred (July).

During staff interviews, interview respondents mentioned that some misinformation about the programs had been communicated to trade allies by the previous program implementer. In particular, it was noted that some trade allies had been led to believe that the programs were being discontinued rather than transitioning to a new implementer. Four of the interviewed trade allies confirmed that they had been under the impression that the programs were ending. Additionally, one trade ally indicated that they had stopped promoting the incentives because they believed they were no longer available.

Trade allies were asked to provide their perspective on the transition. Four of the five respondents indicated that it negatively impacted their experience with the program, while the fifth thought it was an improvement. Reasons for why the program negatively impacted their experiences were as follows:

> *"Franklin Energy always checked in on us. We never hear from CLEAResult."*
>
> *"I cannot get a hold of CLEAResult at all. They never get back to me and I'm having a hard time getting my programs through."*
>
> *"More consistent communication."*

Five respondents stated that there are aspects of the application process that they think could be modified, while three did not see a reason to change it. However, two trade allies raised issues unrelated to the application process, for example, one interviewee suggested that the program should offer project financing, and another indicated that the a former Franklin employee who had gone to work for a competitor was taking their customers. The three trade allies who did suggest changes related to the application indicated that the forms could provide clearer information on what incentives are offered, that the turnaround time could be quicker, and that they needed better support from CLEAResult.

Trade allies were asked if they had sought assistance from program staff for incentive projects they were working on. Five of the nine respondents said they had sought assistance from Xcel Energy staff and two from CLEAResult staff. The reasons for seeking assistance are displayed in Table 10-47. The most commonly mentioned reason, noted by four respondents, was to get assistance with how to complete the application. All but one of the respondents said they were able to get the assistance they needed. The one respondent who stated they did not receive the assistance they sought indicated that they would have preferred a quicker response.

Table 10-47 Reasons for Seeking Assistance from Program Staff

Response	Percent of Respondents* (n=5)
General program information	40%
Questions about how to complete an incentive application	80%
Check on the status of an incentive application	40%
Questions about using Xcel Energy's name or logo in promoting the program	0%
Questions about qualifying equipment	40%
Other	0%

**The sum of the percentages in the table above exceeds 100% because respondents were able to select more than one response.*

10.4.9.5 Program Satisfaction

Respondents were asked to rate their levels of satisfaction with selected aspects of the program. As shown in Table 10-48, 75% of respondents were satisfied with the program overall. In terms of the individual program aspects, trade allies were most satisfied with the level of incentives provided, with 63% indicating they were very satisfied or somewhat satisfied. Respondents were most satisfied with the level of incentives offered and the programs overall.

Table 10-48 Client Satisfaction

Program Element	Very Satisfied	Somewhat Satisfied	Neither Satisfied nor Dissatisfied	Somewhat Dissatisfied	Very Dissatisfied
The program application process	25%	13%	25%	38%	0%
The range of measures and products for which Xcel Energy offers incentives	25%	13%	38%	13%	13%
The level of incentives offered	25%	38%	13%	13%	13%
The Xcel Energy incentive programs overall	25%	50%	13%	13%	0%
(n=9)					

The area of least satisfaction was the program application process at 38%. Some of the reasons given by the trade allies for dissatisfaction in the application process were:

> *"...we never know which [application] to use."*
>
> *"The program application is pretty difficult to maneuver."*

Some trade allies also provided their perspective on recommendations for program improvement included:

- Easier application process

- Online feature that would allow application and rebate status updates
- More communication from CLEAResult and Xcel Energy
- T12 to LED be considered a prescriptive job instead of custom
- Offer bonus incentives depending on the season

10.4.9.6 Preferred Means of Communicating Program Changes

When asked how they would like future program changes communicated, 75% of the trade allies prefer to be contacted through email, while 25% preferred a telephone call.

Table 10-49 Preferred Communication Method from Program Staff

	Response	Percent of Respondents (n=8)
What is the best way for program staff to communicate future program changes to you?	Email	75%
	Telephone	25%
	Face-to-face	0%
	Mail	0%
	Website	0%
	Other	0%

10.4.9.7 Conclusions

Trade allies generally found the program to be beneficial for expanding their business and as a source of information for energy saving technologies. Most also indicated that they promote qualifying energy saving equipment with a large share of their clients, that the proposed equipment is often accepted and that clients that agree to implement the equipment also tend to apply for program incentives. However, trade allies noted that sizable shares of the customers they speak with were not previously aware of the incentives, suggesting that increasing awareness is an opportunity for program development.

When discussing energy saving projects with clients, respondents indicated that energy and program related cost savings were the most effective means of promoting energy saving equipment. Non-energy benefits were less likely to be mentioned, although 63% indicated that reduced maintenance costs was also an effective means of promoting energy saving benefits. Although costs are key considerations for businesses evaluating energy efficient equipment options, it is possible that trade partners are generally less aware of non-energy benefits or that they are undervaluing their importance to customers.

At various points during the interviews, trade allies made remarks indicating that they would benefit from increased communication. For example, several of them indicated that they had been under the impression that the programs were ending at the mid-year point when they transitioned to CLEAResult. Some trade allies also stated that the program application forms were changing and that this was confusing. Additionally, some trade allies indicated that they would appreciate more communication from CLEAResult and one respondent suggested developing a newsletter with monthly updates similar to other utilities they work with. When asked what their preferred method of communication was for program updates most stated email. However, in an open-ended response, one trade ally also indicated a preference for more face-to-face communication.

10.5 Conclusions & Recommendations

10.5.1 Conclusions

The Evaluators' conclusions for the Business Comprehensive Program are as follows:

- **Performance has declined compared to prior years.** Verified net savings were 46% lower than in 2013. This is due in part to the difficulties faced during the mid-year change in implementation contractor.
- **Program has robust verification procedures in place.** The program verification procedures are robust and require that the first five projects completed by a new contractor are verified and that all projects coming from large accounts with a load of 400 kW or more. Additionally, the contract with CLEAResult is structured such that they are paid based on verified savings rather than expected saving. This structure should help prevent the reoccurrence of verification issues noted during the prior year's evaluation because it aligns CLEAResult's and SPS's savings goals.
- **Few issues noted by customers.** Most customers reported that they were satisfied with their experience with the program and few reported problems with different aspects of the participation process including completing and submitting application materials. Most participants who completed the application paperwork found it to be clear and few had issues getting the paperwork approved or receiving the incentive check. Additionally, assessments of the inspector performing inspections were positive. The most frequently mentioned area of concern was the time and quality of response from program staff and in particular, the length of time required to get a response.
- **Prescriptive refrigeration incentives incorporated into multiple program subcomponents.** The program incorporated the following prescriptive refrigeration measures: the program offers incentives for electronically commutated motors, LED case strip lighting, no heat case doors, and anti-sweat

heater controls. These measures are made available through the Cooling, Lighting, and Motors and Drives components.

Including the refrigeration measures in different program components may negatively impact their adoption by SPS customers. A customer with refrigeration equipment is required to search through multiple program applications in order to understand the full range of incentive measures. Moreover, a single project may involve multiple measure types that cross program components, e.g., LED case strip lighting and anti-sweat heater controls. A customer implementing a project like that would need to submit two application forms for the Lighting Efficiency and Cooling Efficiency Program components for a single site.

- **Website has extensive information but presentation by business type may make it more accessible to customers.** The program website includes a wide range of materials that provide information about the incentives available and energy saving technologies. Most incentive information on the program website and associated materials is presented by the measure type rather than by business type. This may be less accessible to some customers interested in learning more about energy efficiency opportunities than information presented by business type. The program does offer an online energy audit that provides information based on building type, but this requires a significant investment of time (20-30 minutes) and may not appeal to customers who are not already committed to finding ways they can save money.
- **Program offers single point of contact but contact information is inconsistent across program components.** Consistent with best practice for energy efficiency programs, SPS provides a single point of contact for business customers through its Business Solutions Center. Trade allies and customers can contact the Business Solutions Center to learn more about the incentives available and to get help with completing application materials. However, there are some inconsistencies in how contact information is presented in the online materials. For example, the Lighting efficiency page presents one phone number for a facility assessment and one number for Business Solutions Center. Additionally, the Business Solutions Center email is provided on the page for some program components, but not all.
- **Trade allies report benefits from programs but continued outreach is needed:** At various points during the interviews, trade allies made remarks indicating that they would benefit from increased communication. For example, several indicated that they had been under the impression that the programs were ending at the mid-year point when they transitioned to CLEAResult. Some trade allies also stated that the program application forms were changing and that this was confusing. Additionally, some trade allies indicated that they would

appreciate more communication from CLEAResult and one trade ally suggested developing a newsletter with monthly updates similar to other utilities they work with. When asked what their preferred method of communication was for program updates most stated email. However, in an open-ended response, one trade allies also indicated a preference for more face-to-face communication.

10.5.2 Recommendations

The Evaluators' recommendations are as follows:

- **Process Cooling Projects should be treated as Custom Savings Projects:** Deeming savings for process loads creates the risk that the verified savings will differ substantially from the deemed expected savings. The reason for this risk is that plant operating schedules can vary substantially, making it difficult to develop accurate assumptions about operating hours. Additionally, process cooling applications are more energy intensive than the space cooling loads used as the basis for deemed savings values. It is recommended that all process cooling applications be treated as custom projects.
- **Consider basing verification requirements on project size rather than customer size.** Rather than basing the verification requirement on account size, consider limiting post-verifications to a random sample of projects below a certain energy savings threshold (e.g., a sample of 10% of projects below 200,000 kWh in expected savings), while verifying installation and post-retrofit conditions for all projects above that threshold. Invoices, equipment cut-sheets, and other customer provided documentation may prove sufficient for many prescriptive projects. Continue the requirement that the first five projects for a new contractor receive a verification visit.
- **Consider promotional materials targeting business types.** Consider providing quick, easily accessible materials that provide clear information about the benefits of energy efficiency and the incentives available for different building / business types such as retail, offices, grocery and convenience stores, and hotels. These materials could include case studies or fact sheets about energy saving opportunities for different types of customers.
- **Provide consistent contact information on website.** In order to present a unified, single point of contact to customers, consider listing all contact information as part of the Business Solutions Center with email contact information and local and 800 number calling options.
- **Consolidate prescriptive refrigeration incentive offerings.** It is recommended that the program consolidate prescriptive refrigeration incentives into a single application in order to present all relevant measure incentives to the customer in a single document and to prevent the customer from having to complete multiple

applications for a single project. Additionally, program staff should consider offering a broader range of prescriptive refrigeration incentives such as auto door closers, motion sensors on LED cases, and floating pressure and floating suction controls.

- **Continue and enhance trade ally outreach:** Trade allies would likely benefit from continued program outreach and general communication. Some trade allies and program staff noted that there has been some incorrect information about the programs provided to trade allies in the past and they indicated some confusion about application form changes. Program staff should continue their one-on-one outreach efforts, but should also consider other forms of communicating program changes and other information to trade allies such as monthly newsletters.

11. Appendix A: Tables for SPS Annual Report

This section contains tables formatted for SPS' annual report submission.

Program	Participants or Units	Annual Savings (kWh)	Annual Savings (kW)	Lifetime Savings (kWh)	Total Program Costs
Home Energy Services (Res & LI)	3,611	4,271,208	720.8	69,697,790	$1,389,227
Home Lighting	507,867	12,550,318	1,851.4	84,263,645	$1,494,445
Business Comprehensive	1,700[15]	9,111,036	1,957.2	139,689,152	$3,191,063
Energy Feedback Pilot	12,353	3,211,232	355.4	3,211,232	$190,221
Evaporative Cooling	132	296,309	266.5	4,444,630	$124,224
Refrigerator Recycling	440	339,388	69.0	1,696,942	$110,883
School Education Kits	10,632	713,311	2.3	6,793,899	$121,833
Residential Saver's Switch	3,756	0	3,083.7	0	$506,149
Business Saver's Switch	476	0	556.4	0	$209,515
Interruptible Credit Option	0	0	0	0	$471
Business Education	-	-	-	-	$0
Consumer Education	-	-	-	-	$177,239
Market Research	-	-	-	-	$58,140
Measurement & Verification	-	-	-	-	$6,800
Planning & Administration	-	-	-	-	$198,313
Product Development	-	-	-	-	$30,921
Total	540,967	30,492,802	8,862.7	309,797,290	$7,809,444

Program	Verified NTGR
Home Energy Services (Res & LI)	93.0%
Home Lighting	81.5%
Business Comprehensive	88.8%
Energy Feedback Pilot	100.0%
Evaporative Cooling	66.8%
Refrigerator Recycling	100.0%
School Education Kits	67.8%
Residential Saver's Switch	100.0%
Business Saver's Switch	100.0%

[15] This tally includes 1503 individual computer incentives and 197 downstream project rebates.

Program	Participants or Units	Participant Costs	Cost per kWh Saved	2014 Economic Benefits	Total Economic Benefits
Home Energy Services (Res & LI)	3,611	$45,392	$0.02	$268,776	$6,043,597
Home Lighting	507,867	$455,136	$0.02	$861,665	$6,948,108
Business Comprehensive	1700	$2,514,926	$0.02	$695,878	$13,127,051
Energy Feedback Pilot	12,353	$0	$0.06	$202,645	$202,645
Evaporative Cooling	132	$4,839	$0.03	$65,674	$1,223,414
Refrigerator Recycling	440	$0	$0.07	$25,242	$138,733
School Education Kits	10,632	$0	$0.02	$37,293	$307,851
Residential Saver's Switch	3,756	$0	-	$348,918	$348,918
Business Saver's Switch	476	$0	-	$61,352	$61,352
Interruptible Credit Option	0	$0	-	$0	$0
Business Education	-	-	-	$0	$0
Consumer Education	-	-	-	$0	$0
Market Research	-	-	-	$0	$0
Measurement & Verification	-	-	-	$0	$0
Planning & Administration	-	-	-	$0	$0
Product Development	-	-	-	$0	$0
Total	540,967	$3,020,293	$0.03	$2,567,443	$28,401,669

Program	Avoided Production Costs	Avoided Capacity Expansion Costs	Net Incremental Cost	Administration Costs	Incentives
Home Energy Services (Res & LI)	$2,796,868	$692,106	$361,045	$1,056,353	$332,874
Home Lighting	$4,366,382	$1,281,358	$877,197	$751,609	$742,835
Business Comprehensive	$5,502,420	$2,660,669	$2,514,926	$1,981,120	$1,209,943
Energy Feedback Pilot	$162,432	$40,213	$0	$190,221	$0
Evaporative Cooling	$315,927	$450,107	$4,839	$91,324	$32,900
Refrigerator Recycling	$85,444	$35,378	$0	$84,808	$26,075
School Education Kits	$297,802	$1,905	$31,680	$90,153	$31,680
Residential Saver's Switch	$0	$348,918	$0	$371,122	$135,028
Business Saver's Switch	$0	$61,352	$0	$170,585	$38,930
Interruptible Credit Option	$0	$0	$0	$471	$0
Business Education	$0	$0	$0	$0	$0
Consumer Education	$0	$0	$0	$177,239	$0
Market Research	$0	$0	$0	$58,140	$0
Measurement & Verification	$0	$0	$0	$6,800	$0
Planning & Administration	$0	$0	$0	$198,313	$0
Product Development	$0	$0	$0	$30,921	$0
Total	$13,527,275	$5,572,006	$3,789,687	$5,259,179	$2,550,265

12. Appendix B: Site Reports

This appendix contains the site reports for evaluation of the SPS 2014 Business Portfolio.

12.1 Cooling Efficiency

Project Number OID2142402, OID2044824, OID2127757
Program Business Cooling Efficiency, Business Motor & Drive Efficiency

Project Background

The participant is a uranium enrichment facility that received incentives from SPS for the installation of high efficiency air cooled chillers and VFDs on chilled water pumps used for cooling gas centrifuges as part of a new construction project. The overall gross kWh realization for the grouping of projects is 42%.

M&V Methodology

The facility utilizes an air cooled chilled water plant to provide process cooling for production purposes. The chilled water is used to cool a multitude of gas centrifuges used as part of the uranium enrichment process. The chilled water is produced by three 524 ton air cooled Daikin chillers equipped with VFDs. The chilled water is supplied to the centrifuges through the use of a primary/secondary chilled water loop configuration. The chiller loop, otherwise known as the primary loop, relies on three 50 hp pumps with VFDs, while the secondary loop relies on three 125 hp pumps with VFDs.

Due to the loads being process based, ASHRAE 90.1 does not govern the baseline efficiency requirements for the air cooled chillers; therefore, typical industry practice is considered the baseline. Due to the sensitive nature and uncommonness of uranium enrichment plants, typical industry practice was not able to be used for baseline determination; therefore, the Evaluators opted to use federal minimum efficiency standards. The federal minimum standards require all air cooled electric chillers to have an IPLV less than or equal to 0.80 kW/ton. The Evaluators also determined that the primary and secondary pumps baseline is constant speed pumps that modulate flow through the use of trim valves.

Savings Calculations

Due to the sensitive nature of the site the Evaluators was not granted access to the facility; however, site contacts were able to provide chiller and pump submittals as well as piping and instrumentation diagrams of the new chilled water system. Site contacts also trended and provided eight weeks of five minute interval demand data for each of the primary/secondary chilled water pumps and corresponding chilled water loop flows and supply/return temperatures.

