2021 ENERGY EFFICIENCY ANNUAL REPORT

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

May 16, 2022

SOUTHWESTERN PUBLIC SERVICE COMPANY

Table of Contents

Glossary of Acronyms and Definition

Acronym/Defined Term	Definition
2021 Annual Report	SPS's 2021 Energy Efficiency and Load Management Annual Report
Commission	New Mexico Public Regulation Commission
DSM	Demand-Side Management – refers to the energy efficiency and load management programs collectively
EE	Energy Efficiency
EE Rider	SPS's Energy Efficiency Rider
EE Rule	Energy Efficiency Rule (17.7.2 NMAC)
EE/LM	Energy Efficiency and Load Management
EISA	Energy Independence and Security Act of 2007
EUEA	New Mexico Efficient Use of Energy Act, as amended (NMSA 1978 §§62-17-1 through 62-17-11)
Evaluator	Independent Program Evaluator, the third-party contractor that will conduct all measurement and verification of the programs
Evergreen	Evergreen Economics 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
GWh	gigawatt hour
HPWH	Heat Pump Water Heater
HER	Home Energy Reports

Acronym/Defined Term	Definition
kW	kilowatt
kWh	kilowatt-hour
LED	light emitting diode
M&V	Measurement and Verification
NATE	North American technical Excellence
PY	Plan Year
SPS	Southwestern Public Service Company, a New Mexico corporation
Staff	Commission's Utility Division Staff
Stipulation	Settlement Agreement between the parties to Case No. 19-00140-UT
Triennial Plan	SPS's Energy Efficiency Plan
UCT	Utility Cost Test - the cost-effectiveness standard implemented on July 1, 2013, also known as the Program Administrator Test
VFD	Variable Frequency Drive
Xcel Energy	Xcel Energy Inc.

Document Layout

Southwestern Public Service Company's, a New Mexico corporation, ("SPS") 2021 Energy Efficiency ("EE") Annual Report ("2021 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 required by 17.7.2.14 NMAC;
- Section III provides the program descriptions including an explanation of deviations from goal and changes during 2021, organized into the Residential, Business, and Planning & Research Segments;
- Section IV provides true-up of the 2021 Incentive Mechanism; and
- Appendix A provides the Measurement and Verification ("M&V") Report of SPS's 2021 program year prepared by Evergreen Economics Inc. ("Evergreen").

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), House Bill 267 (2013) and House Bill 291 (2019), and the New Mexico Public Regulation Commission's ("Commission") EE Rule 17.7.2 NMAC ("EE Rule"), SPS respectfully submits for Commission review its 2021 Annual Report. The EUEA and the associated EE Rule require public utilities to offer cost-effective energy efficiency and load management programs ("EE/LM" programs) and authorizes them to receive cost recovery for qualified expenditures and performance incentives. Further, 17.7.2.8(A) NMAC requires SPS to file with the Commission on May 15 of each year, a report on its energy efficiency and load management programs during the prior calendar year. The specific reporting requirements of the EE Rule are discussed in Section II.

Within this 2021 Annual Report, SPS provides the expenditures and savings results for eight EE/LM direct impact programs in the Residential Segment (including Low-Income) and Business Segment (including Large Customer). In addition, the 2021 Annual Report includes a summary of the Planning and Research Segment, which supports the direct impact programs. The M&V Report for SPS's 2021 savings is included as Appendix A.

Background

On May 15, 2019, SPS filed its Application requesting that the Commission: (a) approve SPS's 2020, 2021, and 2022 Energy Efficiency Plan ("Triennial Plan") and associated EE programs; (b) authorize SPS to apply the Commission's approval of the 2020 Triennial Plan budget to the entirety of 2020, even if the Commission has not issued a final order by December 31, 2019; (c) authorize SPS to fund its Triennial Plan program and administrative costs at three to five percent of customer bills in accordance with Section 17.7.2.8(C)(1) of the EE Rule and Section 62-17-6(A) of the EUEA and to recover these costs through its EE Rider ("EE Rider"); (d) approve SPS's proposed methodology to calculate the financial incentive for each year of the Triennial Plan; (e) approve recovery of a financial incentive for 2020 through SPS's EE Rider; (f) approve SPS's proposed reconciliation process for the authorized budget and actual plan year expenditures and collections; (g) authorize SPS to recover costs associated with an EE Potential Study over a two-year time period beginning in 2020; and (h) grant all other approvals, authorizations, and relief that may be required under the EUEA, the EE Rule, and the New Mexico Public Utility Act (NMSA 1978, Sections 62-3-1 et seq., "PUA") for SPS to implement the approved Triennial Plan and EE Rider.

On September 27, 2019, SPS filed the Settlement Agreement between the parties to Case No. 19-00140-UT ("Stipulation") signed by SPS, the Attorney General, Coalition for Clean Affordable Energy, and Commission's Utility Division Staff ("Staff") and noted that Occidental Permian Ltd. and COG Operating LLC., the only other parties to the case, did not oppose the Stipulation. The Stipulation supported the following approvals and authorization's for SPS's Triennial Plan: a) The modified Triennial EE Plan (four residential direct EE programs, one business direct EE program, and one indirect segment to reflect the stipulated

2020 Plan Year ("PY") budget, as well as additional commitments by SPS to evaluate potential future changes to programs that could be considered for implementation in the 2022 PY; b) SPS's continued use of the EE Rider that authorizes SPS to recover its 2020 PY program costs, as modified by the Stipulation; c) stipulated modifications to the performance incentive for the 2020 PY, that will be recovered by SPS through the EE Rider; and d) stipulated agreement for SPS to issue an RFP to conduct an EE Potential Study in PY 2020 and recover the cost of the EE Potential Study within SPS's 2021 and 2022 program portfolio budgets ($250,000 each year). The Final Order Adopting the Certification of Stipulation in Case No. 19-00140-UT was approved on February 19, 2020.

Summary of Results

In compliance with 17.7.2.14(C) NMAC, Table 1 on page 4 shows SPS's program budgets, goals, and Utility Cost Test ("UCT") forecasted ratios that were developed using SPS's approved 2021 portfolio with adjustments to program budgets to account for additional spending not forecasted in 2021's plan filing.

In 2021, SPS achieved verified net electric savings of 17,730 kilowatts ("kW") and 50,209,534 kilowatt-hours ("kWh") at the customer level, for a total cost of $11,667,970 (see Table 1 below.) This equals 125% of SPS's 2021 approved energy goal, while spending 110% of the approved budget. The portfolio was cost-effective with a UCT ratio of 2.30.

As shown in Table 1, most of the direct impact energy efficiency programs were cost-effective under the UCT. Four of the programs did not pass the UCT test in 2021. While each of the products listed below is discussed in more detail later in the Annual Report, a summary of the primary reasons for individual programs falling below 1.0 on the UCT follows.

- Energy Feedback: Did not meet the UCT threshold because the savings attributed to the cohort of customers added by the third-party vendor in March of 2021 were not deemed statistically significant causing the program to miss savings achievement goals.

- Residential Cooling: The program received a low UCT in 2021 due to lower than expected participation and having fixed costs in the program. Changes to the program have been made for 2022 that will not require HVAC contractors to be North American Technical Excellence ("NATE") certified. This should allow for more contractors in the program and, therefore, more participation.

- Heat Pump Water Heaters: The program had two participants in PY2021 and therefore achieved a low UCT.

- Smart Thermostats: The program received a low UCT in 2020 due to low participation.

Table 1: Estimated and Actual Program Data for 2021

Program	2021 Estimated								2021 Reported and Verified							
	Participants	Budget	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	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	23,418	$143,485	778	4,291,520	908	4,843,702	$ 153,701	1.07	44,780	$131,823	711	3,858,383	830	4,354,834	$ 125,700	0.95
Residential Cooling	96	$43,040	39	125,177	46	141,284	$ 66,918	1.55	35	$37,756	7	13,666	8	15,424	$ 9,704	0.26
Home Energy Services: Residential & Low Income	3,263	$2,213,861	904	8,963,155	1,055	10,116,428	$ 4,833,293	2.18	2,172	$2,242,746	876	9,557,245	1,022	10,786,958	$ 4,926,470	2.20
Home Lighting & Recycling	322,550	$1,169,217	951	5,514,523	1,106	6,155,861	$ 2,772,372	2.37	306,243	$1,194,747	12,380	9,966,365	14,446	11,248,719	$ 11,480,739	9.61
School Education Kits	2,500	$145,917	10	376,378	12	424,806	$ 122,387	0.84	2,561	$133,285	15	562,451	18	634,821	$ 159,977	1.20
Heat Pump Water Heaters	100	$78,500	45	337,666	53	381,113	$ 102,237	1.30	2	$8,225	1	6,814	1	7,691	$ 1,865	0.23
Smart Thermostat	1,296	$122,500	0	698,746	0	788,652	$ 172,471	1.41	90	$75,860	0	57,401	0	64,787	$ 12,553	0.17
Residential Segment Total	**353,223**	**$3,916,520**	**2,729**	**20,307,164**	**3,180**	**22,851,845**	**$ 8,223,379**	**2.10**	**355,883**	**$3,824,443**	**13,990**	**24,022,325**	**16,324**	**27,113,234**	**$ 16,717,008**	**4.37**
Business Segment																
Business Comprehensive	487	$5,682,482	2,764	19,763,161	3,027	21,273,586	$ 8,308,813	1.46	228	$7,164,944	3,740	26,187,209	4,096	28,188,600	$ 10,088,489	1.41
Business Segment Total	**487**	**$5,682,482**	**2,764**	**19,763,161**	**3,027**	**21,273,586**	**$ 8,308,813**	**1.46**	**228**	**$7,164,944**	**3,740**	**26,187,209**	**4,096**	**28,188,600**	**$ 10,088,489**	**1.41**
Planning & Research Segment																
Consumer Education		$200,000								$104,691						
Market Research		$360,000								$294,446						
Measurement & Verification		$15,000								$5,804						
Planning & Administration		$290,000								$236,449						
Product Development		$190,000								$37,192						
Planning & Research Segment Total		**$1,055,000**								**$678,583**						
2021 TOTAL	**353,710**	**$10,654,002**	**5,425**	**40,134,737**	**6,207**	**44,125,431**	**$ 16,532,192**	**1.55**	**356,111**	**$11,667,970**	**17,730**	**50,209,534**	**20,421**	**55,301,833**	**26,805,497**	**2.30**

Table 2: Variance Comparison of 2021 Estimated and Reported/Verified Data

Program	2021 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	191%	92%	91%	90%	91%	90%	82%	89%
Residential Cooling	36%	88%	18%	11%	18%	11%	15%	17%
Home Energy Services: Residential & Low Income	67%	101%	97%	107%	97%	107%	102%	101%
Home Lighting & Recycling	95%	102%	1302%	181%	1306%	183%	414%	405%
School Education Kits	102%	91%	144%	149%	144%	149%	131%	143%
Heat Pump Water Heaters	2%	10%	2%	2%	2%	2%	2%	17%
Smart Thermostat	7%	62%	N/A	8%	N/A	8%	7%	12%
Residential Segment Total	**101%**	**98%**	**513%**	**118%**	**513%**	**119%**	**203%**	**208%**
Business Segment								
Business Comprehensive	47%	126%	135%	133%	135%	133%	121%	96%
Business Segment Total	**47%**	**126%**	**135%**	**133%**	**135%**	**133%**	**121%**	**96%**
Planning & Research Segment								
Consumer Education		52%						
Market Research		82%						
Measurement & Verification		39%						
Planning & Administration		82%						
Product Development		20%						
Planning & Research Segment Total		64%						
2021 TOTAL	101%	110%	327%	125%	329%	125%	162%	148%

As shown in Tables 1 and 2 (above), SPS met, or came close to meeting, most of its program forecasts for 2021. While program performance varied, the reasons for which are discussed further in Section III of this report, the majority of programs met or exceeded forecasted achievements in 2021 and were within their budgets. Home Lighting Program, School Education Kits, and Business Comprehensive Programs far exceeded their savings forecasts.

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. 17.7.2.14(C) states:

C. Annual reports shall include the following for each measure and program:

(1) documentation of program expenditures and estimates of the program expenditures expected in the next year, including documentation of any adjustments to expenditures in the plan year and expected adjustments to the next plan year;

(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 ("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 M&V 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, M&V 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)	Tables 1 & 2
17.7.2.14(C)(2)	Tables 1 & 2
17.7.2.14(C)(3)	Tables 1 & 2
17.7.2.14(C)(4)	Tables 1 & 2
17.7.2.14(C)(5)	Tables 1 & 2
17.7.2.14(C)(6)	Tables 1 & 2
17.7.2.14(C)(7)	Tables 1 & 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 92,838 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.

In 2021, SPS offered eight residential programs with opportunities for all residential customers, including low-income customers, to participate. In total, SPS spent $3,824,443 on these programs and achieved 13,990 kW and 24,022,325 kWh net savings at the customer level.

Overall, the Residential Segment of programs was cost-effective with a UCT of 4.37. The segment achieved 118% of the annual kWh goal with significant contributions from the Home Lighting & Recycling, School Education Kits and Home Energy Services programs. All the programs under the Residential Segment are discussed in more detail below.

Energy Feedback

The Energy Feedback Program is a free service offered to Xcel residential customers designed to help them save energy and money. The report compares a customer's energy consumption to similar nearby households for benchmarking an individual household's performance. Energy Feedback provides personalized tips to demonstrate how much customers can save by changing their behavior. Participants receive free monthly emails or quarterly printed reports. Customers also can log on to the My Energy website portal where they can take a home audit, customize an action plan and get energy efficiency tips. To administer the program, Xcel works with a third-party company that helps utilities meet their efficiency goals through effective customer engagement. This program currently serves 24,198 New Mexico customers.

The program's energy savings are derived by comparing the energy usage of a control group to a treatment group. The treatment group receives reports with tips and suggestions along with alerts, based on their actions, to speed up the adoption of energy saving opportunities. The control groups improve energy consumption more organically based on both Xcel and other external influences. While equipment improvements provide longer and less volatile energy savings, behavioral savings require consistent support to the customer through reminders to act on energy savings tips. The goal of report delivery and improvement, alerts and the tools in the web portal is to improve the quality of the energy efficiency behavioral recommendations and the customer experience towards increase energy savings. Generally, realized energy savings increase gradually over time as behavior is impacted by treatment, then begin a long slow decline as the control group efficiency catches up. Product savings are measured and reported to the Company each month by the third-party implementer.

Table 4: 2021 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	44,780	23,418	$ 131,823	$ 143,485	711	778	3,858,383	4,291,520	0.95

Deviations from Goal
In 2021, the program exceeded filed savings targets on a Customer kWh basis and was under budget. Overall, the program performed better than goal in New Mexico.

Changes in 2021
The program added one new wave of customers in March of 2021 to broaden program reach and increase savings. Format upgrades were also made to the reports making them more user friendly. In partnership with the program implementer, SPS is pursuing additional communication changes pulling customers towards increasing levels of digital interaction with more interactive savings suggestions and demonstrated higher savings rates. SPS issued an RFP in Q1 of 2022 to select a vendor for 2023 towards increased participation, enhanced reporting, digital engagement, and higher energy savings achievement.

Residential Cooling

The Residential Cooling Program provides a rebate to electric customers who purchase and permanently install evaporative cooling, high efficiency air conditioners, air source heat pumps, mini-split heat pumps, or programmable thermostats for residential use in New Mexico. The overall goal of the program is to educate customers and contractors on the benefits of high efficiency units and encourage adoption. A quality installation was required for the contractors along with being NATE certified.

Table 5: 2021 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 Cooling	35	96	$ 37,756	$ 43,040	7	39	13,666	125,177	0.26

Deviations from Goal
In 2021 the Residential Cooling program did not perform as expected. Participation was lower than expected and the program had fixed cost associated with having the program.

Changes in 2021
None.

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 low-flow showerheads for homes with an electric water heater.

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 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 multifamily sites prior to installation of any energy efficiency components for which an incentive will be requested.

Table 6: 2021 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	2,172	3,263	$2,242,746	$2,213,861	876	904	9,557,245	8,963,155	2.20

Deviations from Goal
The Home Energy Services Program exceeded its energy savings goals for 2021. The program was also highly cost-effective. The Residential portion of the program performed well, achieving savings of 4.433 gigawatt hours ("GWh") at the customer level. SPS recorded 5.123 GWhs of customer level savings on the Low-Income portion of the program, with expenditures of $1,152,398. This is approximately 10% of the total New Mexico portfolio spend and in excess of the minimum state requirement of 5% of the New Mexico portfolio spend.

To help customers save more while at home, the Company also mailed Low Income kits in Q4 which included kitchen/bathroom aerators, LEDs, and a showerhead.

Changes in 2021
None.

Home Lighting and Recycling

The Home Lighting and Recycling Program helps customers save energy and money by offering energy efficient light emitting diode ("LED") bulbs at discounted prices at participating retailers. SPS works with retailers and manufacturers to buy down the prices of bulbs. This provides a convenient and inexpensive way for customers to reduce their energy usage and impact on the environment while saving money.

SPS marketed the program through a variety of advertising and promotions, including television, radio, on-line, publications, bill inserts, and point-of-purchase displays. The Company returned to being present at community events for part of the year. Community events give us an opportunity to drive one-on-one engagements with our customers and allows us to promote the benefits of LEDs via LED giveaways at these events. The Company offered a deep discount promotion on A-line multi-packs in select stores to encourage additional participation from customers.

Table 7: 2021 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 Lighting & Recycling	306,243	322,550	$1,194,747	$1,169,217	12,380	951	9,966,365	5,514,523	9.61

Deviations from Goal
In 2021, the Home Lighting and Recycling Program exceeded its energy and demand savings goal. In late 2019, the US Department of Energy (DOE) released two new rules that would roll back lighting efficiency standards under the Energy Independence and Security Act of 2007 ("EISA") that were set to take effect on January 1, 2020. As a result of this roll back, SPS was not required to apply the EISA Tier 2 baselines that had been used in its 2019 Triennial Plan Filing, allowing SPS to claim more savings than originally forecasted.

Changes in 2021
None.

Heat Pump Water Heaters

The Heat Pump Water Heater ("HPWH") program is designed to encourage SPS customers to purchase and install an eligible energy efficient electric HPWH for residential use. HPWHs are the most efficient electric fuel option for customers. The incentive will be available for self-install or professional installation through a heating, ventilation, and air conditioning contractor. Following installation, a completed rebate application form and invoice are submitted to SPS. Customers can expect to receive a rebate six to eight weeks after submitting an application.

SPS marketed the program through targeted direct mail which was further supported by social media and Google ads. The marketing was aimed at increasing customer and contractor awareness of the program.

Table 8: 2021 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
Heat Pump Water Heaters	2	100	$ 8,225	$ 78,500	1	45	6,814	337,666	0.23

Deviations from Goal
The program did not meet the forecasted savings goal and was under budget for the year due to the lack of participation.