Using the provided trending data, standard engineering equations were used to determine the system's cooling demand for each of the supplied data points. The following equation was used for the calculation:

Chilled Water Load Equation

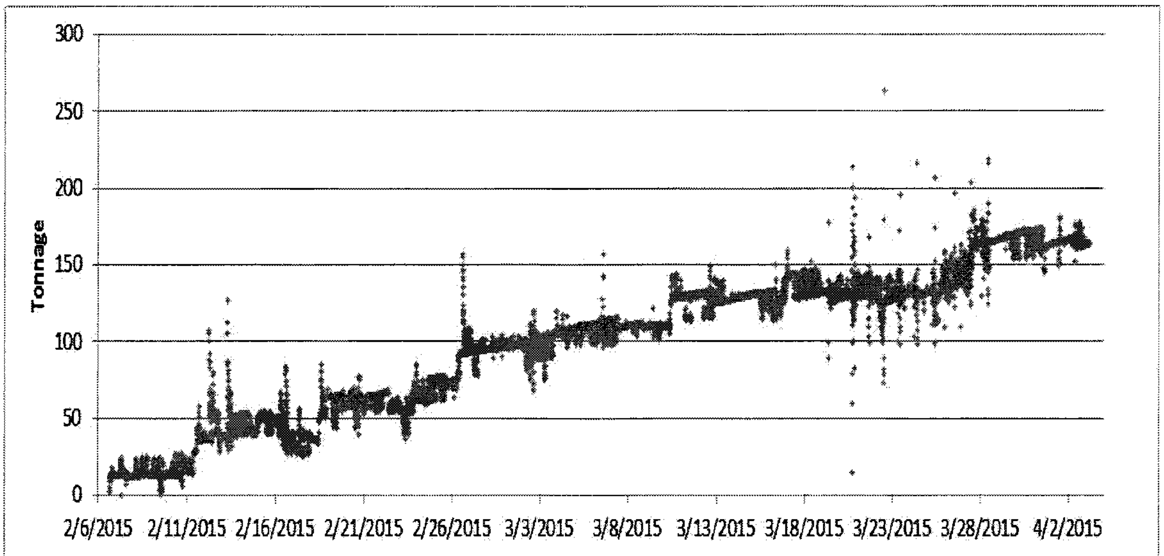
$$Q_{tons} = \frac{GPM \times 60 \times \rho \times Cp \times (T_R - T_S)}{12,000}$$

Parameters for Required Tons of Cooling

Q_{tons}	Tons of cooling for a given data point
GPM	Flow rate of secondary chilled water loop, Gallons per Minute
ρ	Density of water, 8.34 lbs/gallon
Cp	Specific Heat of water, 1.0 Btu/lb F
T_R	Temperature of the return water from centrifuges, F
T_S	Temperature of the supply water from the primary loop, F

The following plot illustrates the chilled water load profile during the monitoring period:

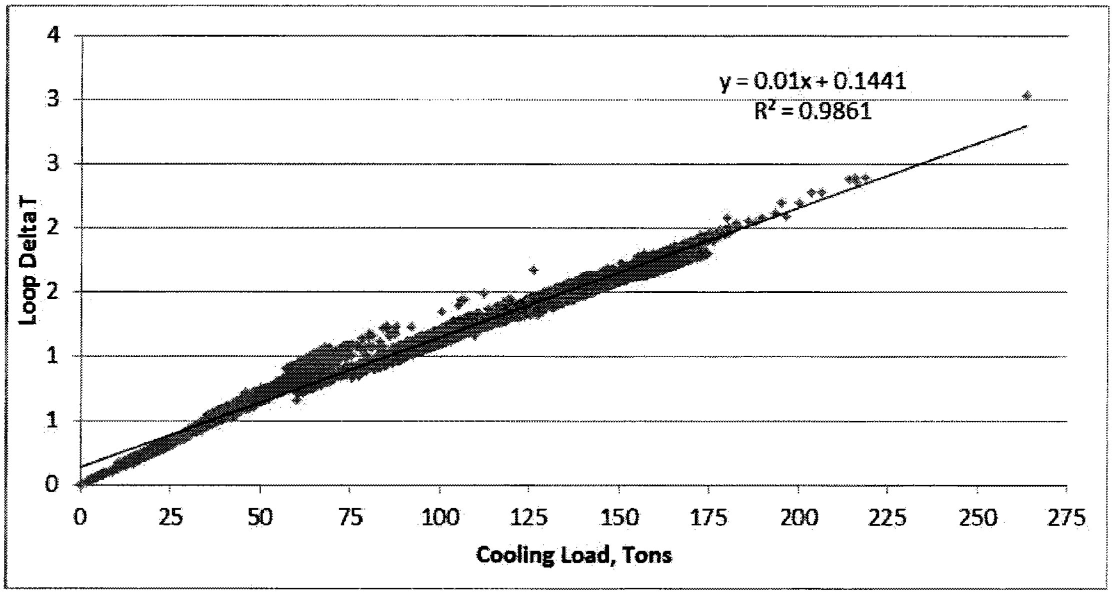
Chilled Water Load Profile



The trending data shows that the facility is still in the process of ramping up production as fore warned by site contacts. The Evaluators were informed that the facility expects to be at 50% of capacity by the end of 2016 and reach full production starting in 2021. Using the calculated chilled water load profile, the Evaluators were able to verify that the facility would indeed be able to meet the 2016 goal of being at 50% of production.

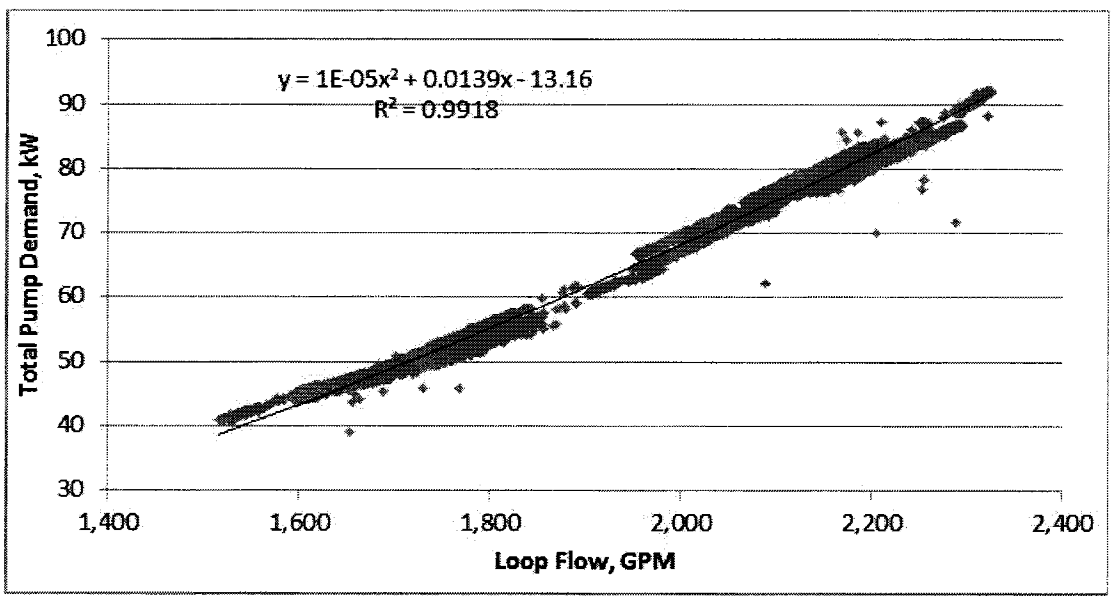
Since the load profile does not represent typical operation, ADM chose to calculate the annual energy savings at the 50% production capacity as it represents typical operation for the next 5 years. Annual savings at a 50% production capacity were calculated through the use of derived correlations. Using the provided trending data, the first correlation was made between the secondary loop supply and return temperature difference and the total cooling load. It was determined from the monitoring data that the system's temperature difference would need to increase linearly based upon the cooling demand of the centrifuges. When the facility is at full production, the secondary chilled water system would need to run a minimum of three pumps eliminating the N+1 design redundancy. In order to prevent this from occurring, the loop temperature difference increases linearly with cooling load. The following plot illustrates this correlation:

Loop Temperature Difference vs Cooling Load



A second correlation was made between the secondary loop flow and the total secondary loop pump demand. This allows for the calculation of the as-built secondary pump demand based upon the loop flow necessary to meet cooling demands.

Pump Demand vs Loop Flow



A similar exercise was performed on the primary chilled water loop pumps; however, it was determined that the pumps operate at a constant speed regardless of the cooling demand. This results in the system having a constant flow primary and a variable flow secondary chilled water loops.

A typical annual cooling load profile was calculated by isolating the final seven days of the monitoring data and creating an hourly normalized load profile for a typical weekday and weekend. This pair of normalized load profiles was then extrapolated to an entire year and the normalized load values were then multiplied by 524 tons, the derived cooling tonnage at 50% of production capacity. Using the fore mentioned correlations, the secondary loop temperature difference was calculated for each hour of the year. The corresponding loop flow necessary to meet the cooling demand was calculated using the *Chilled Water Load Equation*.

Using the *Pump Demand Vs Loop Flow* correlation, the as-built secondary pump demand was calculated for each hourly value. Using the assumption that the as-built and baseline flow rates would remain the same, the baseline pump demand was calculated through the use of manufacture pump curves. The annual energy savings for the addition of VFDs on the secondary chilled water pumps is the difference between the annual consumption of the baseline and as-built pumps.

The as-built primary chilled water pump demand remains constant for each hour of the year due to the loop maintaining a constant flow rate as determined from the monitoring data. The as-built consumption was determined by averaging the monitored kW demand of the primary pumps. The baseline pump demand was calculated in a similar fashion as the secondary loop pumps, in which manufacturer curves were used to determine the kW demand with the absence of a VFD. The annual energy savings for the addition of VFDs on the primary chilled water pumps is the difference between the annual consumption of the baseline and as-built pumps.

Hourly chiller demand for the baseline and as-built configuration was calculated by multiplying the hourly cooling load in tons by the rated IPLV in kW/ton. The as-built chiller has a rated IPLV of 0.65 kW/ton, while the baseline chiller uses minimum federal standards which have an IPLV of 0.80 kW/ton. The annual energy savings for the high efficiency chillers is the difference between the annual consumption of the baseline and as-built chillers.

Results

It was calculated that the installation of the chilled water VFDs and high efficiency air cooled chillers decrease annual energy consumption by 1,323,125 kWh and a demand reduction of 149.83 kW resulting in a combined realization rate of 42%.

ADM attribute the low realization rate to the ex-ante calculations using deemed savings calculations for process based VFDs and chillers. Deemed savings calculations fail to take into account actual operating characteristics of systems as they calculate typical savings for the end uses at hand.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
Chillers	2,555,310	25.23	635,714	71.29	25%	283%
Primary Chilled Water Pump VFDs	223,244	35.62	206,681	23.59	93%	66%
Secondary Chilled Water Pump VFDs	375,571	57.15	480,730	54.95	128%	96%
Total	**3,154,125**	**118.00**	**1,323,125**	**149.83**	**42%**	**127%**

Project Number OID-2054580
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a grocery facility that received incentives from SPS for implementing numerous energy efficiency measures. On-site, the evaluators verified the participants had installed:

- (75) reach-in freezer doors with anti-sweat heater controls.

M&V Methodology

The evaluators confirmed installation of the 75 doors on reach-in freezers with anti-sweat heater controls. Savings were then calculated using the calculator developed by the evaluators. In order to determine the savings due to the ASH controller measure, the evaluators relied on power monitoring data from a multitude of participating facilities. ASH controller operation was monitored on both the frame heater and door heater circuits, which was used to obtain an average typical operating profile. This data was correlated to the dew point temperature for the period which monitoring was performed. In order to determine the typical annual operation of the ASH controllers, the dew point correlation was used to extrapolate an operating profile based on TMY weather data for the location of the store. The annual savings were calculated by subtracting the as-built energy consumption form the baseline, which assumed a constant operating profile. In order to calculate the interactive effect savings, the kW reduction for each hour was divided by the COP of the refrigeration system. The ASH controller energy savings were normalized to a per door savings in order to determine overall savings for each location.

Results

The realization rate for OID-2054580 is savings is 100.1% for kWh savings and 62.9% for kW savings. The evaluators' calculations show the annual energy savings are 151,148 kWh and the demand energy savings are 10.69 kW.

Verified Gross Savings & Realization Rates

Measure	Expected		Verified		Realization Rates	
	kWh Savings	kW Savings	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
ASH Controls	151,046	16.67	151,148	10.69	100.1%	62.9%
Total	**151,046**	**16.67**	**151,148**	**10.69**	**100.1%**	**62.9%**

Project Number OID- 2059013
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a grocery facility that received incentives from SPS for implementing numerous energy efficiency measures. On-site, the evaluators verified the participants had installed:

- (40) reach-in freezer doors with anti-sweat heater controls.

M&V Methodology

The evaluators confirmed installation of the 40 doors on reach-in freezers with anti-sweat heater controls. Savings were then calculated using the calculator developed by the evaluators. In order to determine the savings due to the ASH controller measure, the evaluators relied on power monitoring data from a multitude of participating facilities. ASH controller operation was monitored on both the frame heater and door heater circuits, which was used to obtain an average typical operating profile. This data was correlated to the dew point temperature for the period which monitoring was performed. In order to determine the typical annual operation of the ASH controllers, the dew point correlation was used to extrapolate an operating profile based on TMY weather data for the location of the store. The annual savings were calculated by subtracting the as-built energy consumption form the baseline, which assumed a constant operating profile. In order to calculate the interactive effect savings, the kW reduction for each hour was divided by the COP of the refrigeration system. The ASH controller energy savings were normalized to a per door savings in order to determine overall savings for each location.

Results

The realization rate for OID-2059013 is savings is 95.2% for kWh savings and 62.2% for kW savings. The evaluators' calculations show the annual energy savings are 76,705 kWh and the demand energy savings are 5.60 kW.

Verified Gross Savings & Realization Rates

Measure	*Expected*		*Verified*			
	kWh Savings	*kW Savings*	*kWh Savings*	*kW Savings*	*kWh Realization Rate*	*kW Realization Rate*
ASH Controls	80,558	8.89	76,705	5.6	95.2%	62.2%
Total	**80,558**	**8.89**	**76,705**	**5.6**	**95.2%**	**62.2%**

Project Number OID-1828582
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a lodging facility that received incentives from SPS for implementing a Guest Room Energy Management (GREM) system. As a result, the occupancy sensors and door sensors connected to guest rooms' air conditioning systems shuts off when the room is unoccupied. The realization rate for this project is 72%.

The facility has a mixture of packaged terminal heat pumps (PTHPs) and packaged terminal air conditioning (PTAC) units with electrical resistance heating. The installed GREM system that is composed of ceiling mounted occupancy sensor and wireless power switches the PTHP unit on or off in the guest rooms.

M&V Methodology

During the M&V visit, the evaluators took photographs of the functioning GREM system components and interviewed the facility manager to determine the prior control methods and the instructions for housekeeping staff regarding the operating guidelines for guestrooms. The evaluators followed the savings algorithm listed on the Cooling Efficiency Technical Assumptions for Hotel Room Controllers (HRC) using the packaged terminal unit efficiency found during M&V visit.

The savings from GREM are calculated as:

$$kWh_{Savings} = N \times HRC\_Load \times HRC\_Eff \times HRC\_Op\_Hours$$

$$kW_{Peak\ Reduction} = N \times HRC\_Load \times HRC\_Eff \times CF$$

Where,

$kWh_{Savings}$	= Annual Energy Savings from GREM
$kW_{Peak\ Reduction}$	= Peak Demand Reduction from GREM
N	= Number of rooms being controlled
HRC_Load	= Capacity of a typical AC unit per room, 1 Ton[16]
HRC_Eff	= Efficiency of AC unit, 1.139 kW/Ton
HRC_Op)Hours	= Annual operating hours reduced by GREM, 500 hours/room

[16] SPS Cooling Efficiency Technical Assumptions estimates a typical hotel room has 1.42 Ton AC unit rated at 1.115 kW/Ton. The evaluators found the average size is 1 Ton and the weighted average efficiency of packaged terminal units is 1.457 kW/Ton during M&V visit

CF = Coincident Factor, 6%

The table shown below presents expected and realized energy savings for the GREM project.

Savings Calculations

Measure	Quantity	Capacity (Tons)	Efficiency (kW/Ton)	Hours Reduced	Coincident Factor	Realized kWh Savings	Realized kW Peak Demand Reduction
GREM	87	1.00	1.139	322	0.06	31,887	5.92
					Total	**31,887**	**5.92**

Results

Verified Gross Savings/Realization Rates

Measure	kWh Savings			kW Reduction		
	Expected	Realized	Realization Rate	Expected	Realized	Realization Rate
GREM	44,355	31,887	72%	8.27	5.92	72%
Total	**44,355**	**31,887**	**72%**	**8.27**	**5.92**	**72%**

The project level realization rate is 72%. The project has a lower realization rate because the equipment installed on site is more efficient than the efficiency listed in the SPS Technical Assumptions. The weighted average of the efficiency for the facility is 1.139 kW/Ton per room and that is more efficient compare to the value of 1.583 kW/Ton per from the Technical Assumptions. The more efficient air conditioning units result in fewer saving from the GREM system.

The evaluators approached this project in three methods: building simulation analysis, billing analysis, and the suggested load reduction from the Cooling Efficiency Technical Assumptions. The building simulation analysis and the billing analysis both shown significantly less savings compare to ex ante savings, however, these results will not be applied due to significant uncertainty found in the results.

Comparison of Savings and Realization Rates by Different Analysis Method

Measure	Ex Ante	Technical Assumptions Method with the Site Specific Parameters		Billing Analysis		Building Simulation Analysis	
		Ex Post	Realization Rate	Billing Analysis	Realization Rate	Simulation	Realization Rate
Annual Savings	44,355	31,887	72%	-16,288	-37%	8,526	19%

The evaluator's first approach was using the building simulation analysis. The evaluators used Energy Plus building energy model simulation to calculate the savings.