Changes in 2021
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. Each participating student receives a kit to take home which includes four 9-watt LEDs, an efficient showerhead, a kitchen faucet aerator, and a bathroom faucet aerator. The program is targeted at 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. The students complete surveys to determine the measure installation rates.

Table 9: 2021 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	2,561	2,500	$ 133,285	$ 145,917	15	10	562,451	376,378	1.20

Deviations from Goal
The program exceeded its participation and savings goals while also spending less than our forecasted budget for the year.

Changes in 2021
None.

Smart Thermostat Program

The Smart Thermostat Program utilizes the new ENERGY STAR connected Thermostat specification. Eligible customers will receive a $50 rebate for an ENERGY STAR connected thermostat through the Xcel Energy Inc. ("Xcel Energy") storefront, paper applications and online applications that will be available to both end use customers and trade allies. Customers must receive electric service from SPS in order to be eligible for a rebate.

Table 10: 2021 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
Smart Thermostat	90	1,296	$ 75,860	$ 122,500	0	0	57,401	698,746	0.17

Deviations from Goal
The program did not meet the forecasted savings goal and was under budget for the year due to the lack of participation. SPS plans to do additional marketing and outreach efforts in PY2022 to help drive participation back into the program.

Changes in 2021
The program implemented a new storefront vendor where customers can go directly to purchase smart thermostats and receive an instant rebate.

Business Segment

SPS's Business Segment in New Mexico consists of nearly 24,950 commercial, industrial, and agricultural customer premises. In 2021, SPS offered one business program made up of several product offerings with opportunities for all commercial and industrial customers to participate.

In total, SPS spent $7,164,944 on these programs and achieved 3,740 kW and 26,187,209 kWh savings at the net customer level.

Overall, the Business Segment of programs was cost-effective with a UCT of 1.41. Savings achievements were 133% of the annual kWh goal. The Business Segment is 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 Recommissioning, Cooling Efficiency, Custom Efficiency, Large Customer Self-Direct, Lighting Efficiency, and Motor & Drive Efficiency products. Customers can choose to participate in any or all of the individual program components.

Table 11: 2021 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	228	487	$7,164,944	$5,682,482	3,740	2,764	26,187,209	19,763,161	1.41

Deviations from Goal
The program continues to see substantial participation in the oil and gas sector because of SPS's increased efforts to target the growing market within the service territory. Additionally, the Motors program saw higher than anticipated participation in the prescriptive Variable Frequency Drive ("VFD") measure, and several large custom VFD projects were rebated in 2021.

Changes in 2021
None.

Planning & Research Segment
The Planning and Research Segment consists of internal utility 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 EE/LM 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 EE/LM-related expenses for Demand Side Management ("DSM") Planning & Administration, Market Research, M&V, and Product Development. Each Planning and Research program is discussed below.

Planning & Administration

The Planning and Administration area manages all EE/LM 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 EE/LM 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.

Deviations from Goal

None.

Changes in 2021

None.

Market Research

Market Research conducts surveys and studies to understand customer needs that relate to DSM conservation efforts. In 2021, the Company conducted the following general research projects:

- An electric energy efficiency potential study
- Contribute to purchase of business and residential customer segmentation data via 3rd party data/segmentation firms
- Contribute to larger project developing Xcel Energy-specific residential segmentation model
- Support a Product Experience Survey that monitors customer satisfaction by surveying most participants after a rebate has been processed or program participation has completed.
- E Source Consultative Services and research; and,
- Residential Campaign Effectiveness Tracking research.
- Peer utility benchmarking research comparing program offerings and performance metrics with a select set of similar utilities across the United States.
- Supplemental program process research for the Home energy Insights/Energy Feedback product.

Deviations from Goal

SPS spent less than the forecasted budget. The deviation is largely due to staffing limitations that reduced the ability to pursue custom research projects and allocations that charged only a small amount of cost for multi-jurisdiction projects to SPS customers in New Mexico.

Changes in 2021
None.

Measurement & Verification

The M&V 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. The 2020 M&V Report is provided as Appendix A of this document. In compliance with the reporting requirements, the 2020 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 EE/LM 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
SPS spent less than the forecasted indirect M&V budget which is primarily used for TRM updates and portfolio wide M&V activities.

Changes in 2021
None.

Product Development

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

Deviations from Goal
SPS spent less than the forecasted budget due to lower than expected consulting costs.

Changes in 2021
None.

Consumer Education

Consumer Education is an indirect program that focuses primarily on creating awareness of energy efficiency by providing residential customers with information on what they can do to save energy and money by reducing their energy usage. The company employs a variety of resources and channels to communicate conservation and energy efficiency messages directed towards Xcel Energy's tools, rebates, programs and energy saving tips. Awareness driving tactics include: the Xcel Energy website, digital content, community outreach events and sponsorships, social media channels, public library partnerships.

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

- sponsorship of community events supporting residential conservation and energy efficiency;
- web presence on xcelenergy.com;
- social media (Facebook, Twitter, blogs, etc.);
- digital content;
- Power Check meters and materials placed in public libraries;
- community-based marketing events;
- customer feedback surveys and customized post-event emails following outreach events;

Deviations from Goal
SPS spent less than the forecasted budget due to cancelled events and in person engagement and educational opportunities because of the COVID-19 pandemic.

Changes in 2021
None.

Section IV: 2021 Incentive Mechanism True-Up

SPS exceeded its 2021 achievement goal of 40.134 GWh by 10.075 GWh, resulting in an earned incentive of $844,761. When compared to the collected amount ($495,391), SPS needs to collect $ 349,370 (plus interest) from customers related to the 2021 incentive.

Appendix A: Measurement & Verification Report:

SPS 2021 Program Year

Provided by Evergreen Economics

Evaluation of the 2021 Southwestern Public Service Company's Energy Efficiency Programs

Final Report

April 22, 2022

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

ECOMETRIC

RESEARCH & POLLING INC

Table of Contents

Executive Summary

This report presents the independent evaluation results for the Southwestern Public Service Company (SPS) energy efficiency programs for program year 2021 (PY2021).

The SPS programs and evaluation requirements were first established in 2005 by the New Mexico legislature's passage of the 2005 Efficient Use of Energy Act (EUEA).[1] The EUEA requires public utilities in New Mexico, in collaboration with other parties, to develop cost-effective programs that reduce energy demand and consumption. Utilities are required to submit their proposed portfolio of programs to the New Mexico Public Regulation Commission (NMPRC) for approval. As a part of its approval process, the NMPRC must find that the program portfolio is cost effective based on the Utility Cost Test (UCT).

An additional requirement of the EUEA is that each program must be evaluated at least once every three years. As part of the evaluation requirement, SPS must submit to the NMPRC a comprehensive evaluation report prepared by an independent program evaluator. As part of the reporting process, the evaluator must measure and verify energy and demand savings, determine program cost effectiveness, assess how well the programs are being implemented, and provide recommendations for program improvements as needed.

For PY2021, the following SPS programs were evaluated:

- Business Comprehensive
- Energy Feedback
- Home Energy Services
- Home Lighting & Recycling

For each of the evaluated programs, the evaluation team estimated realized gross and net impacts (kWh and kW) and calculated program cost effectiveness using the UCT.[2] Brief process evaluations were also conducted for the Business Comprehensive and Home Energy Services programs.

[1] NMSA §§ 62-17-1 *et seq* (SB 644). Per the New Mexico Public Regulation Commission Rule Pursuant to the requirements of the EUEA, the NMPRC issued its most recent *Energy Efficiency Rule* (*17.7.2 NMAC*) effective September 26, 2017, that sets forth the NMPRC's policy and requirements for energy efficiency and load management programs. This Rule can be found online at http://164.64.110.134/parts/title17/17.007.0002.html

[2] The evaluation team consists of Evergreen Economics, EcoMetric, Demand Side Analytics, and Research & Polling.

The remaining programs that were not evaluated for PY2021 are still summarized in this report. The accomplishments for the non-evaluated programs are reported using the following parameters:

- Gross impacts (kWh, kW) were calculated using the SPS *ex ante* values for annual savings;
- Net impacts were calculated from the gross impacts using the existing *ex ante* net-to-gross (NTG) ratio; and
- Cost effectiveness calculations were calculated using the *ex ante* net impact values and cost data as reported by SPS.

The analysis methods used for the evaluated PY2021 programs are summarized as follows:

Business Comprehensive. This program offers rebates to SPS's commercial customers for the installation of energy efficient equipment. The measures eligible for the Business Comprehensive program are primarily prescriptive in nature, but the program also includes custom projects. Gross impacts were estimated based on a review of the deemed savings values combined with engineering desk reviews of a statistically representative sample of projects covering a range of project sizes and major measure types. A phone survey of participating customers was used to verify installation and to collect information needed for a self-report analysis of free ridership to determine net impacts.

Energy Feedback. This program provides participating customers with information on their energy consumption by providing a comparison with a matched set of similar households. The feedback on energy use, combined with tips for reducing energy use, is designed to create sustained reductions in consumption. Net impacts were estimated using a billing regression and data from both the participants and control group customers.

Home Energy Services. This is a prescriptive program serving SPS's residential customers, including low-income households, and offers the following measures: ceiling insulation, duct sealing, air infiltration, central AC, air source heat pumps, programmable thermostats, LEDs, and low flow shower heads. Low-income customers can receive these measures at a reduced cost. The evaluation of the Home Energy Services program included desk reviews for a sample of projects, deemed savings reviews, and a participant survey. For the process evaluation, the participant survey was used to assess how well the program is operating and serving customers.

Home Lighting & Recycling. The lighting program utilized an elasticity model to estimate the net impacts based on the observed changes in bulb sales at different retail price points. The model was then used to estimate the effect that the program rebate is having on bulb sales, which was used to estimate free ridership for the program. The deemed savings for each bulb type were also reviewed as part of the gross impact analysis.

Table 1 summarizes the PY2021 evaluation methods.

Table 1: Summary of PY2021 Evaluation Methods by Program

Program	Deemed Savings Review	Phone Survey	Engineering Desk Reviews	Elasticity Model	Billing Regression
Business Comprehensive		◆	◆		
Energy Feedback		◆			◆
Home Energy Services	◆	◆	◆		
Home Lighting & Recycling	◆	◆		◆	

The results of the PY2021 impact evaluation are shown in Table 2 (kWh) and Table 3 (kW), with the programs evaluated in 2021 highlighted in blue. For the non-evaluated programs, the totals are based on the *ex ante* savings and NTG values from the SPS tracking data.

Table 2: PY2021 Savings Summary - kWh[3]

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Business Comprehensive						
Cooling Efficiency	16	227,178	0.9749	221,468	0.7309	161,871
Custom Efficiency	10	3,619,048	0.9996	3,617,775	0.7309	2,644,232
Lighting Efficiency	123	3,516,687	0.9448	3,322,516	0.7309	2,428,427
Motors Efficiency	79	28,892,005	0.9922	28,666,958	0.7309	20,952,679
Home Lighting & Recycling	306,243	13,888,526	1.0107	14,037,133	0.7100	9,966,365
Energy Feedback	44,780	2,905,000	0.9344	2,714,383	N/A*	2,714,383
Energy Feedback – Web Portal	--	1,144,000	1.0000	1,144,000	N/A*	1,144,000
Residential Cooling	35	23,888	1.0000	23,888	0.5721	13,666
School Education Kits	2,561	562,451	1.0000	562,451	1.0000	562,451
Home Energy Services	1,055	4,465,522	1.0502	4,689,498	0.9455	4,433,920
Home Energy Services Low Income	914	4,837,842	1.0502	5,080,492	1.0000	5,080,492
Smart Thermostat	90	81,189	1.0000	81,189	0.7070	57,401
Low Income Kits	203	42,833	1.0000	42,833	1.0000	42,833
Water Heating	2	6,814	1.0000	6,814	1.0000	6,814
Total	**356,111**	**64,212,983**		**64,211,398**		**50,209,534**

*Energy Feedback results are calculated as net impacts throughout, NTG ratio not applied

[3] All kWh savings shown in this table and throughout the report are at the customer level.

Table 3: PY2021 Savings Summary - kW[4]

Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Business Comprehensive						
Cooling Efficiency	16	72	0.9567	69	0.7309	50
Custom Efficiency	10	550	0.9998	550	0.7309	402
Lighting Efficiency	123	734	0.9496	697	0.7309	509
Motors Efficiency	79	5,452	0.9859	5,375	0.7309	3,928
Home Lighting & Recycling	306,243	17,417	1.0011	17,437	0.7100	12,380
Energy Feedback	44,780	761	0.9343	711	N/A*	711
Energy Feedback – Web Portal	--	--	--	--	N/A*	--
Residential Cooling	35	13	1.0000	13	0.5721	7
School Education Kits	2,561	149	1.0000	149	1.0000	149
Home Energy Services	1,055	382	0.9999	382	0.9455	361
Home Energy Services Low Income	914	645	0.9999	645	1.0000	645
Smart Thermostats	90	15	1.0000	15	0.7070	11
Low Income Kits	203	9	1.0000	9	1.0000	9
Water Heating	2	1	1.0000	1	1.0000	1
Total	**356,111**	**26,199**		**26,051**		**19,163**

*Energy Feedback results are calculated as net impacts throughout, NTG ratio not applied

[4] All kW savings shown in this table and throughout the report are peak coincident kW.

Beginning in 2021 for the impact evaluation, we shifted to applying new NTG ratios prospectively in future years, rather than retrospectively as had been done in prior years. As a consequence, the same NTG ratios applied in PY2020 were also being used for PY2021. For the PY2021 evaluation, the only updates to the NTG ratios occurred with the Business Comprehensive, Home Lighting & Recycling, and Home Energy Services programs, and these new ratios will be applied beginning in PY2022. For the Business Comprehensive program, the ratios will change from 0.7309 to 0.8381, for Home Lighting & Recycling, the ratio will change from 0.7100 to 0.6100, and for Home Energy Services, the NTG ratio will change from 0.9455 to 0.9051.

Table 4 summarizes the updates to the NTG ratios for PY2022, with the updated values shaded in green.

Table 4: Net-to-Gross Ratio Updates for PY2022

Program	PY2021 NTG Ratio	PY2022 NTG Ratio
Business Comprehensive		
Cooling	0.7309	0.8381
Custom	0.7309	0.8381
Lighting	0.7309	0.8381
Motors	0.7309	0.8381
Home Lighting & Recycling	0.7100	0.6100
Energy Feedback	N/A*	N/A*
Residential Cooling	0.5721	
School Education Kits	1.0000	
Home Energy Services	0.9455	0.9051
Home Energy Services – Low Income	1.0000	1.0000
Smart Thermostats	0.7070	

*Energy Feedback results are calculated as net impacts throughout, NTG ratio not applied.

Using net realized savings from this evaluation and cost information provided by SPS, the evaluation team calculated the ratio of benefits to costs for each of SPS's programs and for the portfolio overall. The evaluation team calculated cost effectiveness using the UCT, which compares

the benefits and costs to the utility or program administrator implementing the program.[5] The evaluation team conducted this test in a manner consistent with the California Energy Efficiency Policy Manual.[6]

The results of the UCT are shown below in Table 5. The Business Comprehensive, Home Lighting and Recycling, School Education Kits and Home Energy Services programs had a UCT of greater than 1.00, and the portfolio overall was found to have a UCT ratio of 2.30.

Table 5: PY2021 Cost Effectiveness

Program	Utility Cost Test (UCT)
Business Comprehensive	1.41
Home Lighting & Recycling	9.61
Energy Feedback	0.95
Residential Cooling	0.26
School Education Kits	1.20
Home Energy Services	2.20
Heat Pump Water Heaters	0.23
Smart Thermostat	0.17
Overall Portfolio	**2.30**

The impact evaluation—which included engineering desk reviews for a sample of Business Comprehensive and Home Energy Services projects resulted in verified gross savings that were less than the reported ex ante gross savings. Adjustments to savings based on the Business Comprehensive and Home Energy Services desk reviews were due to two main factors: project-specific calculation inputs were documented solely in the processing database, and baseline lighting fixture wattages were not always documented in the tracking data. The evaluation team has provided a number of recommendations to improve savings values that include documenting calculations and adjustments to project savings, utilizing project-specific information when available, and other minor improvements to savings assumptions or algorithms.

[5] The Utility Cost Test is sometimes referred to as the Program Administrator Cost Test, or PACT.
[6] Version 5. 2013.
http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/EEPolicyManualV5forPDF.pdf

The process evaluation activities, which included surveys with Business Comprehensive and Home Energy Services participants as well as interviews with contractors serving the Home Energy Services program, found very high levels of satisfaction across various aspects of the programs. Very few instances of dissatisfaction were reported, and the program processes generally appear to be working well for participants. Home Energy Service contractors indicated the market continues to respond to incentives, and that the program continues to persuade homeowners to make energy efficiency investments, although, reduced incentives, especially for gas and lighting measures are making it more challenging to attract prospective participants.

1 Evaluation Methods

The analysis methods used for the evaluated PY2021 programs are summarized as follows:

Business Comprehensive. This program offers rebates to SPS's commercial customers for the installation of energy efficient equipment. The measures eligible for the Business Comprehensive program are primarily prescriptive in nature, but the program also includes custom projects. Gross impacts were estimated based on a review of the deemed savings values combined with engineering desk reviews of a statistically representative sample of projects covering a range of project sizes and major measure types. A phone survey of participating customers was used to verify installation and to collect information needed for a self-report analysis of free ridership to determine net impacts.

Energy Feedback. This program provides participating customers with information on their energy consumption by providing a comparison with a matched set of similar households. The feedback on energy use, combined with tips for reducing energy use, is designed to create sustained reductions in consumption. Net impacts were estimated using a billing regression and data from both the participants and control group customers.

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Home Lighting & Recycling. The lighting program utilized an elasticity model to estimate the net impacts based on the observed changes in bulb sales at different retail price points. The model was then used to estimate the effect that the program rebate is having on bulb sales, which was used to estimate free ridership for the program. The deemed savings for each bulb type were also reviewed as part of the gross impact analysis.

1.1 Phone Surveys

Participant phone surveys were fielded in early 2022 for participants in the Business Comprehensive and Home Energy Services programs. The surveys averaged about 15 to 20 minutes in length and covered the following topics:

- Verification of measures included in SPS's program tracking database;
- Satisfaction with the program experience;

- Survey responses for use in the free ridership calculations;
- Participation drivers and barriers; and
- Customer characteristics.

Additional interviews were also conducted by engineers if additional information was needed for the individual project desk reviews.

Given the relatively low number of participants in the Business Comprehensive program, the original goal was to complete as many surveys as possible, and a census of participants was contacted for this program. Ultimately, 40 phone surveys were completed with Business Comprehensive participants. For the Home Energy Services program, the goal was to complete 100 surveys, including a mix of low-income and non-low-income customers. A total of 100 surveys were completed for this program. Table 6 shows the distribution of completed surveys.

Table 6: Business Comprehensive & Home Energy Services Phone Survey Summary

Program	Number of Customers with Valid Contact Info	Completed Surveys
Business Comprehensive	94	40
Home Energy Services	685	100

The final survey instrument for the Business Comprehensive program is included in Appendix A, and the final survey instrument for the Home Energy Services program is included in Appendix B.