The direct monitoring approach is not feasible because this would require deploying monitoring equipment in nearly as many as the number of rooms due to difference in monitoring data from different rooms (high standard deviations). Therefore, the evaluators set up numerous simulations similar to Monte Carlo simulation method with boundary conditions. The boundary conditions are the estimated hourly occupancy rates and the annual average vacancy rates. Based on the interview with the facility management staff, this facility used to instruct housekeeping crews to turn off AC units upon check-outs, and to not change the AC settings if the guest is room still in use. Therefore, the majority of savings come from the reduction in daytime AC operating hours when the guestroom is in use but the guest away. The Energy Plus motel model that the evaluators created contains 43 rooms and a lobby. The lobby runs 24/7 and the 43 guestrooms operate in one of 4 randomly created annual schedules, which is mixture of 12 randomly created weekly schedules based on the facility manager interview. The weekly schedules contain one of 4 randomly created hourly temperature schedules or the room is vacant. Finally, the simulation was performed four times to take in account the different building orientation. The savings value from this analysis is the average kWh savings per room. The evaluators calibrated the building using the actual billing data with an assumption of 40% vacancy rate throughout the year. The resulting savings had a 19% realization rate. However, due to the lack of facility-specific monitored data, we have opted not to apply this rate. This measure has been flagged as needing further research and metering.

The second method the evaluators performed was the billing analysis. The evaluators received the facility billing data for 17 months prior to the installation and seven months of post installation. The evaluators completed a regression analysis using the billing data with the actual heating and cooling degree days and the resulting savings had a -37% realization rate. The billing analysis has larger uncertainty because the dominant factor on billing is the vacancy rate. The vacancy rate is sensitive information which is difficult to collect from the site.

Lastly, the evaluators decided to use the method listed on the Cooling Efficiency Technical Assumptions with the parameters found during M&V visit because the other two methods are inconclusive at this point and further study is needed.

Project Number OID-1828119
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a lodging facility that received incentives from SPS for implementing a Guest Room Energy Management (GREM) system. As a result, the occupancy sensors and door sensors connected to guest rooms' air conditioning systems shuts off when the room is unoccupied. The realization rate for this project is 72%.

The facility has a mixture of packaged terminal heat pumps (PTHPs) and packaged terminal air conditioning (PTAC) units with electrical resistance heating. The installed GREM system that is composed of ceiling mounted occupancy sensor and wireless power switches the PTHP unit on or off in the guest rooms.

M&V Methodology

During the M&V visit, the evaluators took photographs of functioning GREM system components and interviewed facility manager for prior control method and guestroom keeping instructions. The evaluators followed the savings algorithm listed on the Cooling Efficiency Technical Assumptions for Hotel Room Controllers (HRC) with packaged terminal unit efficiency found during M&V visit.

The savings from GREM are calculated as:

$$kWh_{Savings} = N \times HRC\_Load \times HRC\_Eff \times HRC\_Op\_Hours$$

$$kW_{Peak\ Reduction} = N \times HRC\_Load \times HRC\_Eff \times CF$$

Where,

$kWh_{Savings}$	= Annual Energy Savings from GREM
$kW_{Peak\ Reduction}$	= Peak Demand Reduction from GREM
N	= Number of rooms being controlled
HRC_Load	= Capacity of a typical AC unit per room, 1 Ton[17]
HRC_Eff	= Efficiency of AC unit, 1.139 kW/Ton
HRC_Op)Hours	= Annual operating hours reduced by GREM, 500 hours/room
CF	= Coincident Factor, 6%

[17] SPS Cooling Efficiency Technical Assumptions estimates a typical hotel room has 1.42 Ton AC unit rated at 1.115 kW/Ton. The evaluators found the average size is 1 Ton and the weighted average efficiency of packaged terminal units is 1.457 kW/Ton during M&V visit

The table shown below presents expected and realized energy savings for the GREM project.

Savings Calculations

Measure	Quantity	Capacity (Tons)	Efficiency (kW/Ton)	Hours Reduced	Coincident Factor	Realized kWh Savings	Realized kW Peak Demand Reduction
GREM	62	1.00	1.139	322	0.06	22,724	4.22
					Total	**22,724**	**4.22**

Results

Verified Gross Savings/Realization Rates

	kWh Savings			kW Reduction		
	Expected	Realized	Realization Rate	Expected	Realized	Realization Rate
GREM	31,609	22,724	72%	5.89	4.22	72%
Total	**31,609**	**22,724**	**72%**	**5.89**	**4.22**	**72%**

The project level realization rate is 72%. The project has a lower realization rate because the equipment installed on site is more efficient than the efficiency listed in the SPS Technical Assumptions. The weighted average of the efficiency for the facility is 1.139 kW/Ton per room and that is more efficient compare to the value of 1.583 kW/Ton per from the Technical Assumptions. The more efficient air conditioning units result in fewer saving from the GREM system.

The evaluators approached this project in three methods: building simulation analysis, billing analysis, and the suggested load reduction from the Cooling Efficiency Technical Assumptions. The building simulation analysis and the billing analysis both shown significantly less savings compare to ex ante savings, however, these results will not be applied due to significant uncertainty found in the results.

Comparison of Savings and Realization Rates by Different Analysis Method

	Ex Ante	Technical Assumptions Method with the Site Specific Parameters		Billing Analysis		Building Simulation Analysis	
		Ex Post	Realization Rate	Billing Analysis	Realization Rate	Simulation	Realization Rate
Annual Savings	31,609	22,724	72%	-11,883	-38%	6,076	19%

The evaluator's first approach was using the building simulation analysis. The evaluators used Energy Plus building energy model simulation to calculate the savings. The direct monitoring approach is not feasible because this would require deploying monitoring equipment in nearly as many as the number of rooms due to difference in monitoring data from different rooms (high standard deviations). Therefore, the evaluators set up numerous simulations similar to Monte Carlo simulation method with boundary conditions. The boundary conditions are the estimated hourly occupancy rates and the annual average vacancy rates. Based on the interview with the facility management staff, this facility used to instruct housekeeping crews to turn off AC units upon check-outs, and to not change the AC settings if the guest is room still in use. Therefore, the majority of savings come from the reduction in daytime AC operating hours when the guestroom is in use but the guest away. The Energy Plus motel model that the evaluators created contains 43 rooms and a lobby. The lobby runs 24/7 and the 43 guestrooms operate in one of 4 randomly created annual schedules, which is mixture of 12 randomly created weekly schedules based on the facility manager interview. The weekly schedules contain one of 4 randomly created hourly temperature schedules or the room is vacant. Finally, the simulation was performed four times to take in account the different building orientation. The savings value from this analysis is the average kWh savings per room. The evaluators calibrated the building using the actual billing data with an assumption of 40% vacancy rate throughout the year. The resulting savings had a 19% realization rate. However, due to the lack of facility-specific monitored data, we have opted not to apply this rate. This measure has been flagged as needing further research and metering.

The second method the evaluators performed was the billing analysis. The evaluators received the facility billing data for 17 months prior to the installation and seven months of post installation. The evaluators completed a regression analysis using the billing data with the actual heating and cooling degree days and the resulting savings had a -37% realization rate. The billing analysis has larger uncertainty because the dominant factor on billing is the vacancy rate. The vacancy rate is sensitive information which is difficult to collect from the site.

Lastly, the evaluators decided to use the method listed on the Cooling Efficiency Technical Assumptions with the parameters found during M&V visit because the other two methods are inconclusive at this point and further study is needed.

Project Number OID-1827110
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a lodging facility that received incentives from SPS for implementing a Guest Room Energy Management (GREM) system. The evaluators' site visit verified that all GREM controllers were removed from the site. The realization rate for this project is 0%.

M&V Methodology

During the M&V visit, the evaluators took photographs of the functioning GREM system components and interviewed the facility manager to determine the prior control methods and the instructions for housekeeping staff regarding the operating guidelines for guestrooms. The evaluators followed the savings algorithm listed on the Cooling Efficiency Technical Assumptions for Hotel Room Controllers (HRC) using the packaged terminal unit efficiency found during M&V visit.

The savings from GREM are calculated as:

$$\text{kWh}_{\text{Savings}} = \text{N} \times \text{HRC\_Load} \times \text{HRC\_Eff} \times \text{HRC\_Op\_Hours}$$

$$\text{kW}_{\text{Peak Reduction}} = \text{N} \times \text{HRC\_Load} \times \text{HRC\_Eff} \times \text{CF}$$

Where,

$kWh_{Savings}$	= Annual Energy Savings from GREM
$kW_{Peak\ Reduction}$	= Peak Demand Reduction from GREM
N	= Number of rooms being controlled
HRC_Load	= Capacity of a typical AC unit per room, 1 Ton[18]
HRC_Eff	= Efficiency of AC unit
HRC_Op)Hours	= Annual operating hours reduced by GREM, 500 hours/room
CF	= Coincident Factor, 6%

The table shown below presents expected and realized energy savings for the GREM project.

[18] SPS Cooling Efficiency Technical Assumptions estimates a typical hotel room has 1.42 Ton AC unit rated at 1.115 kW/Ton. The evaluators found the average size is 1 Ton and the weighted average efficiency of packaged terminal units is 1.457 kW/Ton during M&V visit

Results

Verified Gross Savings/Realization Rates

	kWh Savings			kW Reduction		
	Expected	Realized	Realization Rate	Expected	Realized	Realization Rate
GREM	25,491	0	0%	4.75	0.00	0%
Total	**25,491**	**0**	**0%**	**4.75**	**0.00**	**0%**

The project level realization rate is 0%. During the site visit, the evaluators verified that the facility manager removed all GREM controller units on site. The facility received numerous complaints from customers because GREM would turn off the PTAC in the rooms when the room was not occupied. The primary customers for this facility are oil field workers and they demanded that the rooms be cool when they come back from work. The facility manager had to remove the GREM controllers installed on site to reduce complaints from their customers. The evaluators conclude that the type of GREM installed on the site was not the appropriate type. Rather than installing GREM controllers that turn the PTAC unit off when the room is unoccupied, this facility should have installed controllers with temperature setback when the room is unoccupied.

Project Number OID-1822744
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a lodging facility that received incentives from SPS for implementing a Guest Room Energy Management (GREM) system. As a result, the occupancy sensors and door sensors connected to guest rooms' air conditioning systems shuts off when the room is unoccupied. The realization rate for this project is 43%

The facility has a mixture of packaged terminal heat pumps (PTHPs) and packaged terminal air conditioning (PTAC) units with electrical resistance heating. The installed GREM system that is composed of ceiling mounted occupancy sensor and wireless power switches the PTHP unit on or off in the guest rooms.

M&V Methodology

During the M&V visit, the evaluators took photographs of the functioning GREM system components and interviewed the facility manager to determine the prior control methods and the instructions for housekeeping staff regarding the operating guidelines for guestrooms. The evaluators followed the savings algorithm listed on the Cooling Efficiency Technical Assumptions for Hotel Room Controllers (HRC) using the packaged terminal unit efficiency found during M&V visit.

The savings from GREM are calculated as:

$$kWh_{Savings} = N \times HRC\_Load \times HRC\_Eff \times HRC\_Op\_Hours$$

$$kW_{Peak\ Reduction} = N \times HRC\_Load \times HRC\_Eff \times CF$$

Where,

$kWh_{Savings}$	= Annual Energy Savings from GREM
$kW_{Peak\ Reduction}$	= Peak Demand Reduction from GREM
N	= Number of rooms being controlled
HRC_Load	= Capacity of a typical AC unit per room, 1 Ton[19]
HRC_Eff	= Efficiency of AC unit, 1.139 kW/Ton
HRC_Op)Hours	= Annual operating hours reduced by GREM, 500 hours/room

[19] SPS Cooling Efficiency Technical Assumptions estimates a typical hotel room has 1.42 Ton AC unit rated at 1.115 kW/Ton. The evaluators found the average size is 1 Ton and the weighted average efficiency of packaged terminal units is 1.457 kW/Ton during M&V visit

CF = Coincident Factor, 6%

The table shown below presents expected and realized energy savings for the GREM project.

Savings Calculations

Measure	Quantity	Capacity (Tons)	Efficiency (kW/Ton)	Hours Reduced	Coincident Factor	Realized kWh Savings	Realized kW Peak Demand Reduction
GREM	38	1.00	1.139	322	0.06	8,357	1.55
					Total	**8,357**	**1.55**

Results

Verified Gross Savings/Realization Rates

	kWh Savings			kW Reduction		
	Expected	Realized	Realization Rate	Expected	Realized	Realization Rate
GREM	19,373	8,357	43%	3.61	1.55	43%
Total	**19,373**	**8,357**	**43%**	**3.61**	**1.55**	**43%**

The project level realization rate is 43%. The project has a lower realization rate because the facility removed GREM controller units in 40% of rooms the evaluators verified. Even without applying the low installation rate, the project has a low realization rate because the HVAC equipment installed on site is more efficient than the efficiency listed in the SPS Technical Assumptions. The weighted average of the efficiency for the facility (1.139 kW/Ton per room) is more efficient than the value from the Technical Assumptions (1.583 kW/Ton/Room). The more efficient air conditioning units produce fewer saving from GREM.

The evaluators approached this project using three different methods: building simulation analysis, billing analysis, and the suggested load reduction from the Cooling Efficiency Technical Assumptions. The building simulation analysis and the billing analysis both shown significantly less savings compare to ex ante savings, however, these results will not be applied due to significant uncertainty found in the results.

Comparison of Savings and Realization Rates by Different Analysis Method

	Ex Ante	Technical Assumptions Method with the Site Specific Parameters	Billing Analysis	Building Simulation Analysis

		Ex Post	Realization Rate	Billing Analysis	Realization Rate	Simulation	Realization Rate
Annual Savings	19,373	13,928	72%	26,612	137%	3,724	19%

The evaluator's first approach was using the building simulation analysis. The evaluators used Energy Plus building energy model simulation to calculate the savings. The direct monitoring approach is not feasible because this would require deploying monitoring equipment in nearly as many as the number of rooms due to difference in monitoring data from different rooms (high standard deviations). Therefore, the evaluators set up numerous simulations similar to Monte Carlo simulation method with boundary conditions. The boundary conditions are the estimated hourly occupancy rates and the annual average vacancy rates. Based on the interview with the facility management staff, this facility used to instruct housekeeping crews to turn off AC units upon check-outs, and to not change the AC settings if the guest is room still in use. Therefore, the majority of savings come from the reduction in daytime AC operating hours when the guestroom is in use but the guest away. The Energy Plus motel model that the evaluators created contains 43 rooms and a lobby. The lobby runs 24/7 and the 43 guestrooms operate in one of 4 randomly created annual schedules, which is mixture of 12 randomly created weekly schedules based on the facility manager interview. The weekly schedules contain one of 4 randomly created hourly temperature schedules or the room is vacant. Finally, the simulation was performed four times to take in account the different building orientation. The savings value from this analysis is the average kWh savings per room. The evaluators calibrated the building using the actual billing data with an assumption of 40% vacancy rate throughout the year. The resulting savings had a 19% realization rate. However, due to the lack of facility-specific monitored data, we have opted not to apply this rate. This measure has been flagged as needing further research and metering.

The second method the evaluators performed was the billing analysis. The evaluators received the facility billing data for 17 months prior to the installation and seven months of post installation. The evaluators completed a regression analysis using the billing data with the actual heating and cooling degree days and the resulting savings had a - 37% realization rate. The billing analysis has larger uncertainty because the dominant factor on billing is the vacancy rate. The vacancy rate is sensitive information which is difficult to collect from the site.

Lastly, the evaluators decided to use the method listed on the Cooling Efficiency Technical Assumptions with the parameters found during M&V visit because the other two methods are inconclusive at this point and further study is needed.

Project Number OID-1827013
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a lodging facility that received incentives from SPS for implementing a Guest Room Energy Management (GREM) system. As a result, the occupancy sensors and a door sensor connected to guest rooms' air conditioning system shuts off when the room is vacant and unoccupied. The realization rate for this project is 72%.

The facility has a mixture of packaged terminal heat pumps (PTHPs) and packaged terminal air conditioning (PTAC) units with electrical resistance heating. The installed GREM system that is composed of ceiling mounted occupancy sensor and wireless power switches the PTHP unit on or off in the guest rooms.

M&V Methodology

During the M&V visit, the evaluators took photographs of the functioning GREM system components and interviewed the facility manager to determine the prior control methods and the instructions for housekeeping staff regarding the operating guidelines for guestrooms. The evaluators followed the savings algorithm listed on the Cooling Efficiency Technical Assumptions for Hotel Room Controllers (HRC) using the packaged terminal unit efficiency found during M&V visit.

The savings from GREM are calculated as:

$$kWh_{Savings} = N \times HRC\_Load \times HRC\_Eff \times HRC\_Op\_Hours$$

$$kW_{Peak\ Reduction} = N \times HRC\_Load \times HRC\_Eff \times CF$$

Where,

$kWh_{Savings}$	= Annual Energy Savings from GREM
$kW_{Peak\ Reduction}$	= Peak Demand Reduction from GREM
N	= Number of rooms being controlled
HRC_Load	= Capacity of a typical AC unit per room, 1 Ton[20]
HRC_Eff	= Efficiency of AC unit, 1.139 kW/Ton
HRC_Op)Hours	= Annual operating hours reduced by GREM, 500 hours/room

[20] SPS Cooling Efficiency Technical Assumptions estimates a typical hotel room has 1.42 Ton AC unit rated at 1.115 kW/Ton. The evaluators found the average size is 1 Ton and the weighted average efficiency of packaged terminal units is 1.457 kW/Ton during M&V visit

CF = Coincident Factor, 6%

The table shown below presents expected and realized energy savings for the GREM project.