1.2 Engineering Desk Reviews

To verify gross savings estimates, the evaluation team conducted engineering desk reviews for a sample of the projects in the Business Comprehensive and Home Energy Services programs. For dropship lighting projects in the Business Comprehensive program, the evaluation team conducted a database review. The goal of the desk reviews and database review was to verify equipment installation, operational parameters, and estimated savings.

Both prescriptive and custom projects received desk reviews that included the following:

- Review of project description, documentation, specifications, and tracking system data;
- Confirmation of installation using invoices and supporting project documentation; and
- Review of project documentation, when available, detailing differences between installed equipment and subsequent adjustments.

For projects in the Business Comprehensive program that used prescriptive methodology, the engineering desk reviews included the following:

- Review of measures available in the New Mexico Technical Reference Manual (TRM) and the SPS Technical Assumptions (TA) to determine the most appropriate algorithms which apply to the installed measure;
- Recreation of savings calculations using TRM/TA algorithms and inputs as documented by submitted specifications and invoices; and
- Review of TRM/TA algorithms to identify candidates for future updates and improvements.

For the custom projects included in the Business Comprehensive program, the engineering desk reviews included the following:

- Review of engineering analyses for technical soundness, proper baselines, and appropriate approaches for the specific applications;
- Review of methods of determining demand (capacity) savings to ensure they are consistent with program and utility methods for determining peak load/savings;
- Review of input data for appropriate baseline specifications and variables such as weather data, bin hours, and total annual hours to determine if they are consistent with facility operation; and
- Consideration and review for interactive effects between affected systems.

For the dropship lighting projects included in the Business Comprehensive program, the database review included the following:

- Review of database for proper baselines, deemed savings technical assumptions and quantities;
- Verification that calculations align with the methodology outlined in the TRM/TA; and
- Recreation of savings calculations using TRM/TA algorithms and inputs as documented in the database.

For projects included in the Home Energy Services program that used prescriptive methodology, the engineering desk reviews included the following:

- Review of field reports, pictures, and other project files for proper baselines, deemed savings technical assumptions and parameters;
- Recreation of savings calculations using TRM/TA algorithms; and
- Review of TRM/TA algorithms to identify candidates for future updates and improvements.

1.3 Billing Regression

As in years past, a billing regression model was used to evaluate the Energy Feedback program. The general framework for the billing regression model is to estimate post-participation energy consumption while controlling for the timing of the measure installations and changes in weather over the analysis period. The model framework was tailored to match the individual program, as discussed below.

1.3.1 Energy Feedback

For the Energy Feedback program, a billing regression was used to estimate energy savings based on an analysis of customer bills before and after they received the Energy Feedback reports. The billing regression uses a fixed effects specification and includes variables for monthly energy consumption, weather (heating and cooling degree days), and other variables to control for external influences on energy use. The analysis dataset is a randomized control trial (RCT) design that includes both a participating (treatment) group and a matched control group of customers. Since data on the control group are included in the model, the resulting impact estimates are interpreted as net impacts.

1.4 Net Impact Analysis

1.4.1 Self-Report Approach

The evaluation team estimated net impacts for some programs using the self-report approach. This method uses responses to a series of carefully constructed survey questions to learn what participants would have done in the absence of a utility's program. The goal is to ask enough questions to paint an adequate picture of the influence of the program activities (rebates and other program assistance) within the confines of what can reasonably be asked during a phone survey.

With the self-report approach, specific questions that are explored include the following:

- What were the circumstances under which the customer decided to implement the project (that is, new construction, retrofit/early replacement, replace-on-burnout)?
- To what extent did the program accelerate installation of high efficiency measures?
- What were the primary influences on the customer's decision to purchase and install the high efficiency equipment?
- How important was the program rebate on the decision to choose high efficiency equipment?
- How would the project have changed if the rebate had not been available (for example, would less efficient equipment have been installed, would the project have been delayed, etc.)?

- Were there other program or utility interactions that affected the decision to choose high efficiency equipment (for example, was there an energy audit done, has the customer participated before, is there an established relationship with a utility account representative, was the installation contractor trained by the program)?

The method used for estimating free ridership (and ultimately the net-to-gross [NTG] ratio) using the self-report approach is based on the 2017 Illinois Statewide TRM.[7] For the SPS programs, questions regarding free ridership were divided into several primary components:

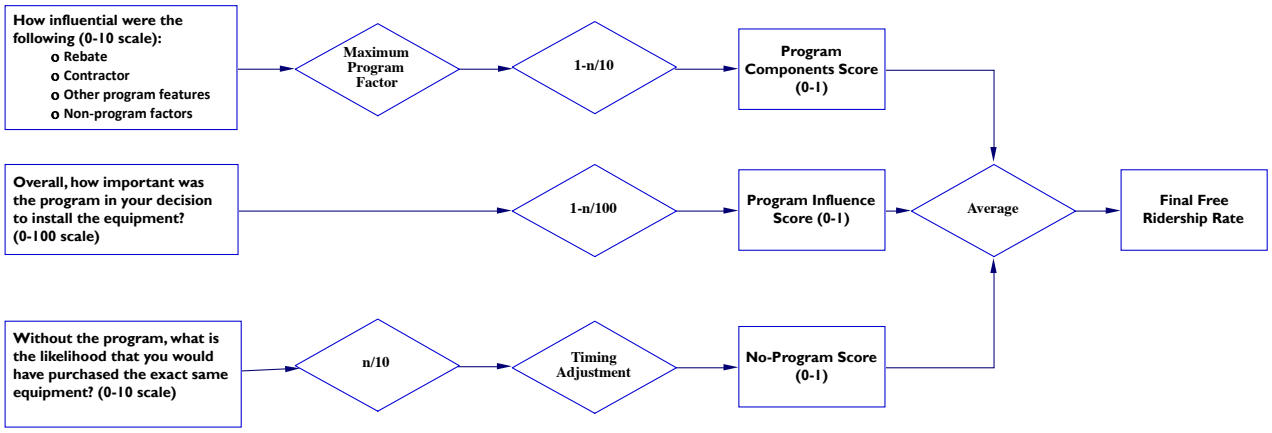
- A ***Program Component*** series of questions that asked about the influence of specific program activities (rebate, customer account rep, contractor recommendations, other assistance offered) on the decision to install energy efficient equipment;
- A ***Program Influence*** question, where the respondent was asked directly to provide a rating of how influential the overall program was on their decision to install high efficiency equipment; and
- A ***No-Program Component*** series of questions, based on the participant's intention to carry out the energy-efficient project without program funds or due to influences outside of the program.

Each component was assessed using survey responses that rated the influence of various factors on the respondent's equipment choice. Since opposing biases potentially affect the main components, the *No-Program* component typically indicates higher free ridership than the *Program Component/Influence* questions. Therefore, combining these opposing influences helps mitigate the potential biases. This framework also relies on multiple questions that are crosschecked with other questions for consistency. This prevents any single survey question from having an excessive influence on the overall free ridership score.

Figure 1 provides a simplified version of the scoring algorithm. In some cases, multiple questions were asked to assess the levels of efficiency and purchase timing in absence of the program. For each of the scoring components, the question responses were scored so that they were consistent and resulted in values between 0 and 1. Once this was accomplished, the three question components were averaged to obtain the final free ridership score.

[7] The full Illinois TRM can be found at http://www.ilsag.info/il_trm_version_6.html

Figure 1: Self-Report Free Ridership Scoring Algorithm



Source: Adapted by Evergreen Economics from the 2017 Illinois TRM.

More detail on each of the three question tracks is provided below.

Program Component Questions

The ***Program Component*** battery of questions was designed to capture the influence of the program on the equipment choice. These questions were also designed to be as comprehensive as possible so that all possible channels through which the program is attempting to reach the customer were included.

The type of questions included in the Program Component question battery included the following:

- How influential were the following on your decision to purchase your energy efficient equipment?
  - Rebate amount
  - Contractor recommendation
  - Utility advertising/promotions
  - Technical assistance from the utility (e.g., energy audit)
  - Recommendation from utility customer representative (or program implementer)
  - Previous participation in a utility efficiency program

As shown at the top of Figure 1, the question with the highest value response (i.e., the program factor that had the greatest influence on the decision to install a high efficiency measure) was the one that was used in the scoring algorithm as the Program Component score.

Program Influence Question

A separate ***Program Influence*** question asked the respondent directly to rate the combined influence of the various program activities on their decision to install energy efficient equipment.

This question allowed the respondent to consider the program as a whole and incorporated other forms of assistance (if applicable) in addition to the rebate. Respondents were also asked about potential non-program factors (condition of existing equipment, corporate policies, maintenance schedule, etc.) to put the program in context with other potential influences.

The Program Influence question also provided a consistency check so that the stated importance of various program factors could be compared across questions. If there appeared to be inconsistent answers across questions (rebate was listed as very important in response to one question but not important in response to a different question, for example), then the interviewer asked follow-up questions to confirm responses. The verbatim responses were recorded and were reviewed by the evaluation team as an additional check on the free ridership results.

No-Program Questions

A separate battery of ***No-Program*** component questions was designed to understand what the customer might have done if the SPS rebate program had not been available. With these questions, we attempted to measure how much of the decision to purchase the energy efficient equipment was due to factors that were unrelated to the rebate program or other forms of assistance offered by SPS.

The types of questions asked for the No-Program component included the following:

- If the program had not existed, would you have
  - Purchased the exact same equipment?
  - Chosen the same energy efficiency level?
  - Delayed your equipment purchase?
- Did you become aware of the utility rebate program before or after you chose your energy efficient equipment?

The question regarding the timing of awareness of the rebate was used in conjunction with the importance rating the respondent provided in response to the earlier questions. If the respondent had already selected the high efficiency equipment prior to learning about the rebate **and** said that the rebate was the most important factor, then a downward adjustment was made on the influence of the rebate in calculating the Program Component score.

The responses from the No-Program questions were analyzed and combined with a timing adjustment to calculate the No-Program score, as shown in Figure 1. The timing adjustment was made based on whether or not the respondent would have delayed their equipment purchase if the rebate had not been available. If the purchase would have been delayed by one year or more, then the No-Program score was set to zero, thereby minimizing the level of free ridership for this algorithm component only.

Free Ridership and NTG Calculation

The values from the Program Component score, the Program Influence score, and the No-Program score were averaged in the final free ridership calculation; the averaging helped reduce potential biases from any particular set of responses. The fact that each component relied on multiple questions (instead of a single question) also reduced the risk of response bias. As discussed above, additional survey questions were asked about the relative importance of the program and non-program factors. These responses were used as a consistency check, which further minimized potential bias.

Once the self-report algorithm was used to calculate free ridership, the total NTG ratio was calculated using the following formula:

$$Net\text{-}to\text{-}Gross\ Ratio = (1 - Free\ Ridership\ Rate)$$

Beginning in 2021, any updates to program NTG ratios will be applied prospectively. As a result, the new NTG ratios for Business Comprehensive, Home Lighting & Recycling, and Home Energy Services developed in the PY2021 evaluation will be used beginning in PY2022. The realized net impacts discussed below were calculated using the existing NTG ratios from PY2020.

1.5 Realized Gross and Net Impact Calculations

The final step in the impact evaluation process is to calculate the realized gross and net savings, based on the program-level analysis described above. The **Gross Realized Savings** are calculated by taking the original *ex ante* savings values from the participant tracking databases and adjusting them using an **Installation Adjustment** factor (based on the count of installed measures verified through the phone surveys) and an **Engineering Adjustment** factor (based on the engineering analysis, desk reviews, etc.):

Gross Realized Savings =
(*Ex Ante* Savings)*(Installation Adjustment)*(Engineering Adjustment Factor)

Net Realized Savings are then determined by multiplying the Gross Realized Savings by the NTG ratio:

Net Realized Savings = (Net-to-Gross Ratio)*(Gross Realized Savings)

1.6 Cost Effectiveness

The cost effectiveness of the SPS programs was tested using the Utility Cost Test (UCT). In the UCT, the benefits of a program are considered to be the present value of the net energy saved, and the costs are the present value of the program's administrative costs plus incentives paid to

customers. To perform the cost effectiveness analysis, the evaluation team obtained the following from SPS:

- Avoided cost of energy (costs per kWh over a 20+ year time horizon);
- Avoided cost of capacity (estimated cost of adding a kW/year of generation, transmission, and distribution to the system);
- Avoided cost of CO2 (estimated monetary cost of CO2 per kWh generated);
- Avoided transmission and distribution costs;
- Discount rate;
- Line loss factor; and
- Program costs (all expenditures associated with program delivery).

For all programs, the Evergreen team took the energy savings and effective useful life values from the final PY2021 tracking data submitted by SPS. The evaluation team reviewed the effective useful life values and compared them to the values contained in the New Mexico TRM to confirm that the values assumed by SPS were reasonable. The final cost-effectiveness analyses used net verified impacts, which take into account NTG ratios and engineering adjustment factors.

SPS also provided the evaluation team with measure-specific net present values for the avoided cost per kWh saved over each measure's life. These values took into account measure load shapes, hourly avoided energy costs, measure effective useful lives, the SPS discount rate, and line loss factors.

Additionally, Section 17.7.2.9.B(4) of the New Mexico Energy Efficiency Rule allows utilities to claim utility system economic benefits for low-income programs equal to 20 percent of the calculated energy benefits. We applied the 20 percent adder to the benefits calculated for the Home Energy Services Low Income program.

The evaluation team input the savings and cost data into a cost effectiveness model that calculated the benefits, costs, and benefit-cost ratio for each measure, project, or program entered, and rolled up the data into program-level UCT values.

2 Business Comprehensive Program

2.1 Business Comprehensive Gross Impacts

The *ex ante* 2021 impacts for the Business Comprehensive program are summarized in Table 7. In total, the Business Comprehensive program accounted for approximately 56 percent of *ex ante* energy impacts in SPS's overall portfolio.

Table 7: PY2021 Business Comprehensive Savings Summary

Sub-Program	# of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
Cooling Efficiency	16	227,178	72
Custom Efficiency	10	3,619,048	550
Lighting Efficiency	123	3,516,687	734
Motors Efficiency	79	28,892,005	5,452
Total	**228**	**36,254,918**	**6,807**

The majority of the gross impact evaluation activities were devoted to engineering desk reviews of a sample of projects. For the desk reviews, the sample frame included projects in the Cooling, Custom, Lighting, and Motors sub-programs. The sample was stratified to cover a range of different measure types so that no single measure (often lighting) would dominate the desk reviews. The sample was also stratified based on total energy savings within each sub-program. Overall, the sampling strategy ensured that a mix of projects in terms of both project size and measure type would be included in the desk reviews.

The final sample design is shown in Table 8. The resulting sample achieved a relative precision of 90/4.0 overall, with precision ranging from 85/0.4 to 85/5.9 for all but one sub-program. Exterior lighting failed to reach the 85/15 target.

Table 8: Business Comprehensive Desk Review Sample

Sub-Program	Group	Stratum	Count	Average kWh	Total kWh Savings	% of Savings	Final Sample
Cooling	Cooling	0	3	16,812	44,548	0.2%	3
		1	9	2,201	19,806	0.1%	4
Custom	Custom	0	7	373,777	2,616,438	10.3%	7
Lighting	Exterior	0	3	159,180	409,564	1.6%	3
	Exterior	1	8	22,412	179,292	0.7%	3
	Interior	0	3	170,136	431,682	1.7%	3
	Interior	1	10	18,517	185,168	0.7%	3
	Interior	2	44	4,138	182,079	0.7%	2
	Linear	1	3	51,768	155,305	0.6%	2
	Linear	2	4	31,407	125,629	0.5%	2
	Linear	3	9	13,541	121,865	0.5%	2
	Linear	4	14	2,905	40,676	0.2%	2
Motors	Non-VFD	0	2	7,056	14,112	0.1%	2
	VFD	1	6	878,474	5,270,844	20.7%	2
	VFD	2	11	487,673	5,364,403	21.1%	2
	VFD	3	19	337,629	6,414,948	25.2%	2
	VFD	4	27	144,478	3,900,896	15.3%	2
Total			**182**	**160,124**	**25,477,255**	**100%**	**46**

As discussed in the *Evaluation Methods* section, the evaluation team determined gross realized impacts for the Business Comprehensive program by performing engineering desk reviews on the sample of projects.

For prescriptive projects, the evaluation team found multiple measures that existed in both the New Mexico TRM and the SPS Technical Assumptions (TA). For most of these measures, the approaches were consistent between the two sources. However certain lighting parameters (e.g., available building types) differed between these documents. In cases where these sources were

not consistent, the evaluation team examined the sources to determine which approach we believed offered greater detail and accuracy. Additionally, the evaluation team considered the 2021 New Mexico TRM to be the "safe harbor" and did not make negative adjustments to SPS calculations that correctly adhered to the TRM.

For custom projects, the evaluation team recreated savings analyses when possible (e.g., simple spreadsheet calculations). For more complex analyses (e.g., pumping projects), the evaluation team reviewed the calculation methods and input values. When applicable, approaches and assumptions used in custom analyses were compared to those contained in the TRM.

Engineering adjustment factors varied from 100 percent for these main reasons:

- **The *ex post* savings relied on the Xcel Input Wattage Guide to determine the baseline fixture wattages for prescriptive lighting projects.** The evaluation team relied on the values listed in the Xcel Input Wattage Guide to determine the appropriate baseline fixture wattage for prescriptive lighting projects.
- ***The ex post* savings included an In-Service Rate (ISR) for the LED lamps distributed through the Dropship Lighting program. The *ex post* savings also corrected an error in the reported savings for the linear tubes in the Dropship Lighting program.** Based on our experience with the program, the evaluation team adjusted the ISR from 1.00 to 0.91 for LED lamps, a combination of direct install and kits. For LED linear tubes, SPS hired an electrical contractor to install them. Therefore, the evaluation team used a direct install 1.00 ISR to calculate the verified savings.

Table 9 and Table 10 show the results of the desk reviews and how the resulting engineering adjustments were used to calculate realized savings. For the Business Comprehensive program overall, these adjustments resulted in average engineering adjustment factors of 0.9882 for kWh and 0.9828 for kW.

Table 9: PY2021 Business Comprehensive Gross kWh Impact Summary

Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Cooling Efficiency	16	227,178	0.9749	221,468
Custom Efficiency	10	3,619,048	0.9996	3,617,775
Lighting Efficiency	123	3,516,687	0.9448	3,322,516
Motors Efficiency	79	28,892,005	0.9922	28,666,958
Total	**228**	**36,254,918**	**0.9882**	**35,828,716**

Table 10: PY2021 Business Comprehensive Gross kW Impact Summary

Sub-Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings
Cooling Efficiency	16	72	0.9567	69
Custom Efficiency	10	550	0.9998	550
Lighting Efficiency	123	734	0.9496	697
Motors Efficiency	79	5,452	0.9859	5,375
Total	**228**	**6,807**	**0.9828**	**6,690**

A summary of the individual desk review findings for each of the Business Comprehensive projects is included in Appendix F.

2.2 Business Comprehensive Net Impacts

Net impacts for the Business Comprehensive program were calculated using NTG ratios from the participant phone survey. For the Cooling, Custom, Lighting, and Motors sub-programs, the NTG ratios were developed using the self-report method described in the *Evaluation Methods* section using participant phone survey data from the PY2020 evaluation. The resulting program-level NTG ratio is 0.7309.

Table 11 and Table 12 summarize the PY2021 net impacts for the Business Comprehensive program using the NTG ratios described above. Net realized savings for the program overall are 26,187,209 kWh, and net realized demand savings are 4,890 kW.

Table 11: PY2021 Business Comprehensive Net kWh Impact Summary

Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Cooling Efficiency	16	221,468	0.7309	161,871
Custom Efficiency	10	3,617,775	0.7309	2,644,232
Lighting Efficiency	123	3,322,516	0.7309	2,428,427
Motors Efficiency	79	28,666,968	0.7309	20,952,679
Total	**228**	**35,828,716**	**0.7309**	**26,187,209**

Table 12: PY2021 Business Comprehensive Net kW Impact Summary

Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Cooling Efficiency	16	69	0.7309	50
Custom Efficiency	10	550	0.7309	402
Lighting Efficiency	123	697	0.7309	509
Motors Efficiency	79	5,375	0.7309	3,928
Total	**228**	**6,690**	**0.7309**	**4,890**

2.3 Participant Surveys

As part of the process evaluation, the evaluation team conducted telephone surveys with representatives from 40 participating companies that received rebates through the SPS Business Comprehensive program. The surveys were completed in February 2022 and ranged from 15 to 20 minutes in length.

The participant survey was designed to cover the following topics:

- Verifying the installation of measures included in the program tracking database;
- Collecting information on participants' satisfaction with their program experience;
- Survey responses for use in the free ridership calculations;
- Baseline data on energy use and/or equipment holdings;
- Participant drivers/barriers; and
- Additional process evaluation topics.

Throughout the analysis described here, we present the survey results as weighted percentages based on the proportion of savings represented by survey respondents relative to the total savings of all program participants.

Company Demographics

Participants were first asked demographic questions related to their businesses. Eighty-four percent of participants reported that they owned the building where their energy efficient measures were installed (Figure 2).

Figure 2: Building Ownership (n=38)

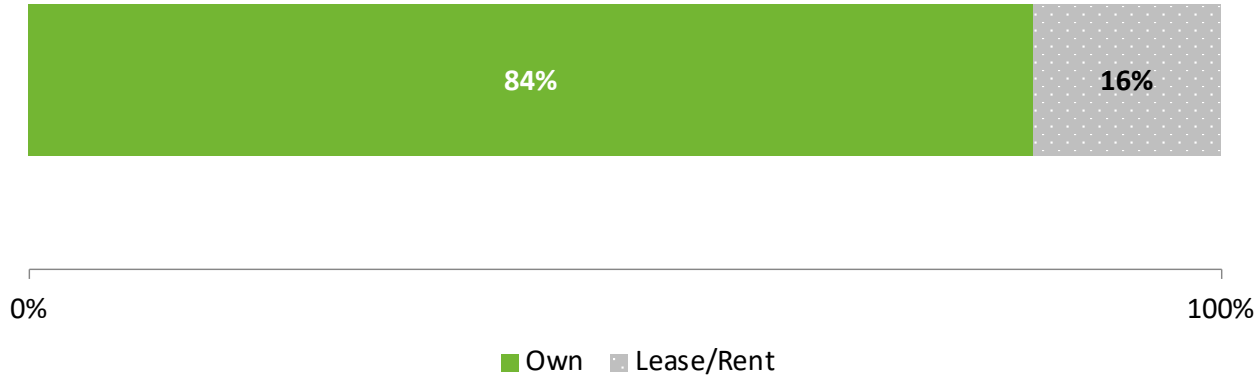


Figure 3 and Figure 4 summarize the survey respondents' number of employees and building size. Thirty-nine percent of participants reported having less than 10 full-time employees, and 56 percent of participants stated that they occupied buildings of less than 2,000 square feet.

Figure 3: Number of Employees (n=36)

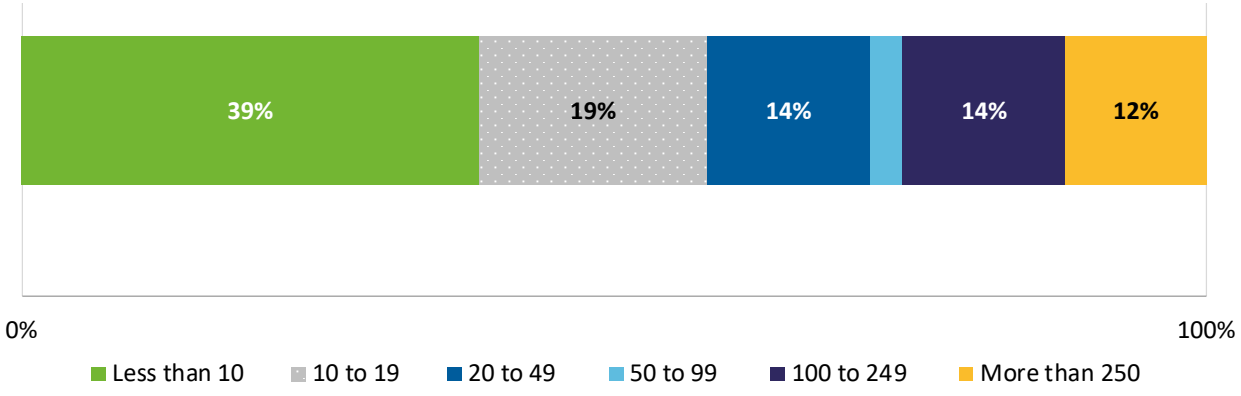
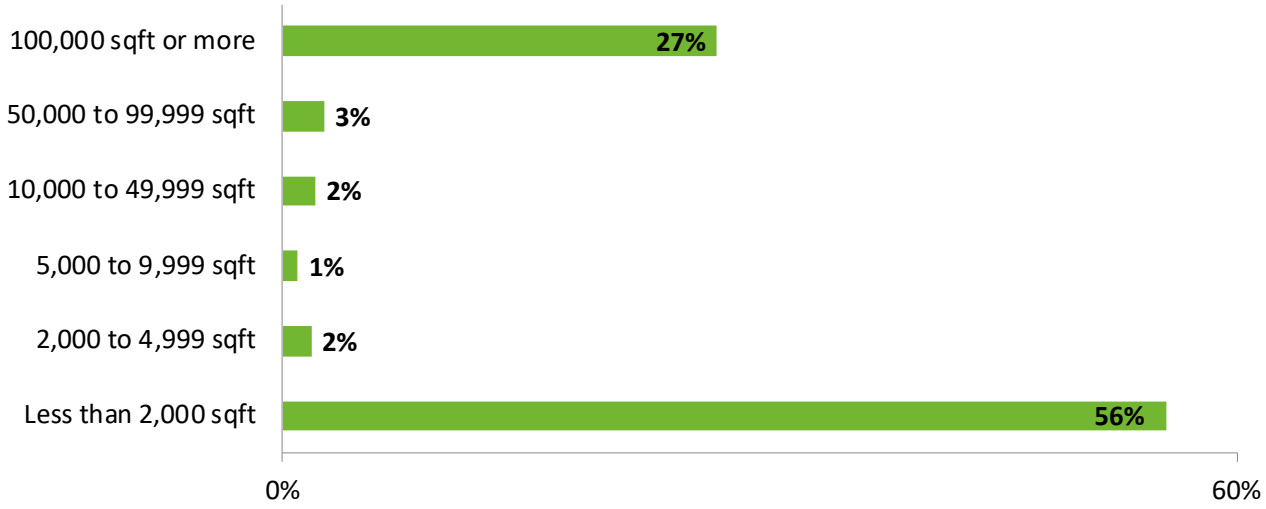
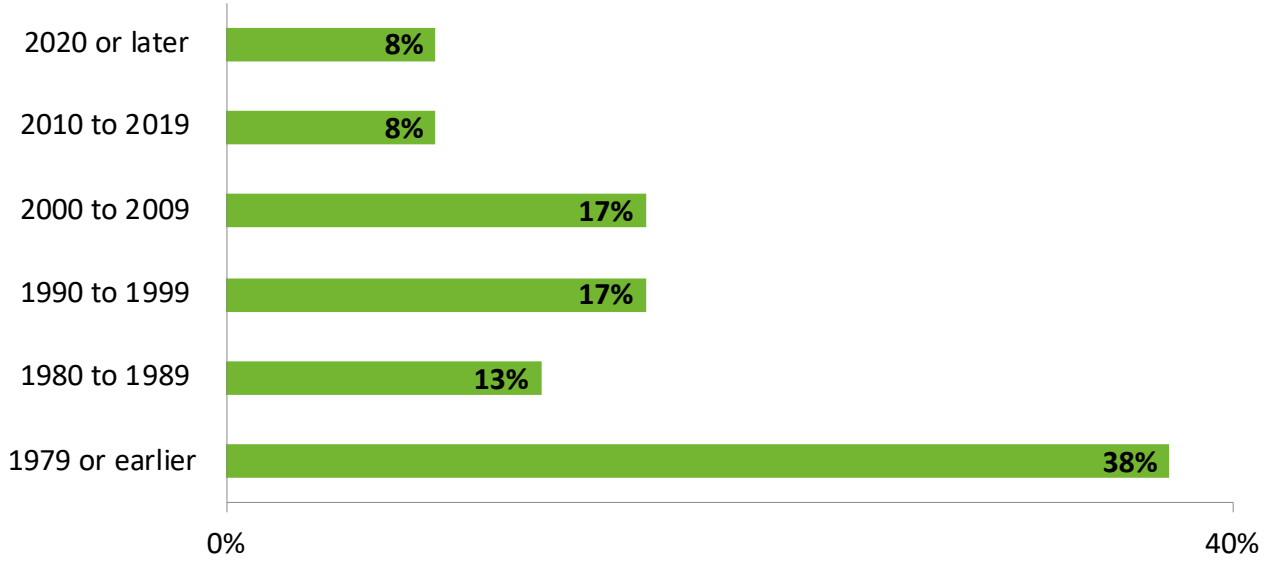


Figure 4: Building Size (n=27)



Additionally, Figure 5 shows that 38 percent of participants reported that their buildings were constructed in 1979 or earlier, 17 percent were constructed from 1990 to 1999, and another 17 percent were constructed from 2000 to 2009. This is inconsistent with previous program years, when survey participants reported newer building projects.

Figure 5: Building Age (n=24)

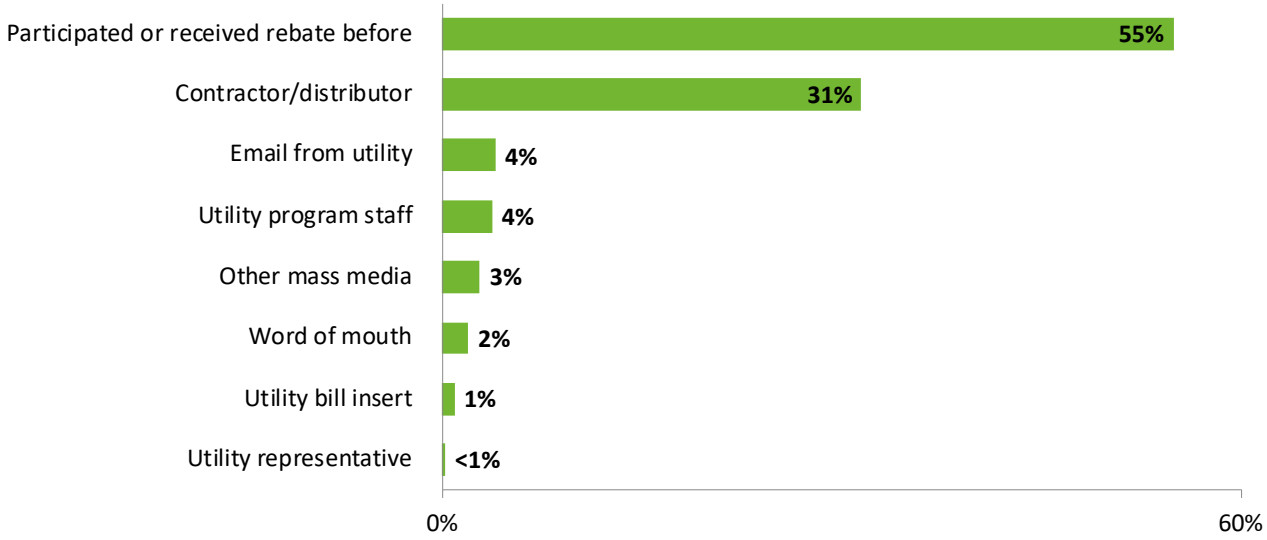


Sources of Awareness

Participants were then asked to recall how they first became aware of the Business Comprehensive program's rebates and assistance (Figure 6). While participants reported learning about the program through a variety of channels (e.g., word of mouth, contractors and/or

distributors, previous participation, retailers, and the utility website), 55 percent of participants had participated or received a rebate before.

Figure 6: Initial Source of Awareness (n=28)



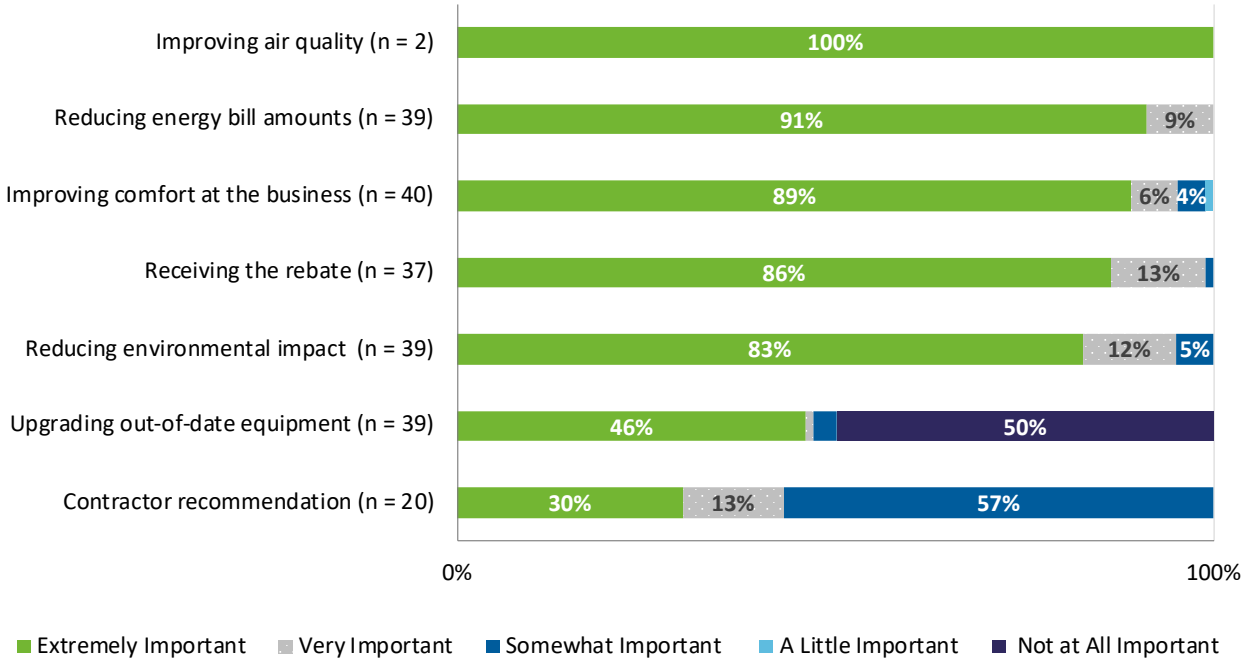
Motivations for Participation

Participants were then asked to rate a list of factors that might have influenced their decision to participate in the program (Conversely, participants were less likely to rank upgrading out-of-date equipment as important, with 50 percent of participants stating that it was not at all important in their decision-making process.

Figure 7). The 'Improving air quality' factor should be examined with caution due to the low number of respondents. Reducing energy bills was the most influential factor across all respondents after excluding improving air quality, with 91 percent of participants reporting that it was extremely important in their decision to participate in the program. Other factors that participants reported as important included improving comfort at the business (89 percent rating it as extremely important) and receiving the rebate (86 percent rating it as extremely important).

Conversely, participants were less likely to rank upgrading out-of-date equipment as important, with 50 percent of participants stating that it was not at all important in their decision-making process.

Figure 7: Motivations for Participation

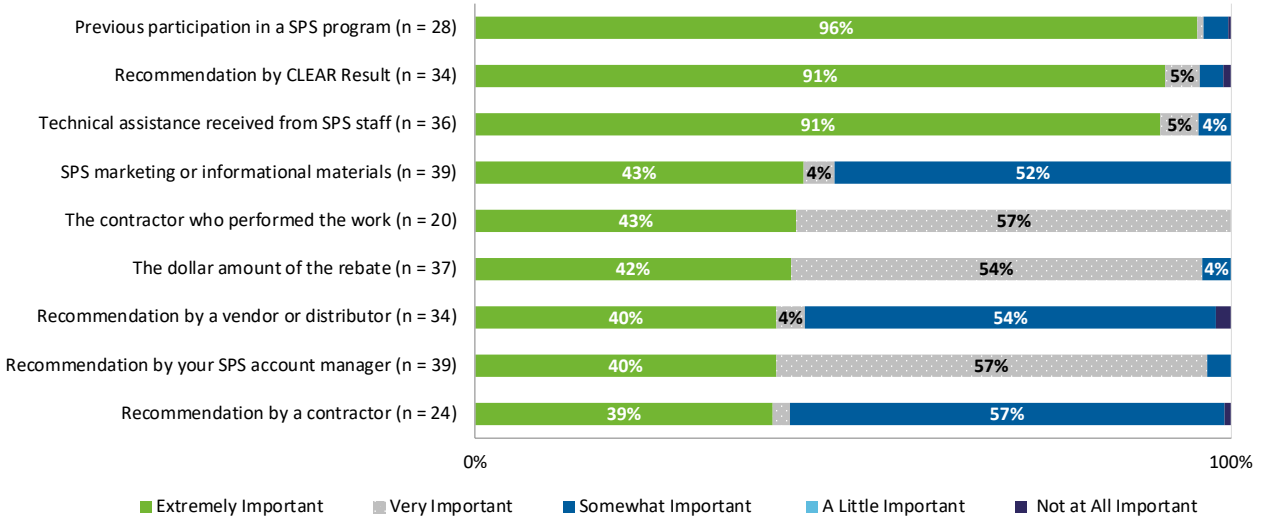


In addition, respondents were given a list of program and non-program factors that may have influenced their decision to participate in the program and were asked to rate each factor on a 0 to 10 point scale.[8] For program factors, as shown in Figure 8, participants were most likely to indicate previous participation in an SPS program (96%), a recommendation by CLEAResult (91%), and technical assistance received from SPS staff (91%) as extremely important in their decision to upgrade their equipment.