Savings Calculations

Measure	Quantity	Capacity (Tons)	Efficiency (kW/Ton)	Hours Reduced	Coincident Factor	Realized kWh Savings	Realized kW Peak Demand Reduction
GREM	18	1.00	1.139	322	0.06	6,597	1.22
					Total	**6,597**	**1.22**

Results

Verified Gross Savings/Realization Rates

Measure	kWh Savings			kW Reduction		
	Expected	Realized	Realization Rate	Expected	Realized	Realization Rate
GREM	9,177	6,597	72%	1.71	1.22	72%
Total	**9,177**	**6,597**	**72%**	**1.71**	**1.22**	**72%**

The project level realization rate is 72%. The project has lower realization rate because the equipment installed on site is more efficient than the efficiency listed in the SPS Technical Assumptions. The weighted average of the efficiency for the facility (1.139 kW/Ton per room) is more efficient than the value from the Technical Assumptions (1.583 kW/Ton/Room). The more efficient air conditioning units produce fewer saving from GREM.

The evaluators approached this project using three different methods: building simulation analysis, billing analysis, and the suggested load reduction from the Cooling Efficiency Technical Assumptions. The building simulation analysis and the billing analysis both shown significantly less savings compare to ex ante savings, however, these results will not be applied due to significant uncertainty found in the results.

Comparison of Savings and Realization Rates by Different Analysis Method

	Ex Ante	Technical Assumptions Method with the Site Specific Parameters		Billing Analysis		Building Simulation Analysis	
		Ex Post	Realization Rate	Billing Analysis	Realization Rate	Simulation	Realization Rate
Annual Savings	9,177	6,597	72%	3,427	37%	1,764	19%

The evaluator's first approach was using the building simulation analysis. The evaluators used Energy Plus building energy model simulation to calculate the savings.

The direct monitoring approach is not feasible because this would require deploying monitoring equipment in nearly as many as the number of rooms due to difference in monitoring data from different rooms (high standard deviations). Therefore, the evaluators set up numerous simulations similar to Monte Carlo simulation method with boundary conditions. The boundary conditions are the estimated hourly occupancy rates and the annual average vacancy rates. Based on the interview with the facility management staff, this facility used to instruct housekeeping crews to turn off AC units upon check-outs, and to not change the AC settings if the guest is room still in use. Therefore, the majority of savings come from the reduction in daytime AC operating hours when the guestroom is in use but the guest away. The Energy Plus motel model that the evaluators created contains 43 rooms and a lobby. The lobby runs 24/7 and the 43 guestrooms operate in one of 4 randomly created annual schedules, which is mixture of 12 randomly created weekly schedules based on the facility manager interview. The weekly schedules contain one of 4 randomly created hourly temperature schedules or the room is vacant. Finally, the simulation was performed four times to take in account the different building orientation. The savings value from this analysis is the average kWh savings per room. The evaluators calibrated the building using the actual billing data with an assumption of 40% vacancy rate throughout the year. The resulting savings had a 19% realization rate. However, due to the lack of facility-specific monitored data, we have opted not to apply this rate. This measure has been flagged as needing further research and metering.

The second method the evaluators performed was the billing analysis. The evaluators received the facility billing data for 17 months prior to the installation and seven months of post installation. The evaluators completed a regression analysis using the billing data with the actual heating and cooling degree days and the resulting savings had a -37% realization rate. The billing analysis has larger uncertainty because the dominant factor on billing is the vacancy rate. The vacancy rate is sensitive information which is difficult to collect from the site.

Lastly, the evaluators decided to use the method listed on the Cooling Efficiency Technical Assumptions with the parameters found during M&V visit because the other two methods are inconclusive at this point and further study is needed.

Project Number OID-2078958
Program Business Comprehensive
Component Cooling Efficiency

Project Background

The participant is a new construction retail facility that received incentives from SPS for implementing energy efficiency measures. On-site, the evaluators verified the participants had installed:

- (4) High efficiency 4.63 Ton Packaged AC Units

M&V Methodology

The evaluators verified the installation of high efficiency air conditioning units. Savings from the HVAC measures were calculated using KEMA's work papers New Mexico's 2013 Technical Resource Manual (TRM) for ex ante calculations of energy efficient HVAC equipment. The EFLH and PCF were calculated for the building type "Retail" in the Roswell climate zone.

CA DEER 2008 Building Type	*Weather Zone*	*EFLH*	*PCF*
Small Retail	Roswell	1,438	0.0005

Savings Calculations

The following prescriptive method was used to calculate this portion of the savings. Savings for units under 5.4 tons are determined with the following equation,

$$kWh\ Savings = Capacity \times EFLH \times Conversion\ Constant \times \left(\frac{1}{SEER_{Base}} - \frac{1}{SEER_{Post}}\right)$$

$$kW\ Savings = Capacity \times Conversion\ Constant \times \left(\frac{1}{EER_{Base}} - \frac{1}{EER_{Post}}\right)$$

Parameters for kWh Savings Calculation of HVAC Measures

Capacity	Nominal rating of packaged system, in tons
EFLH	Effective full load hours, see table below
$SEER_{base}$	Minimum required HVAC efficiency, per IECC2009. Seasonal energy efficiency ratio, nominal rating of packaged system, Btu/Wh
$SEER_{post}$	HVAC efficiency as installed. Energy efficiency ratio, nominal rating of packaged system, Btu/Wh
EER_{base}	Minimum required HVAC efficiency, per IECC2009 Energy efficiency ratio, nominal rating of packaged system, Btu/Wh
EER_{post}	HVAC efficiency as installed. Energy efficiency ratio, nominal rating of packaged system, Btu/Wh
Conversion Constant	12,000 Btuh/ton x 1/1000 kW/W

Following this, the evaluators calculated peak kW savings. This is based upon a EPE-defined peak of 3:00 – 6:00 PM during summer weekdays. Peak kW savings are calculated as:

$$Peak\ kW\ Savings = \left(\frac{1}{(S)EER_{base}} - \frac{1}{(S)EER_{post}}\right) * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of HVAC Measures

ERP_{base}	Minimum required HVAC efficiency, per IECC2009
ERP_{post}	HVAC efficiency as installed
PCF	Peak Coincident Factor

HVAC kWh Savings Calculations

Measure	Quantity	Tons	EFLH	SEER		Expected kWh Savings	Realized kWh Savings	Realization Rate
				Base	Post			
Unitary and Split Air Conditioning Systems and Air Source Heat Pumps: < 65,000 Btu/h (5.4 tons)	4	4.63	1,438	13.00	14.75	3,682	2,919	79.3%
					Total	**3,682**	**2,919**	**79.3%**

HVAC kW Savings Calculations

Measure	Quantity	Tons	PCF	SEER		Expected kW Savings	Realized kW Savings	Realization Rate
				Base	Post			
Unitary and Split Air Conditioning Systems and Air Source Heat Pumps: < 65,000 Btu/h (5.4 tons)	4	4.63	0.0005	13.00	14.75	2.32	1.46	62.9%
					Total	**2.32**	**1.46**	**62.9%**

Results

The realization rate for OID-2078958 is savings is 79.3% for kWh savings and 62.9% for kW savings. The lower kWh savings is due to the ex post calculations using a lower SEER value for the HVAC units than the ex ante calculations claimed.

Verified Gross Savings/Realization Rates

Measure	Verified			
	kWh	Peak kW	kW	kWh
(4) Packaged AC Units	2,919	1.46	62.9%	79.3%
Total	**2,919**	**1.46**	**62.9%**	**79.3%**

12.2 Custom Efficiency

Project Number OID-1893645
Program Business Comprehensive
Component Custom Efficiency

Executive Summary

The participant is an oil company that received incentives from SPS for the installation of a 700 Hp VFD on a reciprocating acid gas compressor. On site the evaluators verified installation of the VFD and that the compressor specifications matched project documentation. Gross kWh realization for this project is 100%.

M&V Methodology

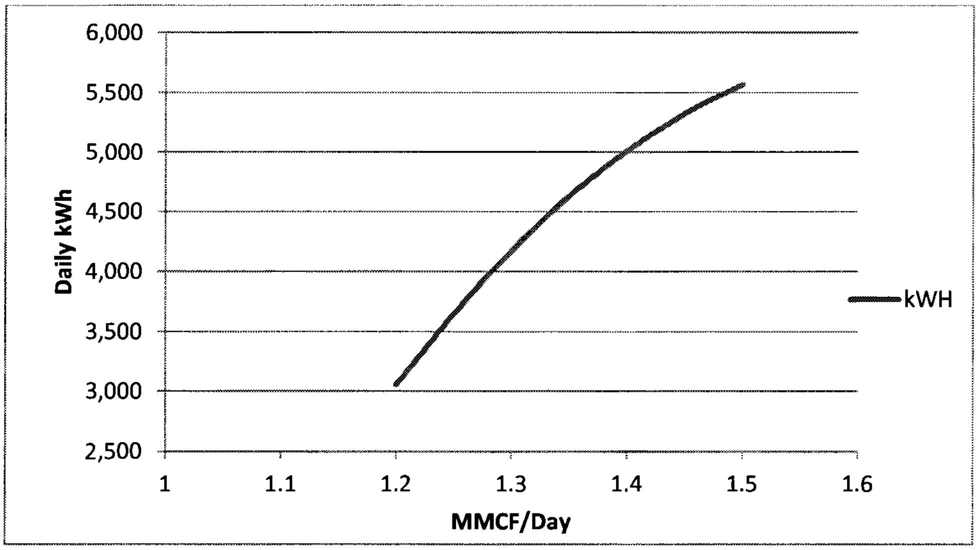
During the site visit, the evaluators verified the installation of the 700 Hp VFD on the sour gas compressor. During the oil production process, gas, oil and salt water is extracted from the oil wells. Upon reaching the treatment plant, the gases are stripped from the oil and separated into two categories "sweet" and "sour." Sweet gases are considered to be profitable gas for the company (propane is an example). Sour gases have no monetary value and must be disposed of properly due to their potential health hazards as the gases are considered acidic.

The acid gas compressor is used to compress the unwanted gas back into a large geological void under New Mexico. In the baseline, the compressor uses a by-pass loop to regulate its capacity against a given discharge pressure. This control method is energy intensive as the compressor demand remains relatively constant during bypass. The addition of the VFD allows the compressor to modulate its output more effectively as the speed of the motor is regulated. This eliminates excess energy from being wasted as in by pass mode.

Savings Calculations

As-built compressor energy consumption was monitored using WattNode data loggers installed by the evaluator's technicians. The loggers were set to record the kW demand at 5 minute interviews. The loggers were left in place for approximately a month after the commissioning of the well was completed and operating normally. In order to correlate the compressor operation with production, daily production data for the monitoring period was provided as well. When comparing the monitored daily kWh of the compressor and the daily volume of gas being injected, the following efficiency curve for the compressor was calculated:

Compressor Power and Output Correlation



Acid gas production data for the monitoring period remained relatively constant. Using the average daily production from the monitoring period the annual energy consumption of the VFD equipped compressor was calculated using the above efficiency curve.

Normally a sour gas compressor would be placed in the by-pass mode to determine the baseline kW demand. However, the site did not install a back-up bypass system on the compressor in case of a VFD failure. Therefore; the baseline compressor demand was calculated through the use of the manufacturer specifications sheets and facility provided well injection pressures. Manufacturer specification sheets and were supplied for two different well pressures. Using a linear interpolation, the kW demand was calculated for the average well pressure during the monitoring period. The following table provides the average baseline kW demand based on well pressure:

Baseline Compressor kW

	Pressure #1	Pressure #2	Actual
Suction (psig)	5	5	5
Discharge (psig)	1,700	1,300	1,615
RPM	885	885	885
BHP	447	426	442.56
Flow (MMSCFD)	1.375	1.377	1.375
Power (Hp)	447.00	426.00	442.56
Motor Eff	96.03%	96.04%	96.03%
Motor Power (kW)	347.26	330.91	343.80

During by-pass the compressor's average demand would be 343.80 kW, it is also assumed that the compressor demand remains constant throughout the by-pass control range. The annual energy consumption for the baseline compressor control is the average kW multiplied by the annual hours of operation, resulting in 2,951,467 kWh.

Results

It was calculated that the installation of the VFD decreases annual energy consumption by 1,207,222 kWh and a demand reduction of 159.61 kW, resulting in a realization rate of 100%.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
Compressor VFD	1,207,222	159.61	1,207,222	159.61	100%	100%
Total	**1,207,222**	**159.61**	**1,207,222**	**159.61**	**100%**	**100%**

The high realization rate can be attributed to the ex ante calculations assuming the well would operate at a pressure of 1,150 psi. Logs provided by the site, showed that the average injection pressure of the well was 1,615 psi resulting in a higher baseline compressor demand.

Project Number OID-1969160
Program Business Comprehensive
Component Custom Efficiency

Project Background

The participant is a manufacturing facility that received incentives from SPS for implementing energy efficient lighting. The evaluators verified the participant had installed:

- (73) 237W High Bay LED fixtures, replacing 750W metal halide fixtures; and
- (44) 237W High Bay LED fixtures with occupancy sensors, replacing 750W metal halide fixtures.

M&V Methodology

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and PNM peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	CA DEER 2008 Space Type	Annual Hours – Non-CFLs	Annual Hours – CFLs	HCEF	HCDF	PCF
Light Industrial	Comm/Ind Work Area(Conditioned)	8,760	8,760	1.028	1.338	1.00

Savings Calculations

Using deemed values from the table above, the evaluators 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
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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

When occupancy sensors and interior daylighting controls are present, post operating hours are derived with the following equation:

$$OperatingHours_{POST} = OperatingHours_{BASE} * (1 - ControlFactor)$$

Lighting Controls Reduction in Operating Hours

Occupancy Sensor	30%
Daylighting, continuous dimming	30%
Daylighting, multi-step dimming	20%
Daylighting, On/Off	10%

The evaluators verified that when the space is vacant, the fixtures with occupancy sensors dim to 33% of normal light output.

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
750W MH to 237W LED - Non-Int. Ballast	73	73	812	237	8,760	8,760	489,808	377,997	1.028	77.2%
750W MH to 237W LED - Non-Int. Ballast	44	44	812	190	8,760	6,132	185,574	269,153	1.028	145.0%
						Total	**675,382**	**647,150**		**95.8%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
750W MH to 237W LED - Non-Int. Ballast	73	73	812	237	1.00	1.00	55.91	56.16	1.338	100.4%
750W MH to 237W LED - Non-Int. Ballast	44	44	812	190	1.00	0.65	36.46	40.55	1.338	111.2%
						Total	**92.38**	**96.71**		**104.7%**

Results

The kWh realization rate for OID-1969160 is 95.8% and the kW realization rate is 104.7%. The decrease in kWh savings is due to the ex post calculations using a lower HCEF value, as per the CA 2008 DEER guidelines for the building type. The increase in kW savings is due to the ex post calculation using a higher HCDF value, as per the CA 2008 DEER guidelines. The decrease in post retrofit PCF also contributed to the higher kW realization rate.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
750W MH to 237W LED - Non-Int. Ballast	377,997	56.16	77.2%	100.4%
750W MH to 237W LED - Non-Int. Ballast	269,153	40.55	145.0%	111.2%
Total	**647,150**	**96.71**	**95.8%**	**104.7%**

Project Number	OID-1719344
Program	Business Comprehensive
Component	Custom Efficiency

Executive Summary

The participant received incentives from SPS for the installation of a new direct digital controls system on their HVAC system. On site, the evaluators verified installation of the DDC system and verified the newly implemented control strategies. Gross kWh realization for this project is 102%.

M&V Methodology

The evaluators visited the facility and confirmed the installation of the DDC system. During the M&V visit, site specific construction details were collected in order to inform the eQuest simulation used to calculated ex post energy savings. These details included building construction, window construction, floor layout, HVAC zoning, HVAC equipment nameplates, and building space utilization. The evaluators gathered screen shots of the DDC system showing implemented control strategies along with; HVAC sequence of operation, temperature set points, and typical hours of operation.

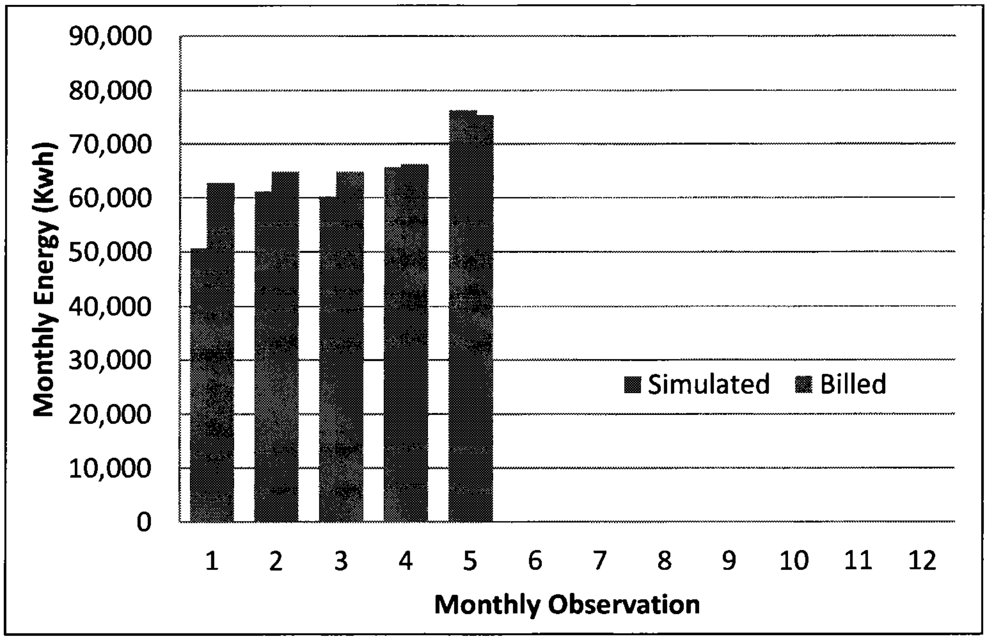
Site contacts were interviewed to determine baseline control strategies and identify the implemented control strategies. From the interviews, the evaluators identified that the DDC system allowed for the implementation of the following control strategies:

- Unoccupied space temperature setback;
- Chilled water temperature reset;
- Supply air temperature reset; and
- Elimination of simultaneous heating and cooling.