In contrast, recommendation by a contractor was the least important program factor for participants, with only 39 percent indicating it was extremely important.

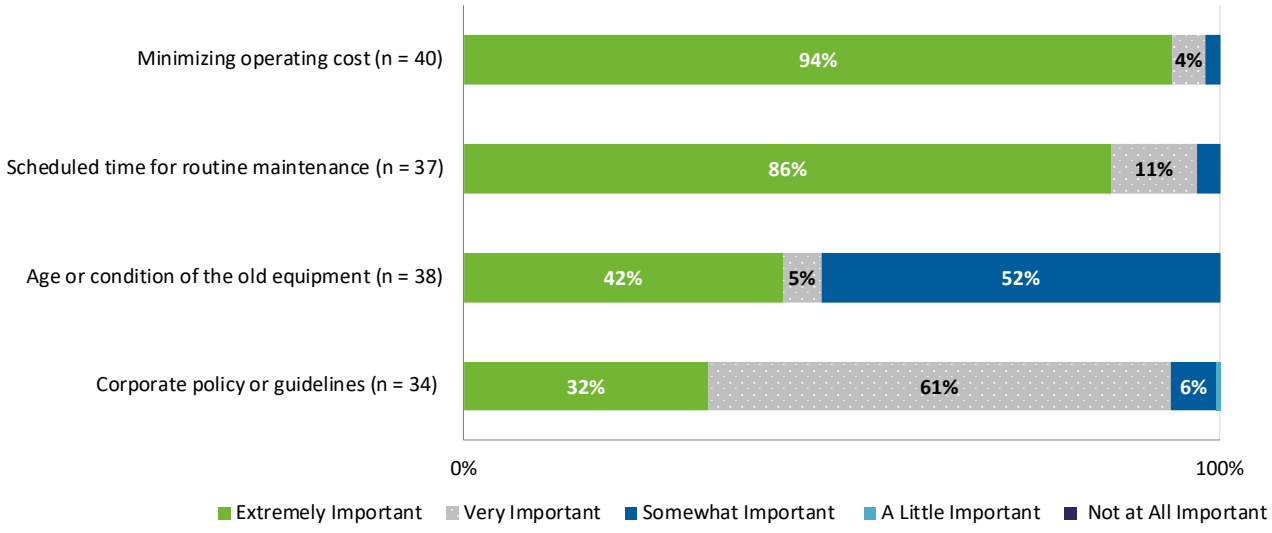
[8] On the 0 to 10-point scale, 0 indicated 'not at all important' and 10 indicated 'extremely important'.

Figure 8: Importance of Program Factors



For non-program factors, as shown in Figure 9, participants were most likely to rate minimizing operating costs as extremely important (94%), followed by scheduled time for routine maintenance (86%), age or condition of old equipment (42%), and finally, corporate policy or guidelines (32%).

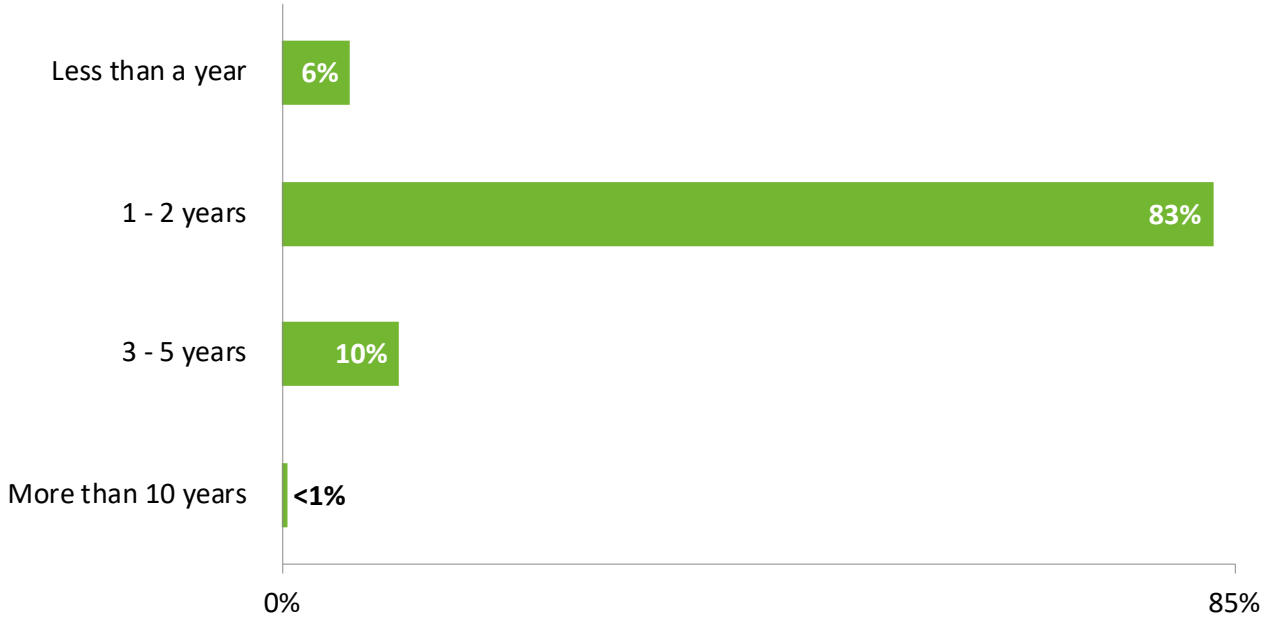
Figure 9: Importance of Non-Program Factors



To get a sense of the condition of participants' existing equipment, respondents estimated how much longer the equipment would have lasted if it had not been replaced. Eighty-three percent of surveyed respondents stated that their equipment would have lasted for one to two more years (Figure 10). Ten percent of respondents estimated their equipment would have lasted three to five

more years. This may suggest that the program is targeting customers with equipment that is likely to need replacement soon anyway (i.e., free riders).

Figure 10: Equipment Remaining Life (n=25)



Participant Satisfaction

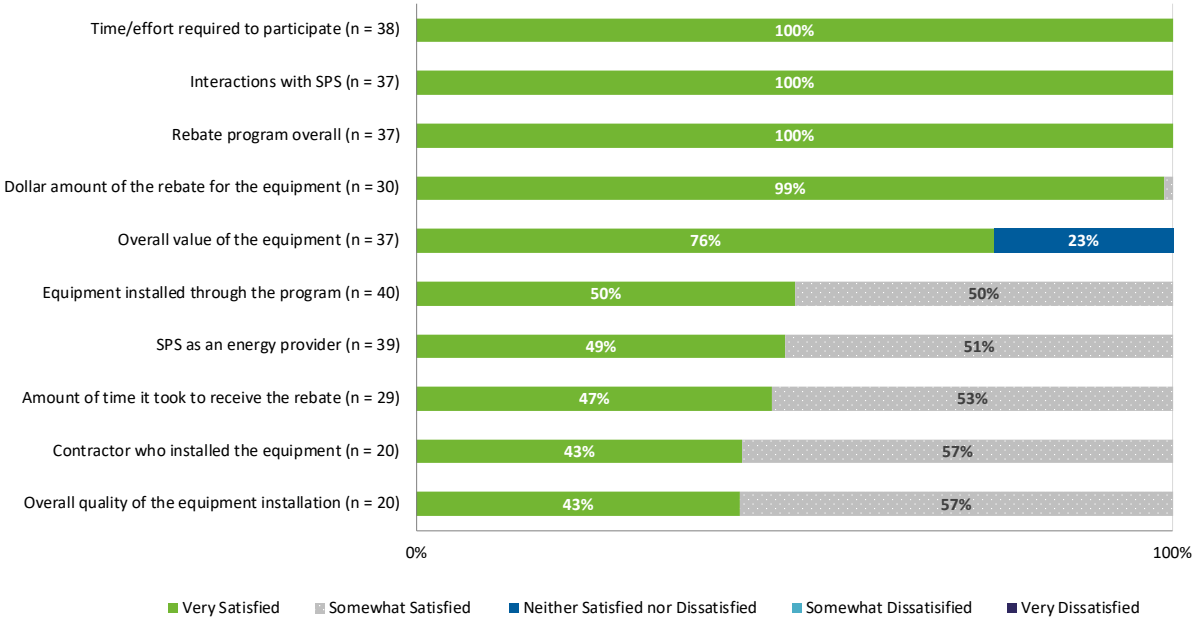
Participants then evaluated their satisfaction with various components of the Business Comprehensive program on a 1 to 5 scale, with 1 being "very dissatisfied" and 5 being "very satisfied". Additionally, the program component with the highest number of neither satisfied nor dissatisfied ratings was the overall value of the equipment, with 23 percent of participants rating the factor in this way.

Figure 11 summarizes the satisfaction levels of the Business Comprehensive program participants over various program components.

Overall, surveyed program participants expressed high levels of satisfaction with the Business Comprehensive program components, with a majority reporting that they were very satisfied or somewhat satisfied with all program components. The program factors that were ranked highest were the time and effort required to participate (100%), the interactions with SPS (100%), and the rebate program overall (100%).

Additionally, the program component with the highest number of neither satisfied nor dissatisfied ratings was the overall value of the equipment, with 23 percent of participants rating the factor in this way.

Figure 11: Participant Program Satisfaction



Net Promoter Score

To calculate a net promoter score, the evaluation team also asked customers about their likelihood to recommend the Business Comprehensive program to others on a scale of 1 to 10. Net promoter scores are measures of brand loyalty. To calculate the net promoter score, responses are classified in the following fashion:

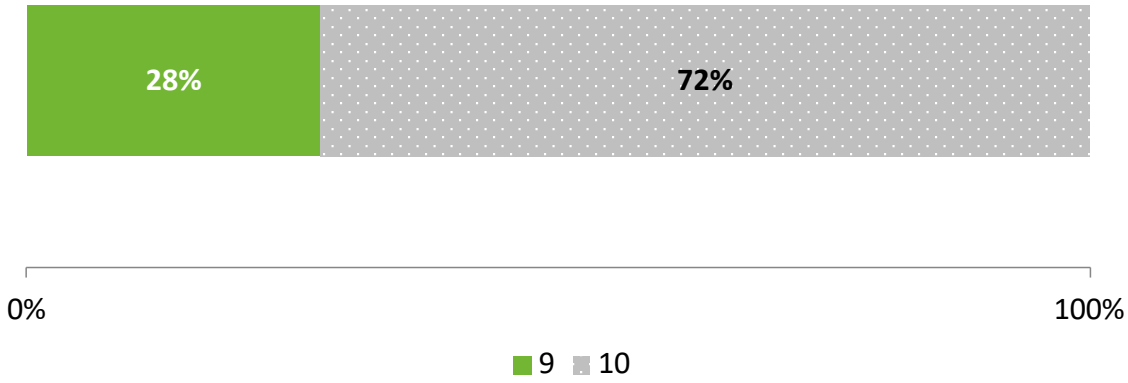
- On a 1 to 10 scale, ratings of 9 or 10 are classified as **Promoters**, as these are customers who are satisfied with the program and are likely to actively recommend the program to other customers.
- Ratings of 7 or 8 are classified as **Passives**, as these are customers who are satisfied with the product but are not likely to actively promote it.
- Ratings of 1 through 6 are classified as **Detractors**, as these customers likely had some issues with the program and may dissuade other customers from participating.

The net promoter score is then calculated using the following formula:

Net Promoter Score = % of Promoters - % Detractors

Responses from participating customers yielded a net promoter score of 100 percent. Figure 12 shows the distribution of responses, with 100 percent of respondents counting as promoters.

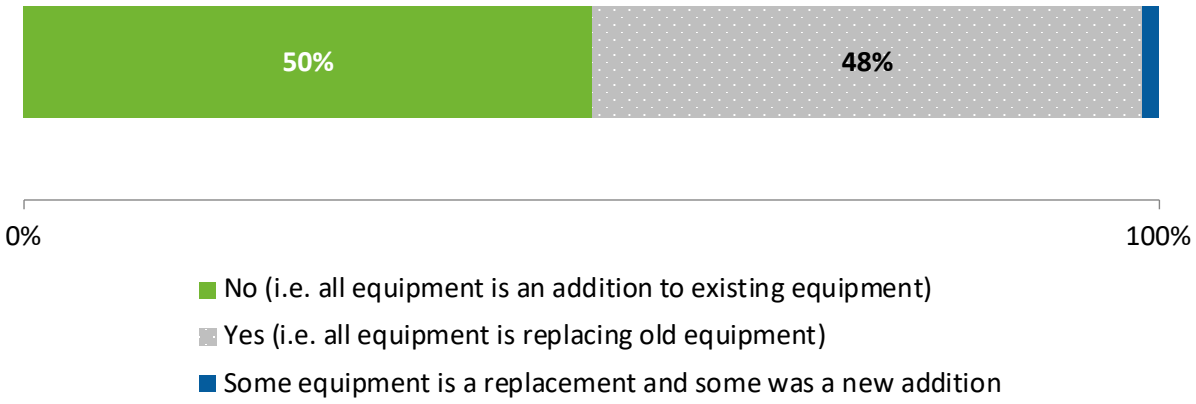
Figure 12: Distribution of Net Promoter Question Responses (n=34)



Equipment Replacement

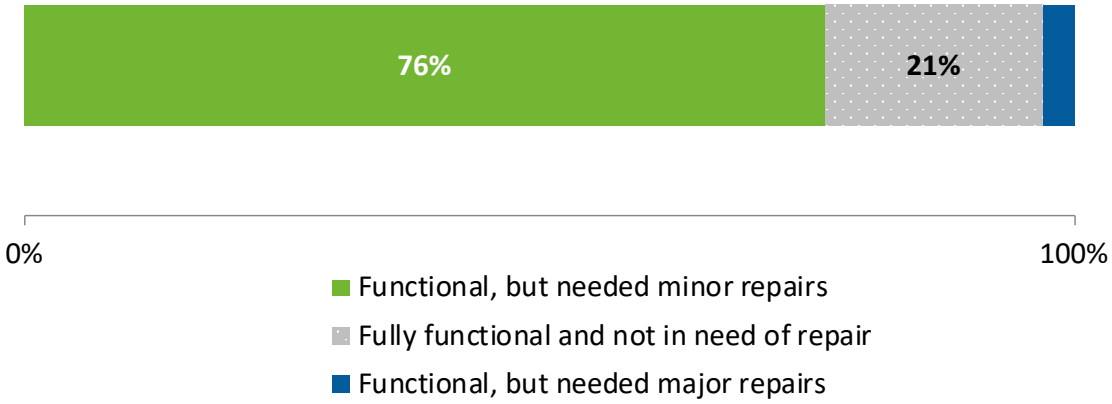
Participants were asked if the equipment installed through the program replaced existing equipment or if program equipment was an addition to existing equipment (Figure 13). Half of the equipment from this program did not replace existing equipment (50%). Forty-eight percent reported that the equipment replaced was replacing old equipment, and 2 percent reported that some equipment was a replacement and some was a new addition.

Figure 13: Intended to Replace Existing Equipment (n=40)



Of the equipment that did replace existing equipment, 76 percent of participants reported that the equipment was functional but needed minor repairs, and 21 percent reported the equipment to be functional and not in need of repairs (Figure 14). Three percent reported that replaced equipment was functional but in need of major repairs.

Figure 14: State of Replaced Equipment (n=37)



2.4 Conclusions and Recommendations

- For prescriptive lighting projects, the evaluation team used baseline fixture wattages listed in the Xcel Input Wattage Guide to calculate *ex post* savings. Using the inputs from the project documentation, Xcel Input Wattage Guide, and algorithms from the SPS TA documents resulted in different savings values (both higher and lower) than those reported by SPS for multiple prescriptive lighting projects.
    - **Recommendation:** Provide documentation of existing fixture wattages, calculation steps, and adjustments made for each project, ensuring that submitted project documentation can be followed to reproduce the *ex ante* savings estimates.
- Project-specific *ex ante* savings for one of the 10 evaluated VFD Motors and Drives projects did not match the *ex post* savings. The *ex ante* savings calculations appear to use the VFD Drive horsepower (HP) (125 HP) instead of the rated motor HP (100 HP).
    - The SPS TA documents state that the rated motor HP should be used in the energy savings calculations.
    - **Recommendation:** Ensure the rated motor HP is used when calculating the prescriptive savings for motors and drives projects.
- For dropship lighting projects in the Business Comprehensive program, the evaluation team conducted a database review by verifying equipment installation, quantities, operational parameters, and estimated savings. Using the inputs from the database and algorithms from the SPS TA documents resulted in different savings values (both higher and lower) than those reported by SPS for multiple dropship lighting projects.
    - The *ex ante* savings for eight of the 41 linear tube projects reported negative savings in the program database. The supplied project documentation appears to note that these reported savings values were errors. The evaluation team calculated positive *ex post* savings for each of the eight projects based on the information in the database.

- Based on the evaluation team's understanding of how the LED lamps were distributed by the program, the evaluation team used an ISR of 0.91 to calculate the *ex post* savings.

3 Energy Feedback Program

The Energy Feedback program is designed as a randomized control trial for the purposes of measuring program savings. As part of this design, the program implementer randomly assigned customers to a treatment group that receives the Energy Feedback Home Energy Report, which compares the household energy use to similar customers and provides tips on how to reduce energy consumption. Those customers not in the treatment group are randomly assigned to the control group and do not receive the report.

3.1 Methods

The Energy Feedback program also uses an opt-out approach to participation. Customers are randomly selected into the program and automatically begin receiving the home energy reports, sent in the mail or via email. There are two ways that customers can leave the program. Customers can opt out at any time, or customers can cancel their electric service when they vacate the premises. Over time, this leads to some attrition in the program, which needs to be accounted for in savings estimation.

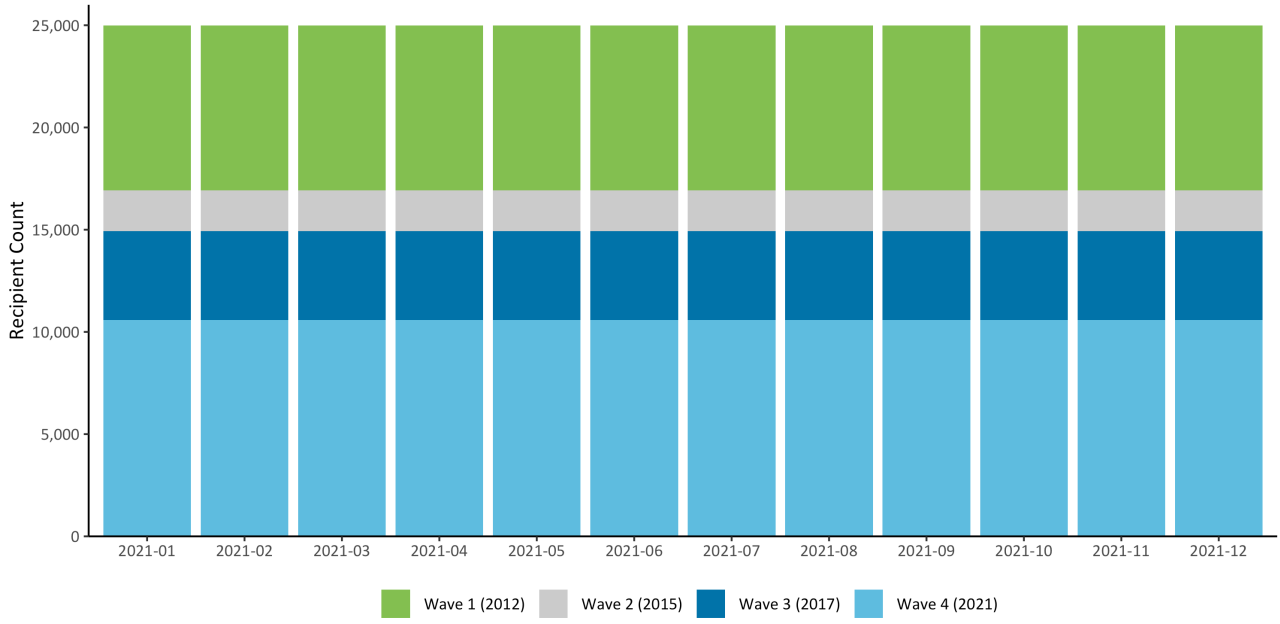
There were four deployment waves for the Energy Feedback program, each of which is tracked separately and has its own matched control group. Table 13 shows the participation numbers at the beginning of each wave, in January 2021, and in December 2021.

Table 13: Participation by Deployment Wave

Wave	Group	Participants – Start Date	Participants – January 1, 2021	Participants – December 31, 2021
Wave 1: 201203	Recipient	15,500	8,121	8,084
	Control	15,500	8,597	8,521
Wave 2: 201507	Recipient	5,250	1,995	1,985
	Control	5,250	2,196	2,178
Wave 3: 201705	Recipient	10,000	4,367	4,341
	Control	10,000	4,855	4,825
Wave 4: 202103	Recipient	10,000	10,601	10,588
	Control	10,000	3,660	3,652
Total	**Recipient**	**30,750**	**25,037**	**24,951**
	Control	**30,750**	**19,288**	**19,156**

Figure 16 shows the program attrition among recipients, due to opt out or account closure. There were very minimal treatment recipients (86 total) that left the program in 2021.

Figure 15: 2021 Treatment Recipient Attrition by Wave



The customer program participation file provided this year contained customers that are still active in Energy Feedback or that left in 2019, 2020 or 2021. It did not contain historical customers (i.e., all customers at the beginning of each wave) that left the program prior to 2019. Given the large number of remaining customers, using only this subset of customers will still provide reliable savings predictions for 2021. Table 14 provides a summary of the data screens and the number of program participants that were not included in the billing regression analysis. These screens reduced our sample slightly from 44,855 customers to 44,780. The most substantial loss of participants came from a lack of billing data for the distinct combination of customer and premise. We also required that a customer in the recipient group must have received at least one print or email report, but this resulted in no account removals.

Table 14: Energy Feedback Data Screens

Description	Removed		Remaining
Total program participants (from Franklin)	-		44,855
Billing data available for unique premise/customer	75	0.1%	44,780

All valid zip codes for program participants were assigned to the closest National Oceanic and Atmospheric Administration (NOAA) weather station. Hourly weather data were pulled for seven

unique weather stations. We calculated cooling degree-hours (CDH) for each hourly temperature using a base temperature of 65 degrees Fahrenheit, and then took the average of these hourly values to create a single cooling degree-day (CDD) value for each weather station on each day in the study period.[9] This process was repeated for heating degree-days (HDD), again using a base temperature of 65 degrees Fahrenheit.

We used a fixed effects regression model to estimate the Energy Feedback impacts, which is the standard approach used for these types of home energy report programs. The benefit of a fixed effects model is that it controls for unique characteristics within each household, such as general levels of electricity use and household occupancy, which would not otherwise be represented in the model. These types of time-invariant characteristics are the fixed effects that the model controls for with a household-specific constant term.

The final billing model using the fixed effects specification is provided below. Variations on this model were explored during the evaluation, including more complex iterations that use a variety of interaction terms and additional explanatory variables. These alternative models all provided similar results and did not improve model performance. An identical model specification was used for each of the Energy Feedback deployment waves.

Equation 1: Daily kWh Regression Model

$$kWh_{i,t} = \alpha_i + \beta_1 Post_t + \beta_2 Treatment + \beta_3 CDD_{i,t} + \beta_4 HDD_{i,t} + \beta_5 Post_t * Treatment + \varepsilon_{i,t}$$

$Where$:

$kWh_{i,t}$ = daily electricity usage of customer i on day t

α_i = customer-specific fixed effect

$Post_t$ = indicator for post-program for year t

$Treatment$ = indicator for treatment group participants

CDD_t, HDD_t = cooling and heating degree days (base of 65°F) for customer i on day t

$\beta_1, \beta_2, \ldots$ = coefficients to be estimated by the regression

ε = random error term

[9] A cooling degree-day (CDD) represents the number of degrees that the outdoor temperature exceeded an assumed baseline (in this case, 65°F), averaged across all hours in the day. By calculating this metric from hourly temperatures instead of daily averages, we can identify days that require some cooling during peak hours as well as heating in the early morning or evening.

For each deployment wave, the post-program period of interest was the 2021 calendar year apart from Wave 4 which began during 2021 and so the post period is the month after implementation. The pre-program period varied for each wave and was the calendar year prior to the original start date of each wave.[10] Table 15 summarizes key dates and time periods for each deployment wave.

Table 15: Deployment Wave Period

Wave	Start Month	Pre-Program Period	Post-Program Period
Wave 1: 201203	March 2012	Jan 1, 2011 – Dec 31, 2011	Jan 1, 2021 – Dec 31, 2021
Wave 2: 201507	July 2015	Jan 1, 2014 – Dec 31, 2014	Jan 1, 2021 – Dec 31, 2021
Wave 3: 201705	May 2017	Jan 1, 2016 – Dec 31, 2016	Jan 1, 2021 – Dec 31, 2021
Wave 4: 202103	March 2021	Jan 1, 2020 – March 31, 2021	April 1, 2021 – Dec 31, 2021

3.2 Findings

The results of the models we estimated for each of the three deployment waves are provided in Table 16, with a 90 percent confidence interval for the customer level energy savings. We found statistically significant savings in energy usage for recipients in waves 1-3, but the magnitude of this varies. The coefficient on the $Post * Treatment$ interaction variable can be interpreted as the change in daily energy consumption attributable to a household being in the treatment group in the post-report period.

Table 16: Savings by Deployment Wave

		Daily Savings (kWh)	
Wave	N	Post * Treatment	%
Wave 1: 201203	16,925	-0.42 ± 0.12	0.84% ± 0.25%
Wave 2: 201507	4,198	-1.18± 0.28	2.07% ± 0.49%
Wave 3: 201705	9,230	-0.39 ± 0.19	1.04% ± 0.51%
Wave 4: 202103[11]	14,194	-0.36 ± 0.34	0.88% ± 0.84%

To calculate program level savings, each recipient's program participation duration was calculated for 2021. If a customer did not opt out of the program or cancel their electric service, they

[10] Pre and post indicators were set using the start date of a billing period.
[11] Not statistically significant energy savings

received 365 participation days. If a participant canceled their electric service or opted out in 2021, their annual savings were prorated to reflect their participation days up to that point. If a customer was dropped from the analysis sample prior to 2021 due to one of the other data screens (Table 14), then they were not included in the savings total for 2021. Wave 4 resulted in no net kWh or kW savings as a result of wave 4 billing regression results being not statistically significant.

The total participation days was multiplied by daily savings to obtain net savings. Table 17 shows the annual net savings for PY2021.

Table 17: PY2021 Energy Feedback Net Impact Summary

Deployment Wave	Net kWh Savings	Net kW Savings
Wave 1: 201203	1,229,589	322
Wave 2: 201507	861,398	226
Wave 3: 201705	623,396	163
Wave 4: 202103	0	0
Total	**2,714,383**	**711**

4.1.1 Home Energy Services Gross Impacts

The *ex ante* 2021 impacts are summarized in Table 18 for the Home Energy Services program, which includes both the low-income and non-low-income program components. In total, the Home Energy Services program accounted for 14 percent of energy impacts in SPS's overall portfolio.

Table 18: Home Energy Services Savings Summary

Program	# of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
Home Energy Services	1,055	4,465,522	382
Home Energy Services – Low Income	914	4,837,842	645
Total	**1,969**	**9,303,364**	**1,027**

The gross impact evaluation activities included engineering desk reviews of a sample of program projects. For the desk reviews, the sample frame included all measure types. The sample was stratified to cover a range of different measure types so that no single measure would dominate the desk reviews. The sample was also stratified based on total energy savings within each measure type. As most projects had multiple measures installed, a typical desk review covered more than one measure type. Overall, the sampling strategy ensured that a mix of projects in terms of both project size and measure type would be included in the desk reviews. The final sample design is shown in Table 19. The resulting sample achieved a relative precision of 90/13.3 overall for Home Energy Services projects.

Table 19: Home Energy Services Desk Review Sample

Measure Type	Stratum	Count	Average kWh	Total kWh Savings	% of Savings	Final Sample
Air Infiltration Reduction	1	7	8,207	57,447	1%	3
	2	17	4,046	68,777	1%	3
	3	23	2,963	68,141	1%	2
	4	49	1,403	68,747	1%	2
	5	81	840	68,061	1%	2
Ceiling Insulation	1	5	15,118	75,588	1%	3
	2	7	10,623	74,359	1%	3
	3	12	6,312	75,746	1%	2
	4	17	4,703	79,957	1%	2
	5	49	1,595	78,145	1%	2
Duct Leakage	1	151	11,735	1,772,047	19%	3
	2	206	8,285	1,706,617	18%	3
	3	258	6,602	1,703,188	18%	3
	4	327	5,216	1,705,510	18%	3
	5	731	2,328	1,701,920	18%	3
Total		**1,940**	**5,998**	**9,304,250**	**100%**	**39**

As discussed in the *Evaluation Methods* section, gross realized impacts for the Home Energy Services program were determined by performing engineering desk reviews on the sample of projects as shown above.

Table 20 and Table 21 show the summary results of the desk reviews and how the resulting engineering adjustments were used to calculated realized savings. For the Home Energy Services program overall, these adjustments resulted in an engineering adjustment factor of 1.0502 for kWh and 0.9999 for kW.

Table 20: PY2021 Home Energy Services Gross kWh Impact Summary

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Home Energy Services	1,055	4,465,522	1.0502	4,689,498
Home Energy Services – Low Income	914	4,837,842	1.0502	5,080,492
Total	**1,969**	**9,303,364**	**1.0502**	**9,769,990**

Table 21: PY2021 Home Energy Services Gross kW Impact Summary

Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings
Home Energy Services	1,055	382	0.9999	382
Home Energy Services – Low Income	914	645	0.9999	645
Total	**1,969**	**1,027**	**0.9999**	**1,027**

For individual projects, engineering adjustment factors that varied from 1.00 were predominately caused by two overarching reasons:

- **Four projects with a Duct Leakage measure reported peak demand savings but did not report energy (kWh) savings.** The program tracking data did not include any energy savings for these four projects.
- **The evaluation team was not able to replicate the energy savings for nine projects with a Duct Leakage measure.** The evaluation team followed the algorithms contained in the SPS Technical Assumptions and algorithm inputs provided by SPS but arrived at savings that differed slightly from those reported by SPS. The majority of projects where the savings could not be replicated were homes with electric furnaces.

A summary of the individual desk review findings for each of the 39 projects is included in Appendix G.

4.1.2 Home Energy Services Net Impacts

Net impacts for the Home Energy Services program were calculated using NTG ratios from the participant phone survey or an assigned value of 1, depending on the participant income level and measure type. For low-income participants, an NTG ratio of 1 was assigned to those projects. For two specific measures—air infiltration reduction and duct sealing—SPS has indicated these

services would not be available in its service territory were it not for the program contractors. For this reason, these two measure types were assigned an NTG ratio of 1. For non-low-income participants with other measures, the NTG ratio was developed using the self-report method described in the *Evaluation Methods* section using participant phone survey data. The resulting NTG ratio for the non-low-income portion of the Home Energy Services program is 0.9455. As a result, the overall NTG ratio for the Home Energy Services program is 0.9738 for PY2021. In PY2022, the overall NTG ratio will change to 0.9051.

Table 22 and Table 23 summarize the PY2021 net impacts for the Home Energy Services program using the NTG ratios described above. Net realized savings for the program overall are 9,514,413 kWh, and net realized demand savings are 1,006 kW.

Table 22: PY2021 Home Energy Services Net kWh Impact Summary

Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Home Energy Services	1,055	4,689,498	0.9455	4,433,910
Home Energy Services – Low Income	914	5,080,492	1.0000	5,080,492
Total	**1,969**	**9,769,990**	**0.9738**	**9,514,413**

Table 23: PY2021 Home Energy Services Net kW Impact Summary

Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Home Energy Services	1,055	382	0.9455	361
Home Energy Services – Low Income	914	645	1.0000	645
Total	**1,969**	**1,027**	**0.9797**	**1,006**

4.2 Participant Surveys

As part of the process evaluation, the evaluation team conducted telephone surveys with 100 participating residential customers that received reduced cost services and/or equipment through the SPS Home Energy Services program. The surveys were completed in February 2022 and ranged from 15 to 20 minutes in length.

The participant survey was designed to cover the following topics:

- Verifying the installation of measures included in the program tracking database;
- Collecting information on participants' satisfaction with their program experience;
- Survey responses for use in the free ridership calculations;
- Participant drivers/barriers; and
- Additional process evaluation topics.

SPS provided program participation data on the Home Energy Services participant projects, which allowed the evaluation team to select a sample for interviews. The evaluation team randomly selected and recruited program participants based on whether they had valid contact information and received services and/or equipment through the Home Energy Services program.

The following subsections include data covering demographics, sources of program awareness, motivations for participation, and program satisfaction among survey respondents.

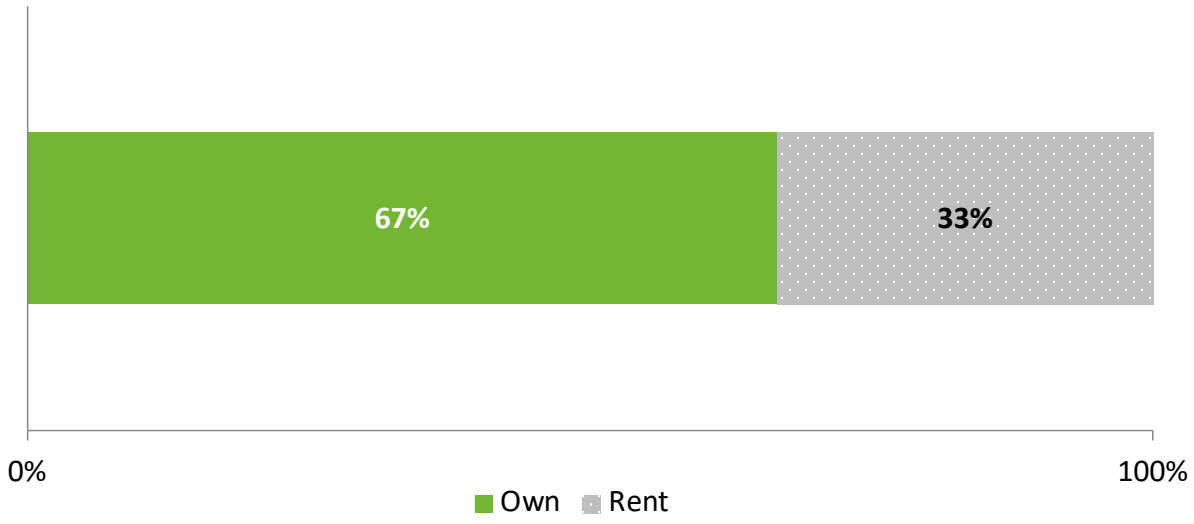
Throughout the analysis described here, we present the survey results as weighted percentages based on the proportion of savings that each survey respondent represents relative to the total savings of all program participants.

4.2.1 Participant Demographics

We asked survey respondents several questions about the characteristics of the home and household including whether they own or rent, the size of their home, the number of people in the household, and the age of their home.

The majority of survey respondents (67%) own their home (Figure 16).

Figure 16: Home Energy Services Participants Own or Rent (n=100)



The following two figures summarize the survey respondents' home and household size. As shown in Figure 17, the majority (69%) of respondents live in homes of less than 2,500 sq ft. Additionally, the majority (72%) of respondents have two or three full-time residents living in the home where the project was completed (Figure 18).