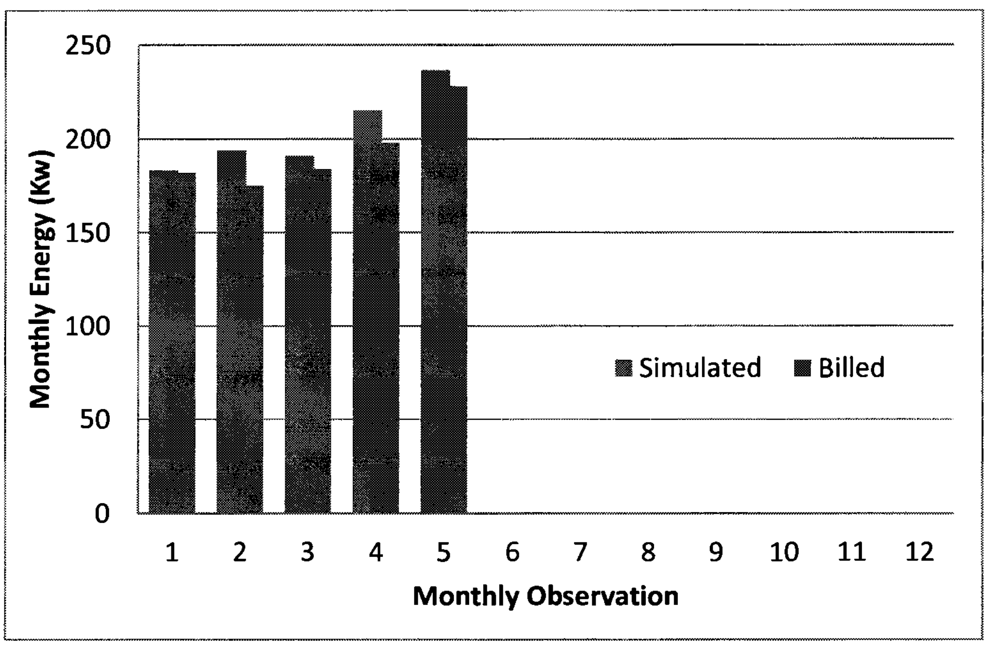
Savings Calculations

The ex post electrical savings were calculated using a calibrated eQUEST (ver. 3-64) computer simulation model, which was compiled based upon the fore mention collected details. The simulation was first built using the as-built DDC system control strategy. The model was then calibrated using billing data and 2014 weather data for the area. The results of the calibration effort are shown below:

eQuest As-Built kWh Calibration



eQuest As-Built kW Calibration



The baseline model was created by removing the control strategies offered by the installed DDC system. The baseline controls used in the simulation were determined through interviews with site contacts. Parametric runs were used to make the appropriate changes within the model, in which the model was run using TMY3 weather. The annual savings is the difference between the annual consumption of the baseline and as-built eQuest model, which can be seen in the following table:

Annual kWh Energy Savings

End Use	Baseline	As-Built	Savings
Lighting	321,210	321,210	0
Misc. Equipment	239,899	239,899	0
Heating	46,406	6,002	40,404
Cooling	286,426	178,316	108,110
Heat Rejection	13,416	9,074	4,342
Pumps	47,460	18,125	29,335
Fans	128,248	69,400	59,028
DHW	0	0	0
Exterior	38,877	38,877	0
Total	**1,122,121**	**880,902**	**241,219**

Results

It was calculated that the installation of the DDC system, decreases annual energy consumption by 241,219 kWh and a demand reduction of 7.58 kW resulting in a realization rate of 102%.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
DDC System	235,674	3.92	241,219	7.58	102%	193%
Total	**235,674**	**3.92**	**241,219**	**7.58**	**102%**	**193%**

Project Number OID-1878293
Program Business Comprehensive
Component Custom Efficiency

Project Background

The participant is farm that received incentives from SPS for installing a new VFD on a 125 HP irrigation pump. The pumps originally had no flow control and would run at a constant speed; therefore the flow produced by the pumps is a function of the downstream head of the system. The flow versus head function is defined by the pump's operating curve.

The purpose of the installing the VFD is to adjust the pump motor's speed to adequately and more precisely match the irrigation system's required pumping output. Originally, the flow to the sprinkler pivot was controlled through the use of a throttling valve.

M&V Methodology

The savings evaluated via onsite verification and monitoring of the VFD equipped pump. Monitoring was completed using WattNode loggers which monitor actual kW demand at a specified interval. The GPM of the pump was determined using the pump curve specification sheet provided by the site, and did not change after the retrofit. Since the pump has a separate utility meter, billing data was provided to offer a means to extrapolate pump operation to a typical year. The evaluators received two years of billing data.

Savings Calculations

The post kW usage was determined creating a polynomial equation based on the pump curve graph. Using the above mentioned savings values the following equations were used to determine savings for the site at hand:

$$kWh_{Savings} = (-7 \times 10^{-9}\, x^3 + 1.8 \times\ 10^{-5} x^2 +\ 0.0082x\ +\ 37.06) \times Hour\ of\ Operation$$

Parameters for Annual kWh Savings Calculation

$kWh_{Savings}$	Annual kWh savings for installation of VFD
HP_{Motor}	Name plate horsepower of motor being controlled
x	GPM

Following this, the evaluator calculated peak kW savings. This is based upon a PNM-defined peak of 3:00 – 6:00 PM during summer weekdays.

$$kW_{Reduction} = -7 \times 10^{-9}\, x^3 + 1.8 \times\, 10^{-5}x^2 +\, 0.0082x \,+\, 37.06$$

Parameters for Peak kW Reduction Calculation

$kW_{Reduction}$	Peak kW reduction for installation of VFD
HP_{Motor}	Name plate horsepower of motor being controlled

Results

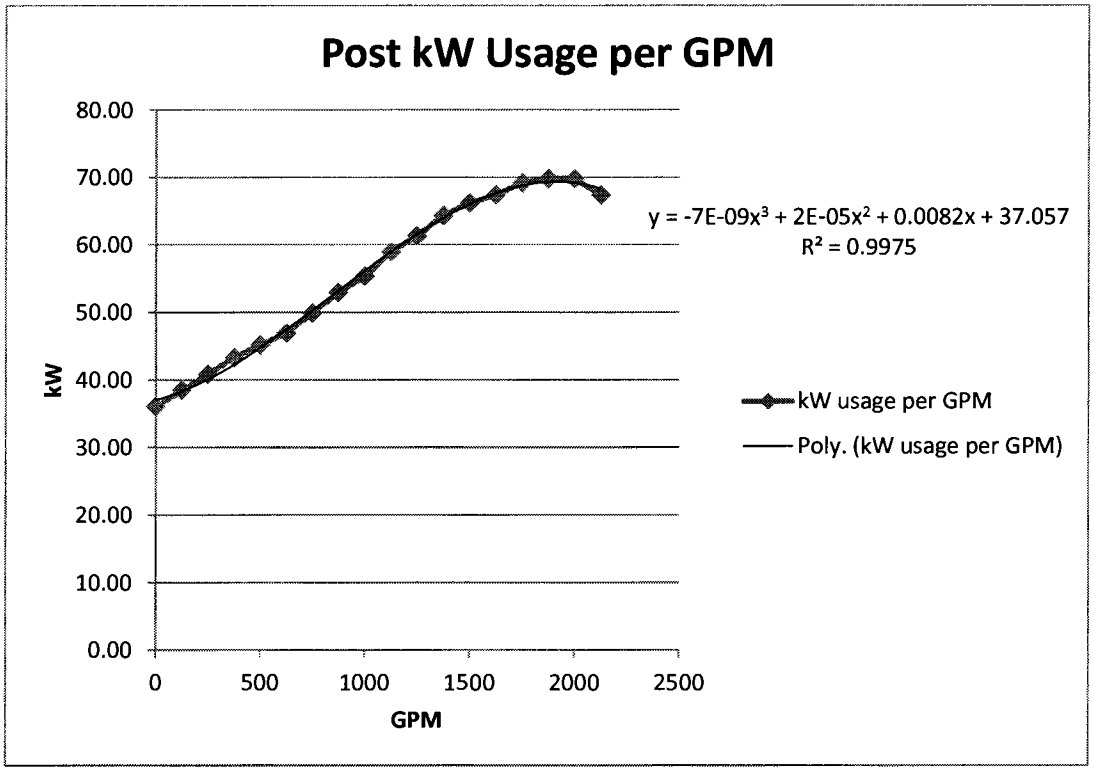
The kWh realization rate for the project is 120% and the kW realization rate is 99.97%. The high kWh realization rate can be attributed to the prescriptive based methods used in the ex-ante calculations. The ex post calculations used monitoring data from the pump when it was at maximum capacity and extrapolated the annual kWh savings based on the provided monthly billing data. The ex ante did not give consideration to the seasonal operation of the pump.

Verified Gross Savings & Realization Rates

Measure	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
VFD Irrigation Pump	117,472	35.38	140,952	34.99	120.0%	99.97%
Total	**117,472**	**35.38**	**140,952**	**34.99**	**120.0%**	**99.97%**

Appendix

Hours of Use Charts



Project Number OID-1910128
Program Business Comprehensive
Component Custom Efficiency

Project Background

The participant is a hotel facility that received incentives from SPS for implementing energy efficient lighting. On-site, the evaluators verified the participant had installed:

- (25) 85W LED fixtures, replacing 400W metal halide fixtures.

M&V Methodology

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and PNM peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	CA DEER 2008 Space Type	Annual Hours – Non-CFLs	Annual Hours – CFLs	HCEF	HCDF	PCF
Hotel	Exterior	4,313	4,313	1.000	1.000	0.00

Savings Calculations

Using deemed values from the table above, the evaluators 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
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
400W MH to 85W LED - Non-Int. Ballast	25	25	453	85	4,313	4,313	40,406	39,677	1.000	98.2%
						Total	**40,406**	**39,677**		**98.2%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
400W MH to 85W LED - Non-Int. Ballast	25	25	453	85	0.00	0.00	0.00	0.00	1.000	N/A
						Total	**0.00**	**0.00**		**N/A**

Results

The kWh realization rate for OID-1901028 is 98.2%.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
400W MH to 85W LED - Non-Int. Ballast	39,677	0.00	98.2%	N/A
Total	**39,677**	**0.00**	**98.2%**	**N/A**

12.3 Lighting

Project Number OID-1798148
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is a library building that received incentives from SPS for installing energy efficient lighting as part of a 28,000 ft.^{2} new construction project.

- (104) 1-lamp 32W CFL;
- (31) 2-lamp 42W CFL;
- (2) 1-lamp 26W CFL;
- (30) 1-lamp 42W CFL;
- (2) 1-lamp 18W CFL;
- (9) 1-lamp 26W CFL; and
- (5) 3-lamp 42W CFL.

M&V Methodology

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and SPS peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	CA DEER 2008 Space Type	Annual Hours – Non-CFLs	Annual Hours – CFLs	HCEF	HCDF	PCF
Community College	Comm/Ind Work Area	3,078	2,740	1.198	1.479	0.76

Savings Calculations

Using deemed values from the table above, the evaluators 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
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
120W Inc. to 1L 32W CFL Twin	104	104	120	34	2,740	2,740	73,449	29,359	1.198	40.0%
100W MH to 2L 42W CFL Multi 4-Pin	62	31	108	93	2,740	2,740	31,313	12,516	1.198	40.0%
100W Inc. to 1L 26W CFL Twin	2	2	72	27	2,740	2,740	739	295	1.198	39.9%
100W MH to 1L 42W CFL Multi 4-Pin	30	30	108	46	2,740	2,740	15,274	6,105	1.198	40.0%
60W Inc. to 1L 18W CFL Multi	2	2	43	18	2,740	2,740	411	164	1.198	39.9%
100W Inc. to 1L 26W CFL Multi	9	9	72	26	2,740	2,740	3,400	1,359	1.198	40.0%
100W MH to 3L 42W CFL Multi 4-Pin	15	5	108	140	2,740	2,740	7,555	3,020	1.198	40.0%
						Total	**132,140**	**52,818**		**40.0%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
120W Inc. to 1L 32W CFL Twin	104	104	120	34	0.76	0.76	12.47	10.05	1.479	80.6%
100W MH to 2L 42W CFL Multi 4-Pin	62	31	108	93	0.76	0.76	5.32	4.29	1.479	80.7%
100W Inc. to 1L 26W CFL Twin	2	2	72	27	0.76	0.76	0.13	0.10	1.479	79.7%
100W MH to 1L 42W CFL Multi 4-Pin	30	30	108	46	0.76	0.76	2.59	2.09	1.479	80.6%
60W Inc. to 1L 18W CFL Multi	2	2	43	18	0.76	0.76	0.07	0.06	1.479	86.0%
100W Inc. to 1L 26W CFL Multi	9	9	72	26	0.76	0.76	0.58	0.47	1.479	81.4%
100W MH to 3L 42W CFL Multi 4-Pin	15	5	108	140	0.76	0.76	1.28	1.03	1.479	80.3%
Total							**22.44**	**18.09**		**80.6%**

Results

The kWh realization rate for OID-1798148 is 40.0% and the kW realization rate is 80.6%. The kWh realization rate is low mainly because the verified hours of operation (2,740) are lower than those used to perform the ex ante calculations (5,010). The evaluators used to SPS's New Mexico Technical Assumptions workpaper to determine the baseline fixtures for this new construction project.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
120W Inc. to 1L 32W CFL Twin	29,359	10.05	40.0%	80.6%
100W MH to 2L 42W CFL Multi 4-Pin	12,516	4.29	40.0%	80.7%
100W Inc. to 1L 26W CFL Twin	295	0.10	39.9%	79.7%
100W MH to 1L 42W CFL Multi 4-Pin	6,105	2.09	40.0%	80.6%
60W Inc. to 1L 18W CFL Multi	164	0.06	39.9%	86.0%
100W Inc. to 1L 26W CFL Multi	1,359	0.47	40.0%	81.4%
100W MH to 3L 42W CFL Multi 4-Pin	3,020	1.03	40.0%	80.3%
Total	**52,818**	**18.09**	**40.0%**	**80.6%**

Project Number OID-1831483
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is a theater that received incentives from SPS for installing energy efficient lighting as part of a 48,200 ft.^{2} new construction project.

M&V Methodology

Savings from the lighting measures were calculated using New Mexico Technical Resource Manual for lighting power density.

The evaluators found some lighting fixture counts deviated from those listed in the project application. Verified fixture counts were used in ex post savings calculations. Savings were then calculated using annual hours of operation based on a facility schedule from facility staff interviews and CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and SPS peak parameters. The deemed values used in calculating savings are presented in the table below.

Custom and Deemed Savings Parameters

CA DEER 2008 Building Type	*CA DEER 2008 Space Type*	*Annual Hours – CFLs*	*HCEF*	*HCDF*	*PCF*
Assembly	Auditorium	607	1.254	1.216	0.50

Savings Calculations

Measure 1: Lighting Power Density Reduction

Using values from the Deemed Savings Parameters table above, the evaluators calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(LPD_{base} * Hours_{base} - LPD_{post} * Hours_{post}\right) * sqft * HCEF$$

Parameters for kWh Savi ngs Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPDpost	Total Wattage for fixtures / square footage / 1000 W/kW

Sqft	Square footage of the specific lighting area
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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:

$$Peak\ kW\ Savings = \left(LPD_{base} - LPD_{post}\right) * sqft * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPD_{post}	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square foot area of the specific lighting area
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

Savings from the various energy efficient measures are shown in the tables below.

LPD_{post} Calculations

Space Type	New Fixture	Wattage	Quantity	Total Wattage	Building Square Footage	Total Facility LPDbase	Total Facility LPDpost
Assembly - Auditorium	2L 26W CFL Multi 4-Pin	51	125	8,915	35,480	1.20	0.25
Assembly - Auditorium	2L 26W CFL Multi 4-Pin	51	10				
Assembly - Auditorium	1L 32W CFL Multi 4-Pin	35	58				
	Total	**102**	**135**	**8,915.00**	**35,480**	**1.20**	**0.25**

LPD kWh Savings Calculations

Space	Total Wattage	LPDbase	LPDpost	Sq. Ft.	Hours	Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
Assembly - Auditorium	8,915.00	1.20	0.25	35,480	607	86036	75,948	1.254	88.27%
Total	**8,915**	**1.20**	**0.25**	**35,480**	**1,747**	**86,036**	**75,948**	**1.254**	**88.27%**

LPD kW Savings Calculations

Space	LPD		Sq. Ft.	PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post		Base	Post				
Assembly - Auditorium	1.20	0.25	35,480	0.50	0.50	43.44	25.89	1.129	59.58%
Total	**1.20**	**0.25**	**35,480**	**0.50**	**0.50**	**43.44**	**25.89**	**1.216**	**59.58%**

Results

The overall kWh realization rate for OID-183143 is 88.3% and the kW realization rate is 59.6%. The kWh and kW realization rates are low due to evaluators verifying a higher lighting power density (LPD) in the space as well as lower facility hours of operation than specified in SPS's Technical Manual for a space classified as "Other/Miscellaneous." The ex post calculations used a lower building area than the total building area because approximately 12,720 $ft.^2$ out of the total 48,200 $ft.^2$ had lighting which was not in the rebate. The ex post baseline LPD was taken from the IECC 2009 standards with New Mexico Amendments. The ex post calculations used a lower coincidence factor than was listed for "Other/Miscellaneous" space type in the Technical Manual. In addition, the evaluators did not verify (10) 32W LED fixtures.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
LPD Improvement	75,948	25.89	88.3%	59.9%
Total	**75,948**	**25.89**	**88.3%**	**59.9%**

Project Number OID-1438223
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is a warehouse facility that received incentives from SPS for implementing energy efficient lighting. On-site, the evaluators verified the participant had installed:

- (87) 15W LED lamps, replacing (87) 75W incandescent lamps;
- (56) 12W LED lamps, replacing (56) 65W incandescent lamps;
- (15) 10W LED lamps, replacing (15) 50W incandescent lamps; and
- (40) 5W LED lamps, replacing (40) 25W incandescent lamps.