Figure 17: Home Energy Services Respondent Home Size (n=61)

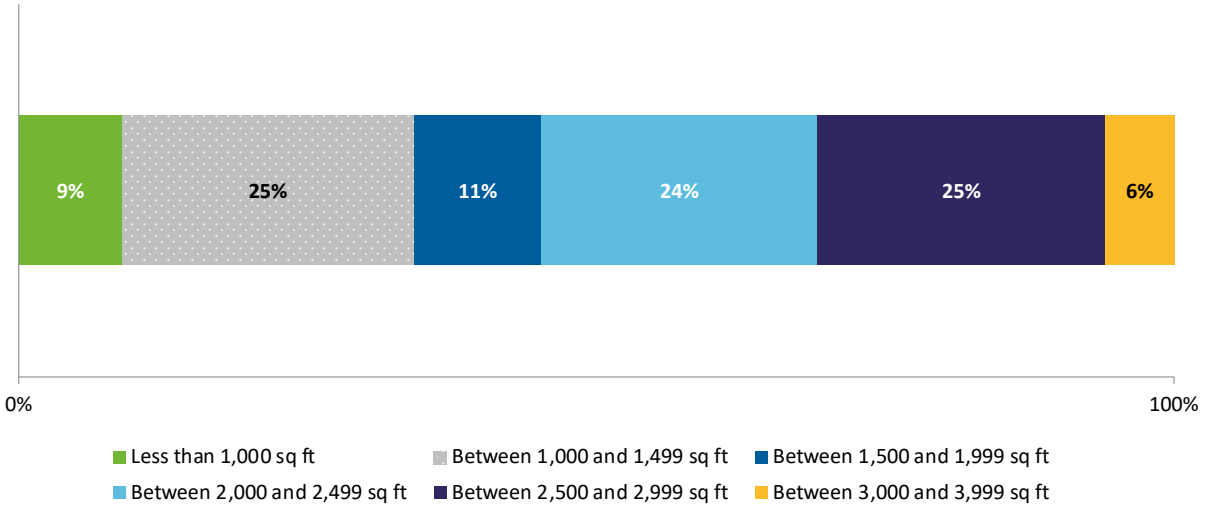
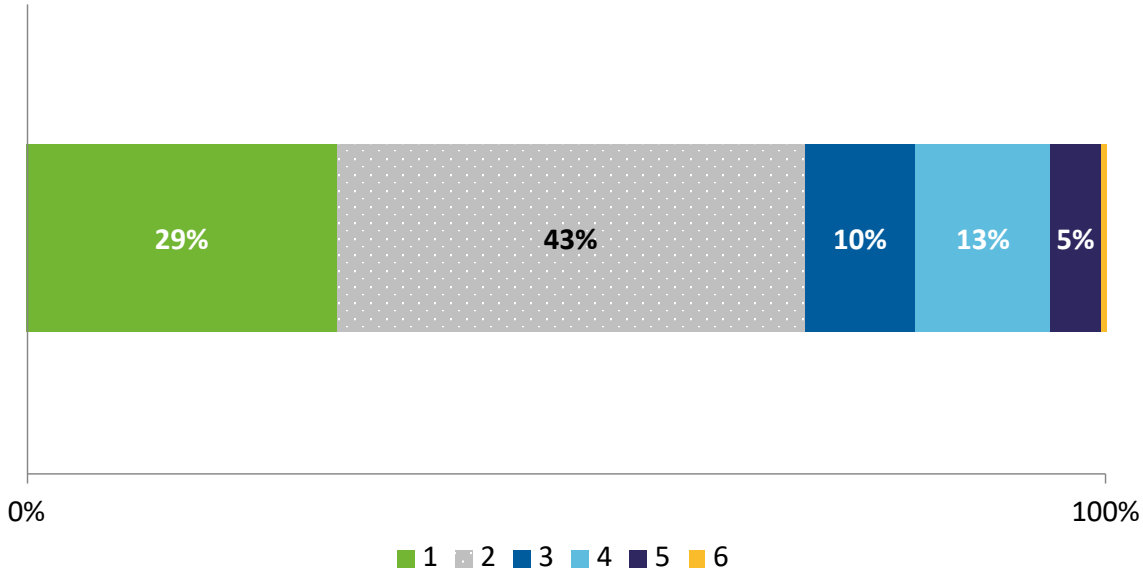
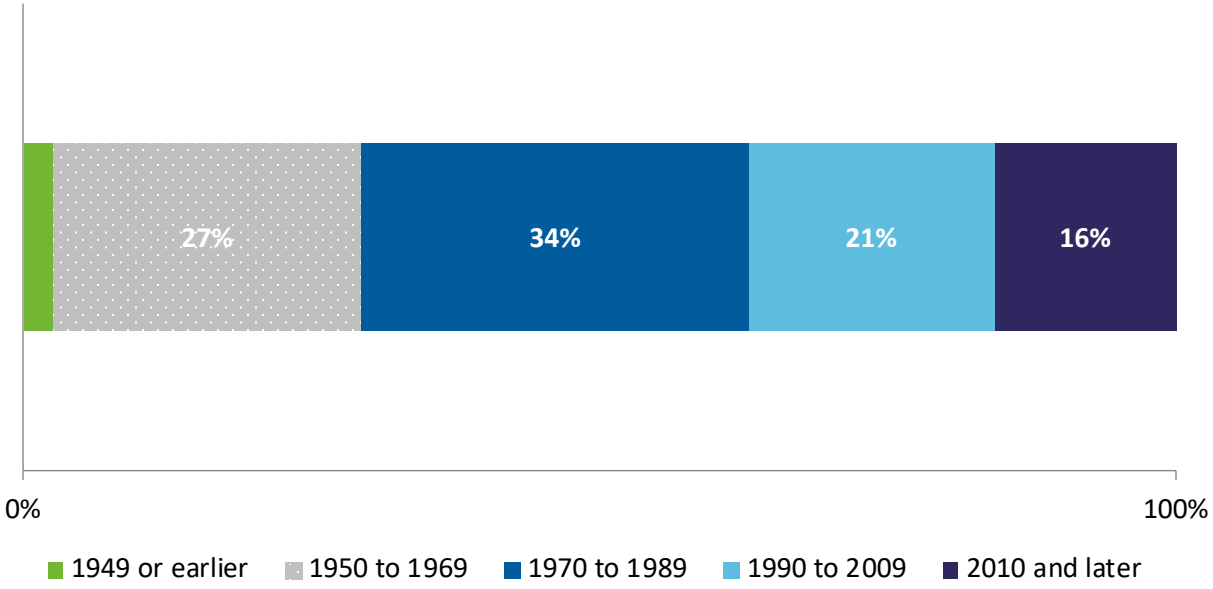


Figure 18: Home Energy Services Respondent Household Size (n=97)



As shown in Figure 19, the majority (63%) of survey respondents reported that their homes were built before 1989.

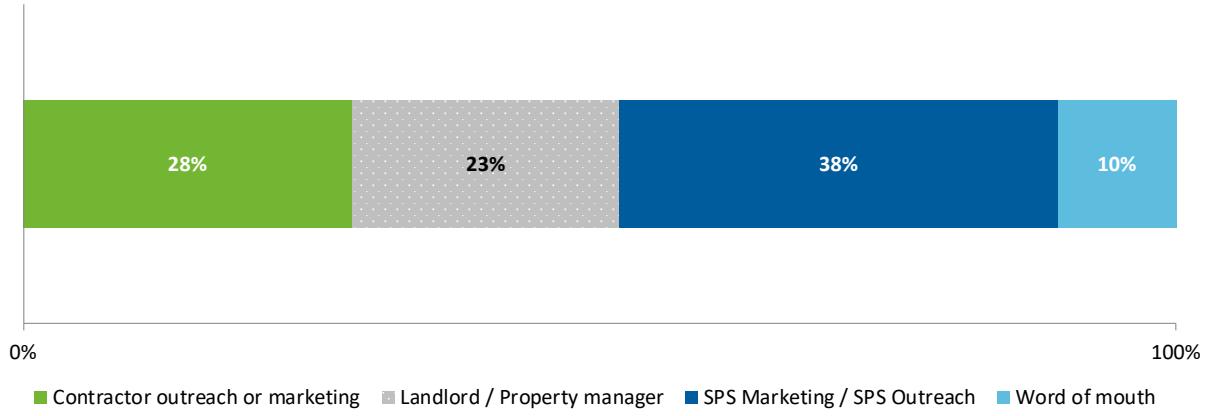
Figure 19: Home Energy Services Home Vintage (n=69)



4.2.2 Sources of Awareness

Participants became aware of the program assistance through a variety of sources including SPS marketing/SPS outreach, word of mouth, contractors, and their landlords. As shown in Figure 20, the largest portion of respondents (38%) reported learning about the program through SPS marketing or outreach. Contractor outreach or marketing (28%) and landlords/contractors (23%) were also significant sources of awareness for survey respondents.

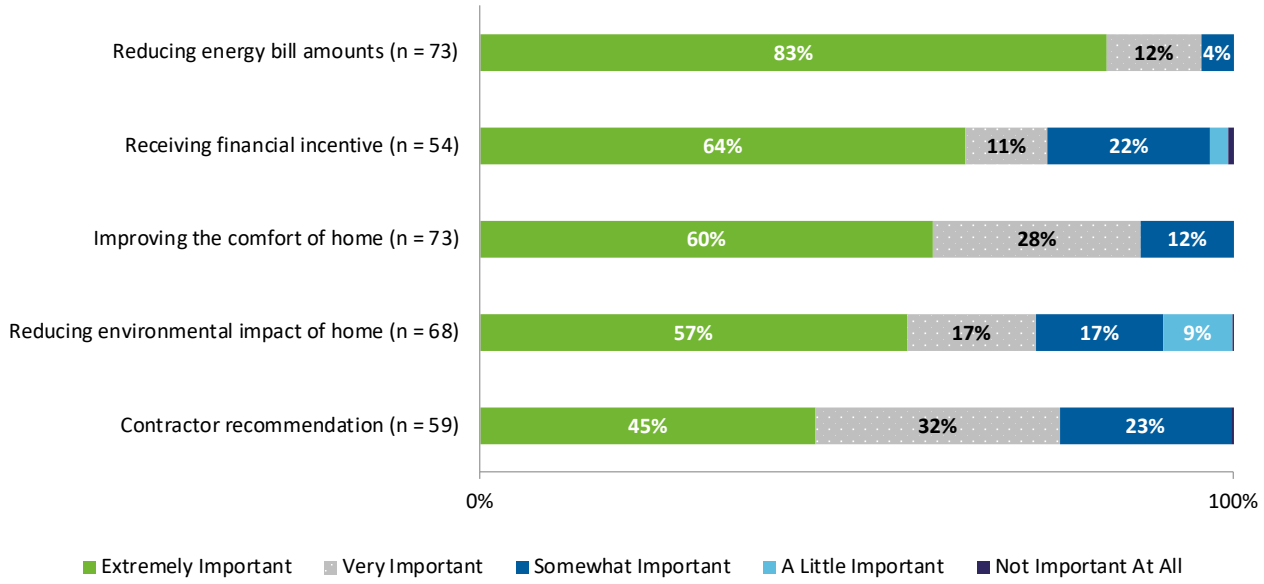
Figure 20: Home Energy Services Respondent Source of Awareness (n=100)



4.2.3 Motivations for Participation

Respondents were asked to rate a variety of factors that may have been important in their decision to participate in the Home Energy Services program. As seen in Figure 21, reducing energy bills was cited as the most important factor, with 83 percent of respondents reporting that it was extremely important in their decision to participate in the program. Receiving a financial incentive (64%) and improving the comfort of the home (60%) were also cited as extremely important to respondents.

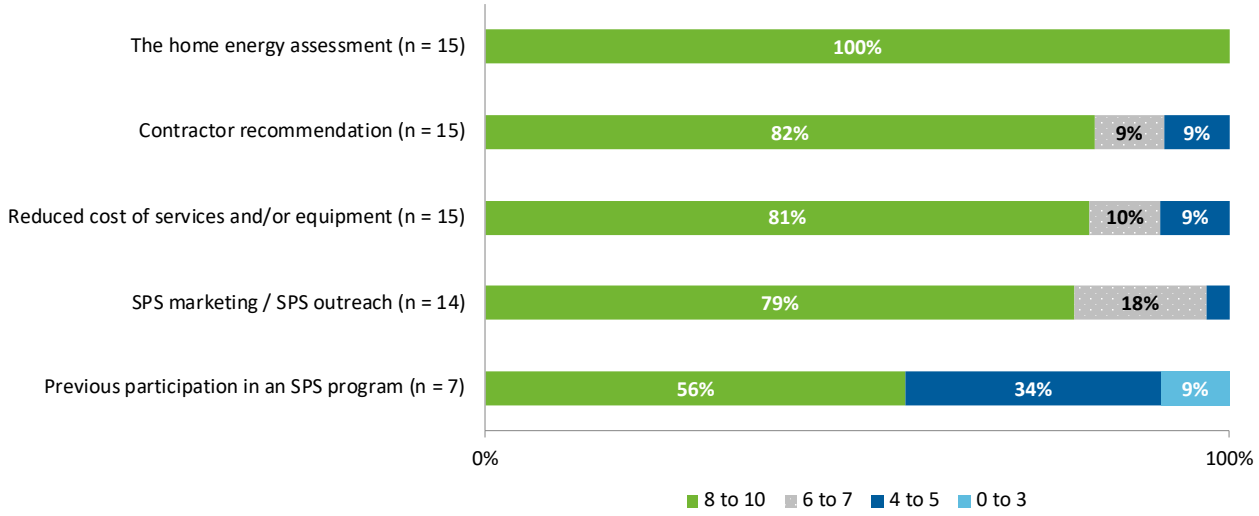
Figure 21: Home Energy Services Motivations for Participation



Survey respondents were also asked to rate a list of program factors that may have influenced their decision to participate in the Home Energy Services program.[12] As shown in Figure 22, the home assessment was rated as extremely important by all survey respondents. Other important factors include contractor recommendations and the available discount on services or equipment, with 82 percent and 81 percent respectively ranking the factors as extremely important.

[12] On a 0-to-10-point scale, 0 indicated 'not influential at all' and 10 indicated 'extremely influential'.

Figure 22: Home Energy Services Influence of Program Factors



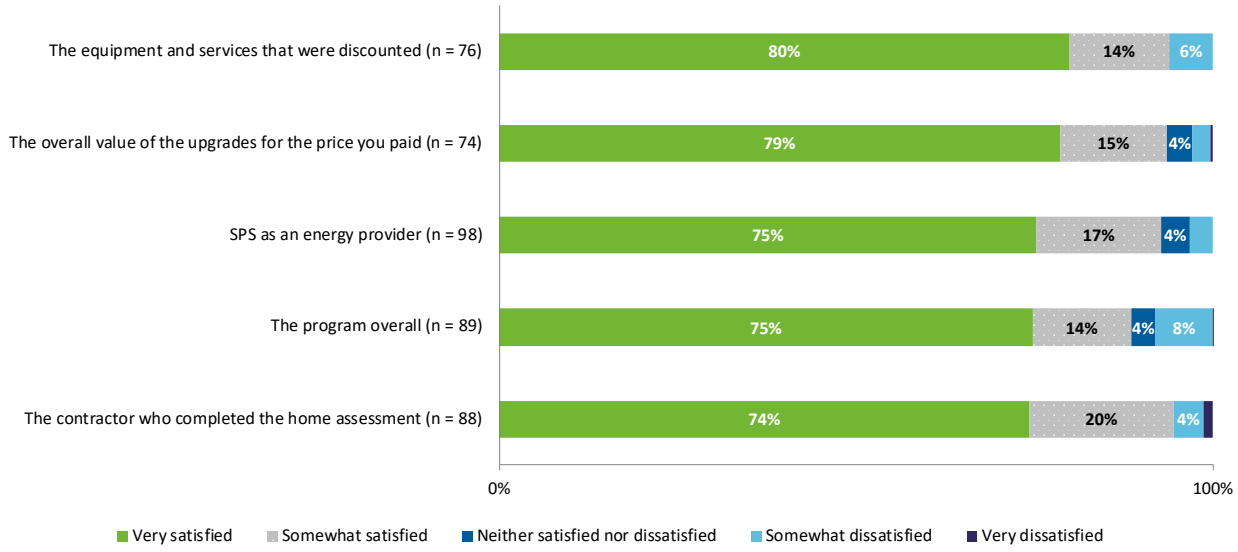
4.2.4 Respondent Satisfaction

Survey respondents were also asked to evaluate their satisfaction with various components of the Home Energy Services program, and more broadly SPS as an energy provider, on the following scale: very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. The individual components that participants were asked to rank their satisfaction with included:

- SPS as an energy provider;
- The Home Energy Services program overall;
- The equipment and services discounted;
- The contractor who completed the home energy assessment; and
- The overall value of the upgrades for the price they paid.

Figure 23 shows the satisfaction levels of the Home Energy Services program respondents. Overall, surveyed program participants showed high levels of satisfaction across the program components they were asked about. Respondents reported being most satisfied with the equipment and services that were discounted through the program and the overall value of the efficiency upgrades they received for the price they paid (80 percent and 79 percent of respondents respectively reporting that they were very satisfied).

Figure 23: Home Energy Services Program Satisfaction



4.3 Contractor Interviews

The evaluation team completed interviews with two of the four contractors who participated in the 2021 Home Energy Services program. The interviews were designed to investigate specific topics, listed below, while allowing for open discussion. Each interview was scheduled for 30 minutes but went over an hour.

The interviews focused on the following topics:

- Contractor background;
- Program awareness, influence, and engagement;
- Program processes;
- Market response; and
- Satisfaction with their involvement with the program.

4.3.1 Contractor Background

Both contractors had multiple years of experience providing energy efficiency-related services in New Mexico and other states, both indicating they had worked with SPS in Texas since at least 2009. Both contractors estimated 45 percent of their business nationally is represented by their work with the New Mexico Home Energy Services program. One contractor indicated they will be moving more of their operations to New Mexico because it is becoming "too difficult to find savings" in other states. One of the contractors stated their business is solely with the New Mexico and Texas SPS Home Services programs.

Both contractors stated that they played a significant and direct role in their business's participation in the program. One contractor said his team was him, a foreman, and four technicians, while indicating he is directly involved in some aspect of each project.

4.3.2 Program Awareness, Influence, and Engagement

Contractors were asked how effectively the program engages and secures participants. Both participants voiced concerns with reduced incentives generally. One contractor stated that they can no longer offer zero-cost Home Energy services to participants. The other contractor stated zero cost to the homeowner was paramount to the success of their business, while stating that this objective was increasingly difficult to achieve. Specifically, they indicated the reduction in gas and lighting measures has made it increasingly difficult to find and engage participants that can still participate.

One contractor stated that prospective program participants do not understand the value of the program and tend to not believe the program savings claims. The contractor indicated he has been able to overcome this challenge with very clear explanation of each aspect of the energy inspection. This communication includes showing the participant pictures of issues in hard to see areas such as attics, and he pairs these pictures with an explanation regarding how each repair will impact the home's efficiency. He said often the pictures speak for themselves and that he is able to sign up the customer.[13]

Both contractors said word of mouth continues to be their most effective means of marketing. This is in part due to what one contractor stated as "the results speak for themselves". He stated that when he successfully completes a home in a community, the homeowner is often so pleased with the program that they refer their friends and family to him.

Overall, both contractors stated they were generally very satisfied with the program and will continue to participate in it. They both stated the program continues to offer reduced costs of services and equipment to customers, which allows them to do more than if the program incentive was not available.

4.3.3 Program Process

Neither contractor expressed significant concern or opinion regarding the program process. They both indicated that communication with program staff is clear and effective. One contractor said he feels:

> *"(T)he processes, and paperwork requirements of the program are reasonable. Communication has been effective."*

[13] It should be noted this contractor does not provide zero cost installations in all cases.

4.3.4 Market Response

Both contractors indicated that the market continues to respond to the incentives and that the program continues to persuade homeowners to make energy efficiency investments, although reduced incentives, especially for gas and lighting measures, are making it more challenging to attract prospective participants.

Both contractors indicated it was more difficult to attract homeowners in areas of perceived relative poverty. They said this is largely due to a misunderstanding of how the program works, who is providing the program, and what the program will achieve. He stated that the public's understanding of the program is greatly influenced by word of mouth, which helps overcome some of these barriers. The contractor provided the example of a customer who was so shocked and pleased with their monthly utility bill savings from participating in the program, they went on to tell every member of their extended, and large, family and friends group. He said that the one installation helped him get an additional 500 projects. The contractor went on to say customer testimonials are critical to effective marketing, stating he uses this example often in his marketing materials, or when discussing with perspective clients.