M&V Methodology

The evaluators found some lighting fixture counts deviated from those listed in the project application. Verified fixture counts were used in ex post savings calculations. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and PNM peak parameters. The deemed values used in calculating savings are presented in the table below

Deemed Savings Parameters

CA DEER 2008 Building Type	CA DEER 2008 Space Type	Annual Hours – Non-CFLs	Annual Hours – CFLs	HCEF	HCDF	PCF
Sit-down Restaurant	Dining Area	4,836	4,836	1.243	1.274	0.80

Savings Calculations

Using deemed values from the table above, the evaluators 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
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluatos 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

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
75W Inc. to 15W LED - Int. Ballast	87	87	53	15	4,836	4,836	17,004	19,873	1.243	116.9%
65W Inc. to 12W LED - Int. Ballast	56	56	65	12	4,836	4,836	19,315	17,841	1.243	92.4%
50W Inc. to 10W LED - Int. Ballast	15	15	50	10	4,836	4,836	3,137	3,607	1.243	115.0%
25W Inc. to 4.8W LED - Int. Ballast	40	40	25	4.8	4,836	4,836	3,691	4,857	1.243	131.6%
						Total	**43,147**	**46,178**		**107.0%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
75W Inc. to 15W LED - Int. Ballast	87	87	53	15	0.80	0.80	4.90	3.37	1.274	68.7%
65W Inc. to 12W LED - Int. Ballast	56	56	65	12	0.80	0.80	5.57	3.02	1.274	54.2%
50W Inc. to 10W LED - Int. Ballast	15	15	50	10	0.80	0.80	0.90	0.61	1.274	67.5%
25W Inc. to 4.8W LED - Int. Ballast	40	40	25	4.8	0.80	0.80	1.06	0.82	1.274	77.1%
						Total	**12.44**	**7.82**		**62.9%**

Results

The kWh realization rate for OID-1438223 is 107.0% and the kW realization rate is 66.9%. The kWh realization rate is high due to the ex post calculations using higher hours of use for the space type, as per the CA DEER 2008 guidelines. The kW realization rate is low due to the 35 LED lamps which failed verification: The evaluator was not able to verify the following:

- (10) 15W LED lamps in the dining area
- (23) 12W LED lamps in the dining area
- (2) 10W LED lamps in the dining area

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
75W Inc. to 15W LED - Int. Ballast	19,873	3.37	116.9%	68.7%
65W Inc. to 12W LED - Int. Ballast	17,841	3.02	92.4%	54.2%
50W Inc. to 10W LED - Int. Ballast	3,607	0.61	115.0%	67.5%
25W Inc. to 4.8W LED - Int. Ballast	4,857	0.82	131.6%	77.1%
Total	**46,178**	**7.82**	**107.0%**	**62.9%**

Project Number OID1794610
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is a warehouse facility that received incentives from SPS for implementing energy efficient lighting. On-site, the evaluators verified the participant had installed:

- (43) 4' 5-lamp T5HO fixtures, replacing (43) 400W metal halide fixtures.

M&V Methodology

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and PNM peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	*CA DEER 2008 Space Type*	*Annual Hours – Non-CFLs*	*Annual Hours – CFLs*	*HCEF*	*HCDF*	*PCF*
Light Industrial	Comm/Ind Work Area (Unconditioned)	3,068	2,613	1.000	1.000	0.83

Savings Calculations

Using deemed values from the table above, the evaluators 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

HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
400W MH to 4' 6L T5HO	43	43	453	298	3,068	3,068	24,917	20,448	1.000	82.1%
						Total	**24,917**	**20,448**		**82.1%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
400W MH to 4' 6L T5HO	43	43	453	298	0.83	0.83	4.05	5.50	1.000	136.0%
						Total	**4.05**	**5.50**		**136.0%**

Results

The kWh realization rate for OID1794610 is 82.1% and the kW realization rate is 136.0%. The kWh and kW savings increased in the ex post calculations because the evaluators verified 4' 5-lamp T5 fixtures instead of 4' 6-lamp T5 as claimed in the ex ante calculations. In addition, the ex post calculations used lower hours of use for the space type, as per CA DEER 2008 guidelines.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
400W MH to 4' 6L T5HO	20,448	5.50	82.1%	136.0%
Total	**20,448**	**5.50**	**82.1%**	**136.0%**

Project Number OID1831615
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is a warehouse facility that received incentives from SPS for installing energy efficient lighting as part of an 11,300 $ft.^2$ new construction project.

M&V Methodology

Savings from the lighting measures were calculated using New Mexico Technical Resource Manual for lighting power density.

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and SPS peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	*CA DEER 2008 Space Type*	*Annual Hours – Non-CFLs*	*Annual Hours – CFLs*	*HCEF*	*HCDF*	*PCF*
Light Industrial	Comm/Ind Work Area	3,068	2,613	1.000	1.000	0.83

Savings Calculations

Measure 1: Lighting Power Density Reduction

Using values from the Deemed Savings Parameters table above, the evaluators calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(LPD_{base} * Hours_{base} - LPD_{post} * Hours_{post}\right) * sqft * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPDpost	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square footage of the specific lighting area
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures

HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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:

$$Peak\ kW\ Savings = \left(LPD_{base} - LPD_{post}\right) * sqft * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPD_{post}	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square foot area of the specific lighting area
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

Savings from the various energy efficient measures are shown in the tables below.

LPD_{post} Calculations

Space Type	New Fixture	Wattage	Quantity	Total Wattage	Building Square Footage	Total Facility LPDbase	Total Facility LPDpost
Storage - Storage (Unconditioned)	4' 6L T5HO	362	32	11,809.60	11,300	0.80	1.05
Storage - Storage (Unconditioned)	9.4W LED - Int. Ballast	9.4	24				
Total		**371.4**	**56**	**11,809.60**	**11,300**	**0.80**	**1.05**

LPD kWh Savings Calculations

Space	Total Wattage	LPDbase	LPDpost	Sq. Ft.	Hours	Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
Storage - Storage (Unconditioned)	11,809.60	0.80	1.05	11,300	3,428	10,603	-9,685	1.000	0%
Total	**11,809.60**	**0.80**	**1.05**	**11,300**	**3,428**	**10,603**	**-9,685**	**1.000**	**0%**

LPD kW Savings Calculations

Space	LPD		Sq. Ft.	PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post		Base	Post				
Storage - Storage (Unconditioned)	0.80	1.05	11,300	0.70	0.70	5.11	-1.98	1.000	0%
Total	**0.80**	**1.05**	**11,300**	**0.70**	**0.70**	**5.11**	**-1.98**	**1.000**	**0%**

Results

The overall kWh realization rate for OID-1831615 is 0% and the kW realization rate is 0%. The evaluators verified that this was a warehouse built for residential use on commercial property and cannot credit the commercial program with these savings. The realization rate will not be extrapolated to other sites in the Business Lighting Efficiency program.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
LPD Improvement	0.00	0.00	0.00%	0.00%
Total	**0.00**	**0.00**	**0.00%**	**0.00%**

Project Number OID-2058406
Program Business Comprehensive
Component Business Lighting

Project Background

The participant is a retail facility that received incentives from SPS for installing energy efficient lighting as part of a new construction project. On-site, the evaluators verified the participant had installed:

- (13) 15W LED fixtures in reach-in coolers;
- (10) 7.5W LED fixtures in reach-in coolers; and
- (112) 4' 4-lamp T8 fixtures.

M&V Methodology

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and SPS peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	*CA DEER 2008 Space Type*	*Annual Hours – Non-CFLs*	*Annual Hours – CFLs*	*HCEF*	*HCDF*	*PCF*
Grocery	Reach-in Cooler	4,964	3,942	1.250	1.250	0.70
Small Retail	Sales area	3,378	4,013	1.210	1.335	0.88

Savings Calculations

Measure 1: Fixture-to-fixture Reduction

Using deemed values from the table above, the evaluators 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
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 1L T8 HLO to 15W LED - Non-Int. Ballast	13	13	36	15	8,760	4,964	N/A	3,915	1.250	N/A
4' 1L T8 HLO to 7.5W LED - Non-Int. Ballast	10	10	36	8	8,760	4,964	N/A	3,477	1.250	N/A
						Total	**N/A**	**7,392**		**N/A**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
4' 1L T8 HLO to 15W LED - Non-Int. Ballast	13	13	36	15	0.70	0.70	N/A	0.24	1.250	N/A
4' 1L T8 HLO to 7.5W LED - Non-Int. Ballast	10	10	36	8	0.70	0.70	N/A	0.25	1.250	N/A
						Total	**N/A**	**0.49**		**N/A**

Measure 2: Lighting Power Density Reduction

Using values from the Deemed Savings Parameters table above, the evaluators calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(LPD_{base} * Hours_{base} - LPD_{post} * Hours_{post}\right) * sqft * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPDpost	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square footage of the specific lighting area
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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:

$$Peak\ kW\ Savings = \left(LPD_{base} - LPD_{post}\right) * sqft * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPD_{post}	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square foot area of the specific lighting area
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

Savings from the various energy efficient measures are shown in the tables below.

LPD_{post} Calculations

Space Type	*New Fixture*	*Wattage*	*Quantity*	*Total Wattage*	*Building Square Footage*	*Total Facility LPDbase*	*Total Facility LPDpost*
Small Retail - Sales Area	4' 3L T12IS	94	112	10,528	7,425	1.50	1.42
Total			**112**	**10,528**	**7,425**	**1.50**	**1.42**

LPD kWh Savings Calculations

Space	Total Wattage	LPD		Sq. Ft.	Hours	Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
		Base	Post						
Small Retail - Sales Area	10,528	1.50	1.42	7,425	3,378	N/A	2,211	1.102	N/A
Total	**10,528**	**1.50**	**1.42**	**7,425**	**3,378**	**N/A**	**2,211**	-	**N/A**

LPD kW Savings Calculations

Space	LPD		Sq. Ft.	PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post		Base	Post				
Small Retail - Sales Area	1.50	1.42	7,425	0.88	0.88	N/A	0.63	1.117	N/A
Total	**1.50**	**1.42**	**7,425**	**0.88**	**0.88**	**N/A**	**0.63**	-	**N/A**

Results

The kWh realization rate for OID-2058406 is 99.2% and the kW realization rate is 34.0%. The kW realization rate is low due to the ex post calculations using the LDP method to calculate savings for the interior lighting fixtures, while the ex ante calculations used the Technical Assumption's fixture to fixture method to calculate savings. In addition, the ex post calculations used a lower PCF than the ex ante calculations.

Verified Gross Savings & Realization Rates

Measure	Expected		Verified		Realization Rate	
	kWh Savings	kW Savings	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
LED Case Lighting	N/A	N/A	7,392	0.49	N/A	N/A
LPD Improvement	N/A	N/A	2,211	0.63	N/A	N/A
Total	**9,677**	**3.29**	**9,603**	**1.12**	**99.2%**	**34.0%**

Project Number OID-1958635
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is an exercise center that received incentives from SPS for installing energy efficient lighting as part of a 5,000 $ft.^2$ new construction project. The evaluator verified the following was installed:

- (17) 4' 6-lamp T5 high bay fluorescent fixtures.

M&V Methodology

Savings from the lighting measures were calculated using New Mexico Technical Resource Manual for lighting power density.

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF), and Heating Cooling Demand Factor (HCDF) determined using local weather data and SPS peak parameters. The hours of operation were based on staff interviews collected by the evaluator during field visits. The values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	CA DEER 2008 Space Type	Annual Hours – Non-CFLs	Annual Hours – CFLs	HCEF	HCDF	PCF
Small Retail	Sales Area	8,760	8,760	1.230	1.335	0.88

Savings Calculations

Measure 1: Lighting Power Density Reduction

Using values from the Deemed Savings Parameters table above, the evaluators calculated lighting savings as follows:

$$Annual\ kWh\ Savings = \left(LPD_{base} * Hours_{base} - LPD_{post} * Hours_{post}\right) * sqft * HCEF$$

Parameters for kWh Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPDpost	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square footage of the specific lighting area
$Hours_{base}$	Annual Hours of Operation of Baseline Fixtures
$Hours_{post}$	Annual Hours of Operation of Installed Fixtures
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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:

$$Peak\ kW\ Savings = \left(LPD_{base} - LPD_{post}\right) * sqft * HCDF * PCF$$

Parameters for Peak Demand (kW) Savings Calculation of Lighting Retrofit Measures

LPD_{base}	Allowed ASHRAE 90.1 LPD (w/ft^2)
LPD_{post}	Total Wattage for fixtures / square footage / 1000 W/kW
Sqft	Square foot area of the specific lighting area
PCF	Peak Coincident Factor, % Time During the Peak Period in Which Lighting is Operating
HCDF	Heating Cooling Demand Interactive Factor

Savings from the various energy efficient measures are shown in the tables below.

LPD_{post} Calculations

Space Type	New Fixture	Wattage	Quantity	Total Wattage	Building Square Footage	Total Facility LPDbase	Total Facility LPDpost
Small Retail - Sales Area	4' 6L T5HO	362	17	6,154	5,000	1.50	1.23
		Total	**17**	**6,154**	**5,000**	**1.50**	**1.23**

LPD kWh Savings Calculations

Space	Total Wattage	LPDbase	LPDpost	Sq. Ft.	Hours	Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
Small Retail - Sales Area	6,154	1.50	1.23	5,000	8,760	4,213	13,033	1.102	309.35%
Total	**6,154**	**1.50**	**1.23**	**5,000**	**8,760**	**4,213**	**13,033**	-	**309.35%**

LPD kW Savings Calculations

Space	**LPD**		**Sq. Ft.**	**PCF**		**Expected kW Savings**	**Realized kW Savings**	**HCDF**	**Realization Rate**
	Base	**Post**		**Base**	**Post**				
Small Retail - Sales Area	1.50	1.23	5,000	0.88	0.88	2.13	1.40	1.117	65.7%
Total	**1.50**	**1.23**	**5,000**	**0.88**	**0.88**	**2.13**	**1.40**	-	**65.7%**

Results

The overall kWh realization rate for OID-1958635 is 309.4% and the kW realization rate is 66.8%. The ex ante calculations classified this facility's space type as Miscellaneous, so the hours of operations (3,400) used in the ex ante savings calculations were an average across all building types in the 2011 Workpapers rather than specific to the space type. The evaluators used the facility's actual hours of operation (8,760) which significantly increased the estimated annual kWh savings realization rate. The ex ante calculations used a lower HCEF (1.10) value per the Deemed Savings Technical Assumptions, and the ex post calculations used a higher HCEF value (1.109) which increased in the estimated kWh savings. The ex ante calculations used a higher HCDF value (1.30) and the ex post calculations a lower HCDF values (1.195) which decreased the estimated kW savings. The evaluator used the LPD method to calculate ex post kWh and kW savings, while the ex ante calculations used the fixture-to-fixture method in the NM Lighting Efficiency Technical Assumptions.

Verified Gross Savings & Realization Rates

Measure	**Verified**			
	kWh Savings	**kW Savings**	**kWh Realization Rate**	**kW Realization Rate**
LPD Improvement	13,033	1.40	309.4%	65.7%
Total	**13,033**	**1.40**	**309.4%**	**65.7%**

Project Number OID1944692
Program Business Comprehensive
Component Lighting Efficiency

Project Background

The participant is a light industrial facility that received incentives from SPS for implementing energy efficient lighting. On-site, the evaluator verified the participant had installed:

- (6) 4' 6-lamp HO T5 fixtures, replacing 400W metal halide fixtures.

M&V Methodology

The evaluators confirmed installation of all fixtures listed in the project application. Savings for the lighting measures were calculated using CA DEER 2008 deemed values by space type for hours of use, along with a stipulated Peak Coincident Factor (PCF), Heating Cooling Energy Factor (HCEF) and Heating Cooling Demand Factor (HCDF) determined using local weather data and PNM peak parameters. The deemed values used in calculating savings are presented in the table below.

Deemed Savings Parameters

CA DEER 2008 Building Type	CA DEER 2008 Space Type	Annual Hours – Non-CFLs	Annual Hours – CFLs	HCEF	HCDF	PCF
Light Industrial	Comm/Ind Work Area (Unconditioned)	3,068	2,613	1.000	1.000	0.83

Savings Calculations

Using deemed values from the table above, the evaluators 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
HCEF	Heating/Cooling Energy Interactive Factor

Following this, the evaluators 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

Lighting Retrofit kWh Savings Calculations

Measure	Quantity (Fixtures)		Wattage		Hours		Expected kWh Savings	Realized kWh Savings	HCEF	Realization Rate
	Base	Post	Base	Post	Base	Post				
400W MH to 4' 6L T5HO	6	6	453	362	3,068	3,068	3,477	1,675	1.000	48.2%
Total							**3,477**	**1,675**		**48.2%**

Lighting Retrofit kW Savings Calculations

Measure	Quantity (Fixtures)		Wattage		PCF		Expected kW Savings	Realized kW Savings	HCDF	Realization Rate
	Base	Post	Base	Post	Base	Post				
400W MH to 4' 6L T5HO	6	6	453	362	0.83	0.83	0.56	0.45	1.000	79.8%
Total							**0.56**	**0.45**		**79.8%**

Results

The kWh realization rate for OID-1944692 is 48.2% and the kW realization rate is 79.8%. The kWh realization rate is low due to the ex post calculations using lower hours of operation than the ex ante calculations, as per CA DEER 2008 guidelines. In addition, the ex post calculations also used a lower coincidence factor than the ex ante calculations.

Verified Gross Savings & Realization Rates

Measure	Verified			
	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
400W MH to 4' 6L T5HO	1,675	0.45	48.2%	79.8%
Total	**1,675**	**0.45**	**48.2%**	**79.8%**

12.4 Motor Efficiency

Project Number OID-1800813
Program Business Comprehensive
Component Motor Efficiency

Project Background

The participant is an oil company that received incentives from SPS for the installation of Pump-Off Controllers (POC) on above ground oil well pumps. On site the evaluators verified the participant installed:

- (1) POC on a 10 HP 1200 RPM pump;
- (3) POC's on 15 HP 1200 RPM pumps;
- (1) POC on a 30 HP 1200 RPM pump;
- (4) POC's on 40 HP 1200 RPM pumps;
- (13) POC's on 50 HP 1200 RPM pumps; and
- (1) POC on a 60 HP 1200 RPM pump.

M&V Methodology

The evaluators verified the installation of 20 out of 23 POC's on the pumps used to extract oil from the ground. The POC 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.

Savings Calculations

The evaluators used SPS's deemed POC calculator to determine the annual energy savings of the installed POC's. The calculator was developed as a joint venture between the evaluators and SPS, which is informed by extensive monitoring performed by the evaluators at an earlier date. The deemed calculator uses the following equation:

$$kWh_{Savings} = \left(\frac{Hp \times .746 \times LF}{Eff \times Mech}\right) \times ([8{,}760 \times \{8.366 + .956 \times Pump_{eff} \times TC \times 100\}] - [8{,}760 * TC])$$

Parameters for kWh Savings Calculation of POC

$kWh_{Savings}$	Annual kWh Savings for the installation of a POC
Hp	Motor Horsepower
LF	Motor Load Factor
Eff	Motor Efficiency
Mech	Mechanical Efficiency of the pump jack.
$Pump_{eff}$	Volumetric pump efficiency
TC	Time Clock setting , deemed 70%

The summary of evaluators' findings can be found in the following table:

Ex-Post POC Calculated Savings

Unit Type	Motor Enclosure	HP	RPM	Motor Eff	Pump Eff	Baseline Time Clock	kWh Savings	Peak kW Reduction
Conventional	TEFC	40	1200	93.6%	23%	70%	33,985	3.88
Conventional	TEFC	40	1200	89.7%	32%	70%	30,844	3.52
Conventional	TEFC	15	1200	87.5%	14%	70%	15,408	1.76
Conventional	ODP	15	1200	87.2%	25%	70%	13,284	1.52
Conventional	TEFC	50	1200	87.5%	28%	70%	42,154	4.81
Conventional	TEFC	50	1200	89.9%	10%	70%	52,550	6.00
Conventional	TEFC	50	1200	94.1%	80%	70%	7,400	0.84
Conventional	ODP	50	1200	89.5%	10%	70%	52,785	6.03
Conventional	TEFC	50	1200	89.9%	14%	70%	49,990	5.71
Conventional	ODP	50	1200	89.9%	18%	70%	47,430	5.41
Conventional	TEFC	50	1200	89.9%	12%	70%	51,270	5.85
Conventional	TEFC	50	1200	84.0%	10%	70%	56,241	6.42
Conventional	TEFC	60	1200	90.4%	10%	70%	62,711	7.16
Conventional	ODP	50	1200	87.5%	10%	70%	53,992	6.16
Conventional	TEFC	50	1200	87.5%	15%	70%	50,703	5.79
Conventional	ODP	50	1200	89.9%	24%	70%	43,589	4.98
Conventional	ODP	50	1200	89.9%	19%	70%	46,790	5.34
Conventional	TEFC	50	1200	89.9%	10%	70%	52,550	6.00
Conventional	TEFC	30	1200	88.8%	60%	70%	12,481	1.42
Conventional	TEFC	40	1200	89.7%	34%	70%	29,817	3.40
Conventional	TEFC	40	1200	89.7%	20%	70%	37,002	4.22
Conventional	TEFC	10	1200	85.0%	13%	70%	10,710	1.22
Conventional	TEFC	15	1200	85.0%	17%	70%	15,252	1.74
Conventional	TEFC	40	1200	93.6%	23%	70%	33,985	3.88
Total							**868,938**	**99.19**

Results

It was calculated that the installation of the POC's decreases annual energy consumption by 868,938 kWh and a demand reduction of 99.19 kW. OID-1800813 had a realization rate of 114% for kWh and 101.5% for kW.

The high realization rate can be attributed to the SPS deemed calculator assuming higher than verified motor efficiencies and one of the pumps being 50 Hp compared to the claimed 15 Hp.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
POC's	762,118	97.73	868,938	99.19	114.0%	101.5%
Total	762,118	97.73	868,938	99.19	114.0%	101.5%

Project Number OID-1883639
Program Business Comprehensive
Component Motor Efficiency

Project Background

The participant is golf course that received incentives from SPS for installing a (1) 50 HP VFD on a 50 HP pump and (1) 20 HP VFD on a 20HP pump. Both pumps are used for irrigation purposes. The pumps originally had no flow control and would run at a constant speed; therefore the flow produced by the pumps is a function of the downstream head of the system. The flow versus head function is defined by the pump's operating curve.

The purpose of the installing the VFD is to allow the pumps to modulate their speed to maintain a constant system pressure in the irrigation system.

M&V Methodology

The savings from this project were evaluated via onsite verification and monitoring of the VFD equipped pump. Since the pump has a separate utility meter, billing data was provided to offer a means to extrapolate pump operation to a typical year. The evaluators received two years of billing data.

Savings Calculations

Using the above mentioned savings values the following equations were used to determine savings for the site at hand:

$$kWh_{Savings} = (EFLH\ x\ kW_{baseline}) - kWh_{post}$$

Parameters for Annual kWh Savings Calculation

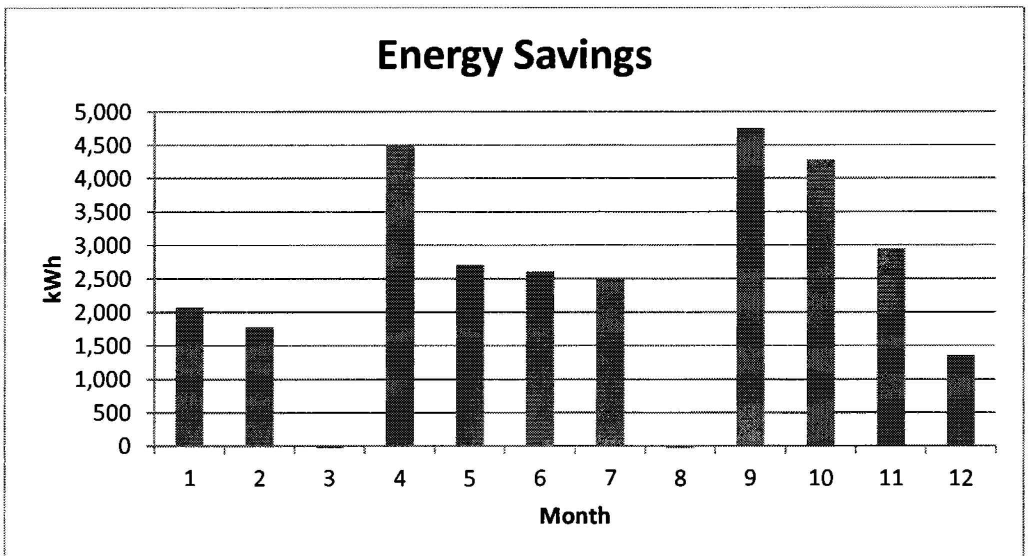
$kWh_{Savings}$	Annual kWh savings for installation of VFD
$kW_{baseline}$	Derived from utility meter billing data prior to installation of VSD and Typical Pump Motor curve
kWh_{post}	Derived from utility meter billing data

Results

This facility installed a VFD on a 50 HP irrigation pump and a VFD on a 20 HP pump. The evaluators verified that when the pump is ON, the facility runs the pump on average, at 48 Hz. The evaluators calculated the hours of use per month, based on interviews with facility staff, then multiplied with the baseline pump power at 80% design flow. The VFDs are set to supply 100 psi and are operated at night. The baseline system was operated manually during the day for 8 to 10 hours, based on irrigation needs. The increase in kW savings is due to the ability to operate the pumps at night using the programmable VFDs rather than running the pumps during the day.

Verified Gross Savings & Realization Rates

Measure	Expected		Verified		kWh Realization Rate	kW Realization Rate
	kWh Savings	kW Savings	kWh Savings	kW Savings		
VFD Irrigation Pump	28,170	10.99	28,219	56.39	100.2%	513.1%
Total	**28,170**	**10.99**	**28,219**	**56.39**	**100.2%**	**513.1%**



Project Number OID- 1885998
Program Business Comprehensive
Component Motor Efficiency

Executive Summary

The participant is an oil company that received incentives from SPS for the installation of Pump-Off Controllers (POC) on above ground oil well pumps. On site the evaluators verified the participant installed:

- (2) POC's on 30 HP 1200 RPM pumps;
- (2) POC's on 40 HP 1200 RPM pumps;
- (1) POC on a 50 HP 1200 RPM pump;
- (2) POC's on 60 HP 1200 RPM pumps; and
- (1) POC on a 75 HP 1200 RPM pump.

M&V Methodology

The evaluators verified the installation of 8 out of 8 POC's on the pumps used to extract oil from the ground. The POC 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.

Savings Calculations

The evaluator used SPS's deemed POC calculator to determine the annual energy savings of the installed POC's. The calculator was developed as a joint venture between the evaluators and SPS, which is informed by extensive monitoring performed by the evaluators at an earlier date. The deemed calculator uses the following equation:

$$kWh_{Savings} = \left(\frac{Hp \times .746 \times LF}{Eff \times Mech}\right) \times \left([8{,}760 \times \{8.366 + .956 \times Pump_{eff} \times TC \times 100\}] - [8{,}760 * TC]\right)$$

Parameters for kWh Savings Calculation of POC

$kWh_{Savings}$	Annual kWh Savings for the installation of a POC
Hp	Motor Horsepower
LF	Motor Load Factor
Eff	Motor Efficiency
Mech	Mechanical Efficiency of the pump jack.
$Pump_{eff}$	Volumetric pump efficiency
TC	Time Clock setting , deemed 70%

The summary of the evaluator's findings can be found in the following table:

Ex-Post POC Calculated Savings

Unit Type	Motor Enclosure	HP	RPM	Motor Eff	Pump Eff	Baseline Time Clock	kWh Savings	Peak kW Reduction
Conventional	ODP	75	1200	95.0%	13%	70%	71,868	8.20
Conventional	TEFC	60	1200	87.5%	13%	70%	62,422	7.13
Conventional	ODP	40	1200	87.5%	43%	70%	25,832	2.95
Conventional	TEFC	50	1200	89.9%	12%	70%	51,270	5.85
Conventional	ODP	30	1200	93.6%	13%	70%	29,177	3.33
Conventional	ODP	60	1200	90.4%	18%	70%	56,601	6.46
Conventional	TEFC	30	1200	89.4%	80%	70%	4,673	0.53
						Total	**309,231**	**35.30**

Results

It was calculated that the installation of the POC's decreases annual energy consumption by 309,231 kWh and a demand reduction of 35.30 kW. OID-1885998 had a realization rate of 94.6% for kWh and 82.8% for kW.

The kW realization rate is low because the verified peak kW reduction savings are estimated based on a fixed multiplier for the kWh savings.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
POC's	326,867	42.65	309,231	35.30	94.6%	82.8%
Total	**326,867**	**42.65**	**309,231**	**35.30**	94.6%	82.8%

Project Number OID-1885985
Program Business Comprehensive
Component Motor Efficiency

Executive Summary

The participant is an oil company that received incentives from SPS for the installation of Pump-Off Controllers (POC) on above ground oil well pumps. On site the evaluators verified the participant installed:

- (1) POC on a 20 HP 1200 RPM pump;
- (1) POC on a 40 HP 1200 RPM pump; and
- (1) POC on a 60 HP 1200 RPM pump.

M&V Methodology

The evaluators verified the installation of 7 out of 7 POC's on the pumps used to extract oil from the ground. The POC 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.

Savings Calculations

The evaluator used SPS's deemed POC calculator to determine the annual energy savings of the installed POC's. The calculator was developed as a joint venture between the evaluators and SPS, which is informed by extensive monitoring performed by the evaluators at an earlier date. The deemed calculator uses the following equation:

$$kWh_{Savings} = \left(\frac{Hp \times .746 \times LF}{Eff \times Mech}\right) \times \left([8{,}760 \times \{8.366 + .956 \times Pump_{eff} \times TC \times 100\}] - [8{,}760 * TC]\right)$$

Parameters for kWh Savings Calculation of POC

$kWh_{Savings}$	Annual kWh Savings for the installation of a POC
Hp	Motor Horsepower
LF	Motor Load Factor
Eff	Motor Efficiency
Mech	Mechanical Efficiency of the pump jack.
$Pump_{eff}$	Volumetric pump efficiency
TC	Time Clock setting , deemed 70%

The summary of the evaluator's findings can be found in the following table:

Ex-Post POC Calculated Savings

Unit Type	Motor Enclosure	HP	RPM	Motor Eff	Pump Eff	Baseline Time Clock	kWh Savings	Peak kW Reduction
Conventional	TEFC	20	1200	87.5%	23%	70%	18,177	2.07
Conventional	ODP	60	1200	94.5%	36%	70%	40,993	4.68
Conventional	TEFC	40	1200	89.7%	14%	70%	40,081	4.58
						Total	**99,251**	**11.33**

Results

It was calculated that the installation of the POC's decreases annual energy consumption by 99,251 kWh and a demand reduction of 11.33 kW. OID-1885985 had a realization rate of 101.6% for kWh and 94.9% for kW.

The kW realization rate is low because the verified peak kW reduction savings are estimated based on a fixed multiplier for the kWh savings.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
POC's	97,679	11.94	99,251	11.33	101.6%	94.9%
Total	**97,679**	**11.94**	**99,251**	**11.33**	**101.6%**	**94.9%**

Project Number OID-1885991
Program Business Comprehensive
Component Motor Efficiency

Executive Summary

The participant is an oil company that received incentives from SPS for the installation of Pump-Off Controllers (POC) on above ground oil well pumps. On site the evaluators verified the participant installed:

- (2) POCs on 50 HP 1200 RPM pumps;

M&V Methodology

The evaluators verified the installation of all of the POC's on the pumps used to extract oil from the ground. The POC 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.

Savings Calculations

The evaluators used SPS's deemed POC calculator to determine the annual energy savings of the installed POC's. The calculator was developed as a joint venture between the evaluators and SPS, which is informed by extensive monitoring performed by the evaluators at an earlier date. The deemed calculator uses the following equation:

$$kWh_{Savings} = \left(\frac{Hp \times .746 \times LF}{Eff \times Mech}\right) \times ([8{,}760 \times \{8.366 + .956 \times Pump_{eff} \times TC \times 100\}] - [8{,}760 * TC])$$

Parameters for kWh Savings Calculation of POC

$kWh_{Savings}$	Annual kWh Savings for the installation of a POC
Hp	Motor Horsepower
LF	Motor Load Factor
Eff	Motor Efficiency
Mech	Mechanical Efficiency of the pump jack.
$Pump_{eff}$	Volumetric pump efficiency
TC	Time Clock setting , deemed 70%

The summary of the evaluators' findings can be found in the following table:

Ex-Post POC Calculated Savings

Unit Type	Motor Enclosure	HP	RPM	Motor Eff	Pump Eff	Baseline Time Clock	kWh Savings	Peak kW Reduction
Conventional	ODP	50	1200	89.5%	20%	70%	46,356	5.29
Conventional	ODP	50	1200	89.5%	11%	70%	52,142	5.95
Total							**98,498**	**11.24**

Results

It was calculated that the installation of the POC's decreases annual energy consumption by 98,498 kWh and a demand reduction of 11.24 kW. OID-1885991 had a realization rate of 103.9% for kWh and 89.3% for kW.

Verified Gross Savings & Realization Rates

Type	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	Realization Rate kWh	Realization Rate kW
POC's	94,791	12.59	98,498	11.24	103.9%	89.3%
Total	94,791	12.59	98,498	11.24	103.9%	89.3%

Project Number OID-1504559
Program Business Comprehensive
Component Motors and Drives

Project Background

The participant is waste water treatment plant that received incentives from SPS for installing (3) 40 HP VFD on (3) 30 HP pump. The pumps are used for pumping wastewater to tanks. The pumps originally used eddy current controls before switching to VFDs. Only one pump is operating during normal operations, while the remaining two are in standby. The "primary" pump position rotates every 24 hours.

The purpose of the installing the VFD is to modulate the pump's speed which is based on the tank level within the influent tank.

M&V Methodology

The savings from this project were evaluated via onsite verification and monitoring of the VFD equipped pump. The evaluators received three years of in-flow trend data from the site contact and used this data to determine to flow rate of the facility. The flow trend data so offer a means to extrapolate pump operation for a typical year.

Savings Calculations

The post kW usage was determined by using monitored data and extrapolated for the typical year. Using the above mentioned savings values the following equations were used to determine savings for the site at hand:

$$kW_{Savings} = kW_{baseline} - kW_{post}$$

$$kWh_{Savings} = EFLH \ x \ kW_{Post}$$

Parameters for Annual kWh Savings Calculation

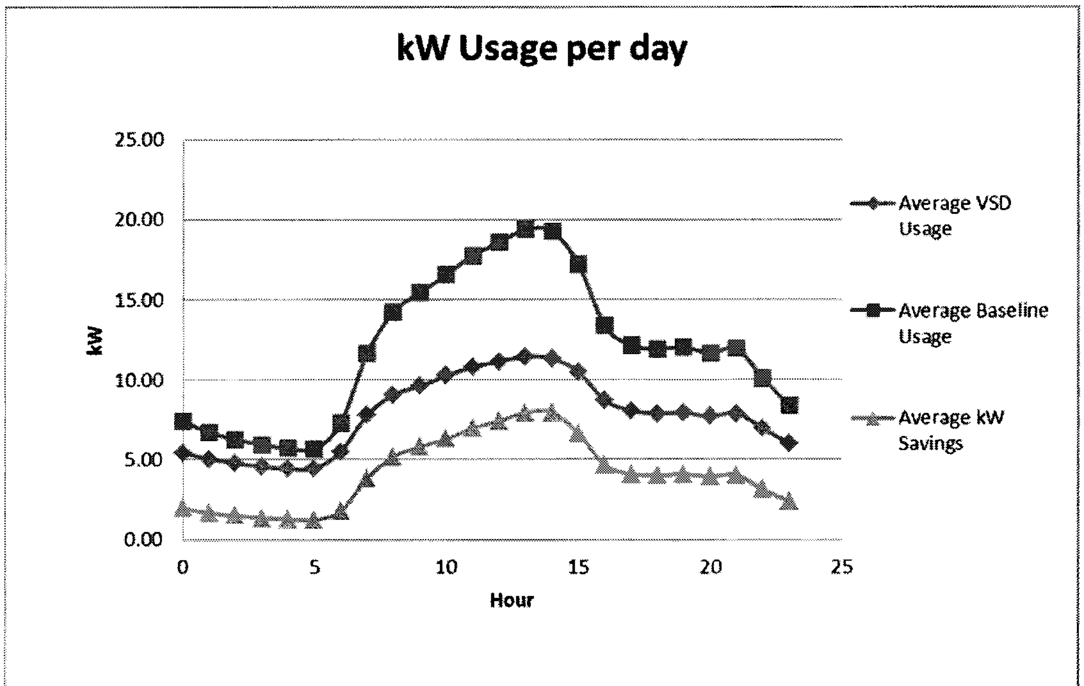
$kW_{Savings}$	Annual kW savings for installation of VFD
$kW_{baseline}$	Derived from in-flow trend data prior to installation of VSD and Typical Eddy Current Pump curve
kW_{post}	Derived from inflow trend data and monitoring data
$kWh_{Savings}$	Annual kWh savings for installation of VFD
$EFLH$	Derived monitoring data

Results

This facility installed a VFD on (3) 30 HP pumps. The evaluators verified that when the pump is on, the facility runs the pump on average, at 60 Hz. The decrease in kWh and kW savings is due to only having one VFD operating at any given time, instead of all three VFD operating at the same time.

Verified Gross Savings & Realization Rates

Measure	Expected		Verified		kWh Realization Rate	kW Realization Rate
	kWh Savings	kW Savings	kWh Savings	kW Savings		
VFD Waste Water Pump	88,594	14.13	46,309	4.77	52.3%	33.7%
Total	**88,594**	**14.13**	**46,309**	**4.77**	**52.3%**	**33.7%**



Project Number OID-1883639
Program Business Comprehensive
Component Motor Efficiency

Project Background

The participant is golf course that received incentives from SPS for installing a (1) 50 HP VFD on a 50 HP pump and (1) 20 HP VFD on a 20HP pump. Both pumps are used for irrigation purposes. The pumps originally had no flow control and would run at a constant speed; therefore the flow produced by the pumps is a function of the downstream head of the system. The flow versus head function is defined by the pump's operating curve.

The purpose of the installing the VFD is to allow the pumps to modulate their speed to maintain a constant system pressure in the irrigation system.

M&V Methodology

The savings from this project were evaluated via onsite verification and monitoring of the VFD equipped pump. Since the pump has a separate utility meter, billing data was provided to offer a means to extrapolate pump operation to a typical year. The evaluators received two years of billing data.

Savings Calculations

Using the above mentioned savings values the following equations were used to determine savings for the site at hand:

$$kWh_{Savings} = (EFLH\ x\ kW_{baseline}) - kWh_{post}$$

Parameters for Annual kWh Savings Calculation

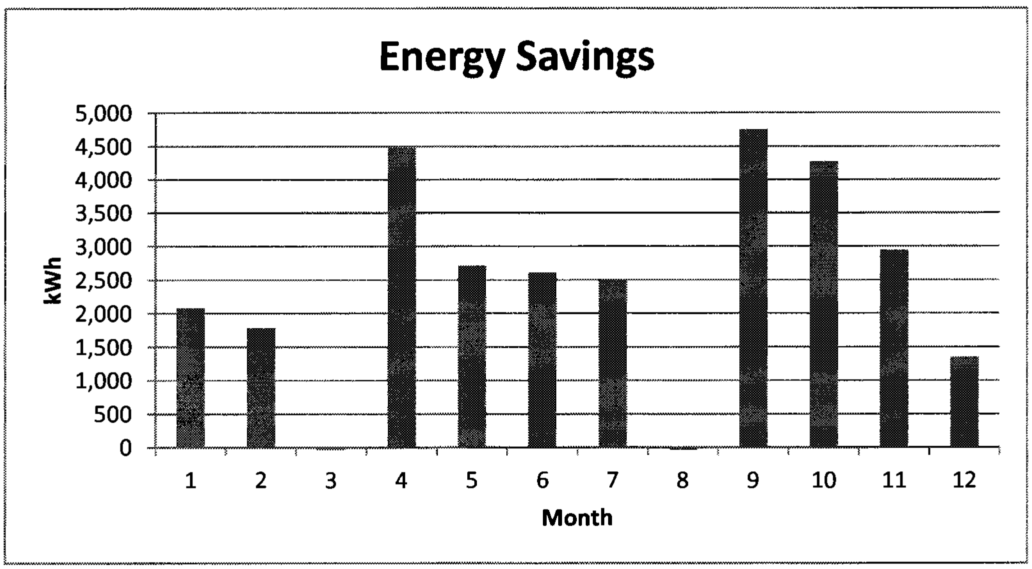
$kWh_{Savings}$	Annual kWh savings for installation of VFD
$kW_{baseline}$	Derived from utility meter billing data prior to installation of VSD and Typical Pump Motor curve
kWh_{post}	Derived from utility meter billing data

Results

This facility installed a VFD on a 50 HP irrigation pump and a VFD on a 20 HP pump. The evaluators verified that when the pump is ON, the facility runs the pump on average, at 48 Hz. The evaluators calculated the hours of use per month, based on interviews with facility staff, then multiplied with the baseline pump power at 80% design flow. The VFDs are set to supply 100 psi and are operated at night. The baseline system was operated manually during the day for 8 to 10 hours, based on irrigation needs. The increase in kW savings is due to the ability to operate the pumps at night using the programmable VFDs rather than running the pumps during the day.

Verified Gross Savings & Realization Rates

Measure	Expected		Verified		kWh Realization Rate	kW Realization Rate
	kWh Savings	kW Savings	kWh Savings	kW Savings		
VFD Irrigation Pump	28,170	10.99	28,219	56.39	100.2%	513.1%
Total	**28,170**	**10.99**	**28,219**	**56.39**	**100.2%**	**513.1%**



Project Number OID-1910951
Program Business Comprehensive
Component Motor Efficiency

Project Background

The participant is farm that received incentives from SPS for installing a new 100 HP motor on a pump. The motor runs six to eight hours a day for seven days a week from March to November every year. The original motor was installed in the 1940's.

M&V Methodology

The savings is evaluated via onsite verification to determine to horsepower, efficiency, make, and model of the new energy efficient motor. The evaluators also interviewed site staff for the horsepower, efficiency, and age of the pre-retrofit motor. The evaluators received two years of billing data used to determine annual operating hours.

Savings Calculations

The post kW usage was determined creating a polynomial equation based on the pump curve graph. Using the above mentioned savings values the following equations were used to determine savings for the site at hand:

$$kWh_{Savings} = HP_{Motor} * LF_{Motor} * Conversion * \left(\frac{1}{Standard_{Eff}} - \frac{1}{High_{Eff}}\right) * Hours$$

Parameters for Annual kWh Savings Calculation

$kWh_{Savings}$	Annual kWh savings for installation of motor
HP_{Motor}	Name plate horsepower of motor being controlled
LF_{Motor}	Motor load factor as percentage (0 - 100). The assumed value of 75% will be used for prescriptive motors
Conversion	1 HP = 0.746 kW =746 watts
$Standard_{Eff}$	Efficiency of baseline replacement motor as percentage (0 - 100)
$High_{Eff}$	Efficiency of high efficiency replacement motor as percentage (0-100).
Hours	Annual hours of operation

Following this, the evaluator calculated peak kW savings. This is based upon a SPS-defined peak of 3:00 – 6:00 PM during summer weekdays.

$$kW_{Reduction} = HP * LF_{Motors} * Conversion * (\frac{1}{Standard_{Eff}} - \frac{1}{High_{Eff}})$$

Parameters for Peak kW Reduction Calculation

$kW_{Reduction}$	Peak kW reduction for installation of VFD

Results

The kWh realization rate for OID-1910951 is 157.8% and the kW realization rate is 461.9%. The high kWh and kWh realization is due to the age and efficiency of the baseline motor. The evaluators used the Pre-EPAct of 1992 motor efficiency for the baseline motor which was installed in 1940's, while the ex ante calculations used a higher baseline efficiency rate. The ex ante calculations used higher annual hours of operation per the New Mexico Technical Assumptions. The evaluators determined annual operating hours for the ex post calculations by using the billing data.

Verified Gross Savings & Realization Rates

Measure	Claimed		Verified			
	kWh Savings	kW Savings	kWh Savings	kW Savings	kWh Realization Rate	kW Realization Rate
NEMA Premium Motor	4,592	0.63	7,199	2.90	157.8%	461.9%
Total	4,592	0.63	7,199	2.90	157.8%	461.9%

SMW-7 Program Cross Reference

Colorado	Minnesota	New Mexico	Why Not in NM
2014	**2014**	**2014**	
Business Program	**Business Program**	**Business Program**	
Compressed Air Efficiency	Compressed Air Efficiency	N/A	SPS currently identifies and evaluates compressed air opportunities through the Custom Efficiency Product. A separate program currently has limited applicability due to the SPS customer mix, however SPS has included 2 prescriptive compressed air measures in its Motor & Drive Efficiency product.
Computer Efficiency	Computer Efficiency	Computer Efficiency	N/A
Cooling Efficiency	Cooling Efficiency	Cooling Efficiency	N/A
Custom Efficiency	Custom Efficiency	Custom Efficiency	N/A
Data Center Efficiency	Data Center Efficiency	N/A	Limited customer market in New Mexico to make the program cost effective. Customers can evaluate these types of opportunities through the Custom Efficiency product or through existing prescriptive measures.
Energy Management Systems	Efficiency Controls (Energy Management Systems)	N/A	Limited customer market in New Mexico to make the program cost effective. Customers can evaluate these types of opportunities through the Custom Efficiency product or through existing prescriptive measures.
Heating Efficiency	Commercial Heating Efficiency	N/A	SPS does not have gas service in New Mexico.
Lighting Efficiency	Lighting Efficiency	Lighting Efficiency	N/A
Motor & Drive Efficiency	Motor & Drive Efficiency	Motor & Drive Efficiency	N/A
New Construction	Energy Design Assistance + Energy Efficient Buildings	N/A	Limited new construction market in New Mexico to make the program cost effective. Customer can use existing rebate programs.
Process Efficiency	Process Efficiency	N/A	As a measure in the Custom Efficiency product SPS offers large customers a Study and Implmentation program (Large C&I Study) that is based on the Process Efficiency program in other jurisdictions
Recommissioning	Recommissioning	N/A	SPS offers a Building Tune-up program for buildings up to 75,000 sqft.
Segment Efficiency	N/A	N/A	Program focused on Commercial Office space greater than 50,000 sqft. There is limited commercial real estate market in our New Mexico territory to make the program cost effective.
Self-Directed Custom Efficiency	Self Direct	Large Customer-Self Direct	N/A
Small Business Lighting	N/A	N/A	Program is included as part of the Lighting Efficiency program.
N/A	Turn-Key Services	N/A	At this time SPS does not believe there is sufficient opportunity in New Mexico to make the program cost effective but will continue to evaluate expanding the program to other jurisdictions.
N/A	Vending Efficiency	N/A	Customers can evaluate these opportunities through the Custom Efficiency Product. Market does not warrant a full program.
N/A	N/A	Building Tune Up	N/A

SMW-7 Program Cross Reference

Colorado	Minnesota	New Mexico	Why Not in NM
2014	**2014**	**2014**	
Third-Party Demand Response	N/A	N/A	Customers interested in demand response programs can participate through the ICO program.
Energy Feedback Pilot	Energy Feedback Pilot	N/A	This pilot is in the early stages and may expand to include NM in the future if its deemed successful in other service territories.
Commercial Refrigeration Efficiency	Refrigeration Recommissioning	N/A	Customers can evaluate these types of opportunities through the Custom Efficiency product or through prescriptive rebates included in the cooling efficiency product.
Residential Program	**Residential Program**	**Residential Program**	
Energy Feedback - Residential	Energy Feedback Pilot	Energy Feedback - Residential	N/A
Energy Efficient Shower Heads	Energy Efficient Shower Heads	N/A	Primarily a natural gas savings program; however, showerheads are a measure in Home Energy Services for its electric savings.
ENERGY STAR New Homes	Energy Star Homes	N/A	Combination gas and electric program. Needs both to be cost effective.
Evaporative Cooling Rebates	N/A	Residential Cooling	N/A
Heating System Rebates	Heating System Rebate	Residential Cooling	N/A
High Efficiency Air Conditioning	N/A	Residential Cooling and Home Energy Services	N/A
Home Lighting & Recycling	Home Lighting	Home Lighting & Recycling	N/A
N/A	N/A	Home Energy Services	This program encompasses many of the of the offerings in our other jurisdictions. Offering the program as a bundle of measures is unique to New Mexico.
Home Performance with ENERGY STAR	Home Performance with Energy Star	N/A	Combination gas and electric program. Needs both to be cost effective.
Insulation Rebate	Insulation Rebate	N/A	Primarily a natural gas savings program; however, insulation is a measure in Home Energy Services for its electric savings.
Refrigerator Recycling	Refrigerator Recycling	Refrigerator Recycling	N/A
N/A	Residential AC Quality Installation/Cooling Portfolio	Residential Cooling and Home Energy Services	N/A
N/A	Residential Quick Fix Efficiency Service	N/A	This program primarily offers natural gas measures and is in a pilot stage. It is not ready for launch in other jurisditions.
School Education Kits	School Education Kits	School Education Kits	N/A
Home Energy Squad	Home Energy Squad	Home Energy Services	N/A
Water Heater Rebate	Water Heating Rebate	N/A	SPS used to offer this program in New Mexico, however it had extremely low participation and was subsequently removed from the DSM plan.
Low-Income Program	**Low-Income Program**	**Low-Income Program**	
Energy Savings Kit	Easy Savings Energy Kits	Home Energy Services	This program is a component of SPS's Home Energy Services program.
N/A	Home Electric Savings Program	Home Energy Services	N/A

SMW-7 Program Cross Reference

Colorado	Minnesota	New Mexico	Why Not in NM
2014	**2014**	**2014**	
Multi-Family Weatherization	N/A	N/A	SPS used to offer this program in New Mexico, however it had extremely low participation and was subsequently removed from the DSM plan. Multifamily residences can participate through the Home Energy Services program.
Non-Profit Energy Efficiency	N/A	N/A	This program is offered in CO due to a partnership with an engaged non-profit organization. SPS would consider this offering if a similar partner could be found in its New Mexico territory.
Single-Family Weatherization	Single Family Weatherization Program	Home Energy Services	This program encompasses many of the of the offerings in our other jurisdictions. Offering the program as a bundle of measures is unique to New Mexico.
N/A	LI Home Energy Squad	Home Energy Services	N/A
Load Management Program	**Load Management Program**	**Load Management Program**	
Residential Saver's Switch	Residential Saver's Switch	Residential Saver's Switch	N/A
N/A	Business Saver's Switch	Business Saver's Switch	N/A
Interruptible Credit Option	Electric Rate Savings	Interruptible Credit Option	N/A
Indirect Products & Services	**Indirect Products & Services**	**Indirect Products & Services**	
Business Energy Analysis	N/A	N/A	This audit based, indirect program was deemed too costly to offer in New Mexico.
Consumer Education - Business	N/A	N/A	SPS used to offer this program in New Mexico. Education and outreach are now done more directly through the programs. However, SPS continues to use its Product Development funding in order to identify new measures espeically in the oil and gas sector.
Consumer Education - Residential	Consumer Education	Consumer Education	N/A
N/A	Lamp Recycling	N/A	Recycling is covered by the Home Lighting and Recycling program in New Mexico.
Energy Efficiency Financing	N/A	N/A	SPs may consider expanding the polit to other states if it proves effective in Colorado.
Smart Thermostats	Smart Thermostats	N/A	SPS is awaiting the results of the Colorado pilot before considering the program for implementation in NM.
Multifamily Buildings	Multifamily Buildings	Home Energy Services	N/A
Residential Home Energy Audit	Home Energy Audits	N/A	This audit based, indirect program was deemed too costly to offer in New Mexico.

Note 1 SPS - Texas: Programs offered in Texas are required to be Standard Offer (SOP) programs implemented by third parties and are not directly comparable to SPS programs. The SOP programs in Texas bundle many measures into one overall program, called for instance Residential SOP.

Note 2 NSP - Wisconsin: Programs offered in Wisconsin are implemented by state agencies.