4.3.5 Satisfaction

Both contractors stated they were generally satisfied with the program. Outside of concerns with reduced incentives, they felt that the programs continue to provide incentives that allow more homeowners to make efficiency upgrades. When asked on a scale of 1 to 5 how satisfied they were with their participation in the program, both contractors responded with a 4, or very satisfied. Both contractors felt that their customers would respond similarly, and that in the field, participants overwhelmingly express satisfaction with the program. One contractor felt it was not necessarily the low or zero cost measures, but rather the bill savings that customers end up appreciating the most. He said that while he tries to provide zero cost installations, he is still able to attract participants because of the bill savings.

4.4 Conclusions and Recommendations

- Four projects with a Duct Leakage measure reported peak demand savings but did not report energy (kWh) savings**.** The program tracking data did not include any energy savings for these four projects.
    - **Recommendation:** Ensure the savings for all projects completed through the program are reported in the program tracking data.

5 Home Lighting & Recycling

The residential lighting market in the U.S. has experienced significant change over the past 15 years. Passage of the Energy Independence and Security Act of 2007 (EISA) began the phase-out of (energy inefficient) incandescent bulbs. Since then, consumers have become more aware of LEDs, and the purchase price of LEDs has become increasingly affordable. SPS's Home Lighting & Recycling program promotes adoption of LED lighting by providing incentives to customers to replace less efficient light bulbs with LED bulbs through in-store rebates at participating retailers in SPS's service territory (Table 24).[14]

Table 24: Sales of Bulbs Through the SPS Home Lighting & Recycling Program, December 1, 2020 – November 30, 2021

Retailer Type	Standard Bulbs	Specialty Bulbs	Fixtures	Percent of Total
Warehouse	23,344	944	0	7.9%
Non-Warehouse	173,453	24,132	3,794	65.8%
Giveaway Events	80,576	0	0	26.3%
Total	**277,373**	**25,076**	**3,794**	**100.0%**

Source: Analysis by Evergreen Economics of data provided by SPS.

In total, 51 retail locations participated in the Home Lighting & Recycling program over the period analyzed, and these retailers sold 225,667 LED bulbs and fixtures at a discounted price through a customer point-of-purchase rebate. In addition, 80,576 bulbs and fixtures (26% of the total) were distributed through giveaway events. A single retailer with multiple locations sold 106,169 bulbs and fixtures distributed through the program (nearly 35 percent of the total), the most of any retailer.

Table 25 shows summary statistics for the pre-rebate price per bulb (or fixture) and the rebate amounts sold through the SPS Home Lighting & Recycling program.[15] On average, standard and specialty bulbs had a pre-rebate price of $2.27 and $5.15, respectively, while the average pre-rebate price of an LED fixture was $16.32. For each bulb type and fixtures, pre-rebate prices varied substantially. For standard LED bulbs, prices varied from $1.25 to $9.00, while the prices for

[14] The Home Lighting & Recycling program no longer promotes CFL bulbs as of 2017. However, some CFL bulbs sold in 2016 were invoiced during the 2017 program year and appear in the 2017 tracking data. CFLs accounted for about 19 percent of light bulbs rebated through retail channels in the 2017 tracking data for the SPS Home Lighting & Recycling program. No CFLs were provided through giveaways or events.

[15] Bulb price was included in the program tracking system data provided by SPS.

specialty bulbs ranged from $1.50 to $19.97; for LED fixtures, the prices ranged from $6.24 up to $29.97.

The average rebates provided to consumers through the Home Lighting & Recycling program ranged from $1.13 for standard bulbs to $1.87 for specialty bulbs and $2.00 for LED fixtures. These rebates cut the price paid per bulb by between 12 percent (for LED fixtures) to 50 percent (for standard bulbs) of the pre-rebate bulb price.

Table 25: Summary Statistics of Bulb and Fixture Prices and Rebates, SPS Home Lighting & Recycling Program*

Statistic	Standard LED Bulbs		Specialty LED Bulbs		LED Fixtures	
	Pre-Rebate Bulb Price	Rebate Per Bulb	Pre-Rebate Bulb Price	Rebate Per Bulb	Pre-Rebate Bulb Price	Rebate Per Bulb
Mean	$2.27	$1.13	$5.15	$1.87	$16.32	$2.00
Median	$1.99	$1.20	$4.66	$2.00	$19.97	$2.00
Minimum	$1.25	$0.33	$1.50	$0.25	$6.24	$2.00
Maximum	$9.00	$2.00	$19.97	$2.08	$29.97	$2.00
25th %tile	$1.62	$0.97	$3.31	$2.00	$6.24	$2.00
75th %tile	$2.50	$1.25	$7.42	$2.00	$20.97	$2.00
Mean Rebate as % of Mean Bulb Price	50%		36%		12%	

* Summary statistics weighted by bulb sales. Excludes bulbs distributed through giveaways/events.

5.1.1 Home Lighting & Recycling Program Gross Impacts

For the Home Lighting & Recycling program, the gross impact analysis consisted of reviewing the per-unit savings values used for all the individual lighting measures covered by the program and then comparing these values with those in the Deemed Savings Technical Assumptions (TA) for this program. For each record, we replicated savings based on the baseline wattage values and hours of use. The evaluation team found only minor deviations from the TA documents, resulting in an engineering adjustment factor of 1.0107.

5.1.2 Home Lighting & Recycling Program Net Impacts

The evaluation team utilized an elasticity model to determine net impacts for the Home Lighting & Recycling program. As discussed in the *Evaluation Methods* section, the elasticity model estimates the relationship between price and the number of bulbs sold. The theory underlying the elasticity model is that all else held equal, the quantity of bulbs sold is inversely related to the price of the bulb—as the price of bulbs increase, the number of bulbs sold decreases. Once this relationship is

established, it can be used to estimate the share of total bulbs sold that should be attributed to the price reductions offered by the program including those bulbs distributed to customers through giveaways.

As Table 26 shows, nearly 40 percent of bulbs sold through SPS's Home Lighting & Recycling program had a rebated price of less than $1.00 per bulb, and another 47 percent were between $1.00 and $1.99. Only about 14 percent of bulbs sold through the program had a rebated price of $2.00 or more, and only 1.0 percent had a rebated price of $10 or more. This relationship was explored in more detail using the elasticity model, described below.

Table 26: Bulb Sales by Rebated Price of Bulb*

Rebated Price of Bulb	Proportion of Bulbs & Fixtures Sold
Less than $1.00	39.5%
$1.00 - $1.99	46.6%
$2.00 - $2.99	6.1%
$3.00 - $3.99	2.3%
$4.00 - $4.99	1.5%
$5.00 - $9.99	2.9%
$10.00 - $19.99	0.6%
$20.00 Plus	0.4%

* Data includes only those bulbs sold and rebated through a retail outlet.

The first column of Table 27 shows the same ranges for rebated price per bulb as shown in Table 26. The next two columns show average pre-rebate price per bulb and average rebate per bulb for standard LED bulbs. Columns 4 and 5 and columns 6 and 7 show, respectively, the same information for specialty bulbs and for LED fixtures.

Table 27: Average Pre-Rebate Prices and Rebates per Bulb or Fixture, SPS Home Lighting & Recycling Program*

Rebated Price Per Bulb	Standard LED Bulbs		Specialty LED Bulbs		LED Fixtures	
	Pre-Rebate Bulb Price	Rebate Per Bulb	Pre-Rebate Bulb Price	Rebate Per Bulb	Pre-Rebate Bulb Price	Rebate Per Bulb
Less than $1.00	$1.81	$1.19	$2.56	$1.82		
$1.00 - $1.99	$2.37	$0.99	$3.25	$1.74		
$2.00 - $2.99	$4.31	$1.86	$4.47	$1.88		
$3.00 - $3.99	$5.45	$1.76	$5.43	$1.96		
$4.00 - $4.99	$6.93	$1.97	$6.25	$1.86	$6.24	$2.00
$5.00 - $9.99	$7.99	$1.95	$8.44	$1.96	$11.66	$2.00
$10.00 - $19.99			$13.96	$1.98	$19.80	$2.00
$20.00 Plus					$27.62	$2.00

* Data includes only those bulbs sold and rebated through a retail outlet.

To develop the elasticity model, the evaluation team analyzed sales data for SPS's Home Lighting & Recycling program beginning in December 2020 and extending through November 2021 to understand the impact that direct (in-store) rebates have on the sale of residential LED lighting.[16] Since the customer receives the rebate at the time of purchase (as opposed to a mail-in rebate or a rebate on a future purchase), it acts to immediately lower the purchase price of the LED lighting.

To estimate the impact that price has on the sale of LED bulbs, the evaluation team specified and estimated a Poisson regression model. The Poisson model is preferable to standard ordinary least squares (OLS) regression because the response variable (i.e., bulb sales) only takes on non-negative (or positive) values. The OLS regression model is generally not an appropriate choice because it fails to account for the limited possible values of the response variable.[17] While there are other models that account for limitations of count data (e.g., negative binomial), the Poisson model is the most often-used approach.

The generalized log-linear Poisson model is specified as

$$Ln(\mu_i) = x_i'\beta$$

[16] The evaluation team conducted the NTG analysis on LED bulbs only.

[17] The evaluation team did examine two alternative modeling approaches: fixed-effects and random-effects Poisson models. Results varied little between these models and the (standard) Poisson model.

Where, μ_i is the mean of the individual bulb sales across retailers and sales periods. The empirical model the evaluation team estimated for the SPS Home Lighting & Recycling program is specified as:

$$Ln(Bulb\ Sales_{kit}) = \beta_0 + \beta_1(Rebated\ Price_{kit}) + \beta_k(Bulb\ Char_k)$$

Where,

$Ln(Bulb\ Sales_{kit})$ is the natural logarithm of the average number of bulb type *k* sold each day by retailer *i* in time period *t*.

$Rebated\ Price_{kit}$ is the price after rebate for bulb type *k* sold by retailer *i* in time period *t*.

$Bulb\ Char_k$ is an array of characteristics of the LED bulb, such as lumens and watts.

We estimated four separate models, segmented the sales data by bulb/fixture type and retailer in the following way:

- Model 1: Standard bulbs from non-warehouse retailers
- Model 2: Standard bulbs from warehouse retailers
- Model 3: Specialty bulbs from all retailers
- Model 4: LED fixtures from non-warehouse retailers[18]

Data on bulbs distributed through give-away events were excluded from the analysis because (by definition) the bulbs were given away without charge and, therefore, included no price differentiation.

Our *a priori* assumption was that consumers are more sensitive to price when purchasing standard LED bulbs, which are applicable to a greater range of residential lighting fixtures and for which consumers may have a greater number of alternative lighting options (e.g., efficient incandescent, halogen, CFL). In comparison, as the name implies, there is a wide range of specialty LED bulbs available in the market, but not every specialty LED bulb is demanded by every consumer and, therefore, only those consumers who have a use for a specific specialty LED bulb will plausibly show any sensitivity to price.

Table 28 shows the estimates of price elasticity of demand for each of the four regression models and for the overall program. The price elasticity of demand is a measure of the change in the demand for a good or service when the price of that good or service increases by a small amount (generally 1.0 percent). Price elasticities are assumed to be negative (i.e., as price goes up,

[18] The data provided by SPS contained no rebated sales of LED fixtures from warehouse retailers.

demand for the good or service goes down); it is the magnitude of the elasticity (the "responsiveness") that is of primary interest.[19]

As Table 28 shows, the evaluation team found that the demand for LED bulbs is elastic for standard bulbs sold through both non-warehouse and warehouse retailers (price elasticity of demand of -1.27 and -1.75, respectively). The evaluation team found that the demand for specialty bulbs and for LED fixtures is inelastic (estimated elasticity of -0.69 and -0.25, respectively). Overall, when weighting by LED bulb sales from all retailers, the evaluation team estimated the price elasticity of demand for LED bulbs and fixtures to be -1.24. Thus, a 10 percent decrease in the price of LED bulbs and fixtures will result in a 12.4 percent increase in demand for LED bulbs and fixtures, holding all else constant.

Table 28: Estimates of Price Elasticity of Demand and NTG Ratio

LED Bulb Type and Retailer	Elasticity at Mean Rebated Price	NTG Ratio at Mean Rebated Price
Standard Non-Warehouse	-1.27	0.63
Standard Warehouse	-1.75	0.83
Specialty All Retailers	-0.69	0.26
Fixtures Non-Warehouse	-0.25	0.03
Giveaway and Events*	N/A	0.63
Home Lighting & Recycling Program	**-1.24**	**0.61**

* The evaluation team developed the estimated NTG ratio for bulbs distributed through giveaway and events based on the modeling results for standard non-warehouse LED bulbs.

Table 28 also shows estimates of the NTG ratio for SPS's Home Lighting & Recycling program using the elasticity model. The estimates of the NTG ratio vary across the four combinations of bulb type and retailer. The highest NTG ratio estimate was for standard bulbs sold by warehouse retailers (0.83), and the lowest estimated NTG ratio—by far—was for LED fixtures (0.03).[20]

The evaluation team assumed that the NTG ratio for bulbs (which were all standard) distributed through giveaways and events was equal to the NTG ratio for standard non-warehouse LED bulbs. We believe the estimated NTG ratio of 0.63 is reasonable and indicates that about 37 percent (1 –

[19] If the price elasticity for a good is greater than 1.0 in absolute value, demand for that good is referred to as elastic (more responsive). Similarly, when the price elasticity is less than 1.0 in absolute value, demand for that product is referred to as inelastic. When the price elasticity of demand is equal to 1.0, demand for that product is referred to as unit elastic.

[20] The rebate for all LED fixtures distributed through the program was $2.00, and so there was no program-related variability in price.

0.63 = 0.37) of recipients of the giveaway LED bulbs would have purchased LED bulbs had they not received them through the program.

Figure 24 shows how expected rates of free ridership and NTG ratios vary for standard LED bulbs sold by warehouse and non-warehouse retailers, and for specialty LED bulbs.[21] As the rebated price of LEDs drop, the proportion of purchasers that free ride also decreases as the NTG ratio increases. The trajectories differ for standard and specialty bulbs and for warehouse and non-warehouse retailers because the characteristics of bulbs typically sold by warehouse and non-warehouse retailers differ, as do the prices charged. It is also likely that the purchasing habits of buyers differ between those who shop at warehouse and non-warehouse retailers.

It is important to note that the free ridership chart (upper panel of Figure 24) does not show the expected number of bulbs sold by rebated price, but rather the proportion of bulbs sold by rebated price that would have sold even without the rebate. As the rebated price decreases (moving from right to left along the horizontal axis), more and more consumers—who otherwise would not purchase LED bulbs—are motivated to purchase bulbs, resulting in a decreasing proportion of purchasers that are free riders.

The purpose of the rebates is to encourage those consumers who would not otherwise purchase an LED to make the purchase. However, since the rebate is available to all purchasers of the LED bulbs, even those who would have purchased the bulbs without the rebate receive the rebate. The larger the rebate, the greater the number of consumers who will purchase LED bulbs, leading to a lower rate of free ridership and a higher NTG ratio (lower panel of Figure 24).

[21] Excludes bulbs distributed through giveaways because there is no price sensitivity to measure. LED fixtures were excluded from Figure 24 because the estimated NTG ratio is negligible.

Figure 24: Estimated Free Ridership and NTG Ratio by LED Bulb Type and Retailer

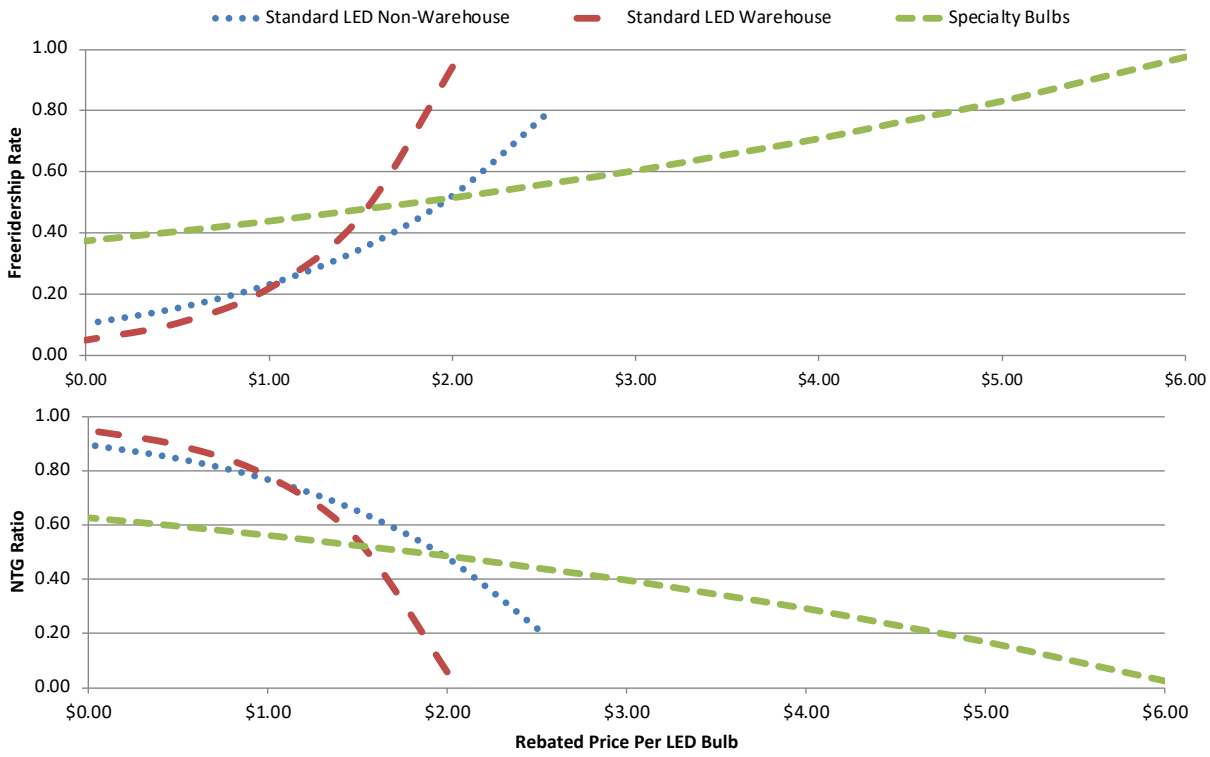


Table 29 summarizes the final gross and net impacts for the Home Lighting & Recycling program using the NTG ratio derived from the elasticity model. Using the overall NTG ratio of 0.7100, the PY2021 net realized impacts for the Home Lighting & Recycling program are 9,966,365 kWh and 12,380 kW.

Table 29: Home Lighting & Recycling PY2021 Impact Summary

	# of Participants	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	306,243	13,888,526	1.0107	14,037,133	0.7100	9,966,365
kW Savings	306,243	17,417	1.0011	17,437	0.7100	12,380

6 Residential Lighting General Population Survey

As part of the PY2021 evaluation, the evaluation team fielded a general population survey to collect information on lightbulb purchases among New Mexico households. The survey was fielded online in January and February 2022, and we received 244 responses compared to our original goal of 200 completes. The survey data will be used to assess the current residential lighting baseline assumptions. A summary of the lighting survey responses is provided below. Note that many customers refused to provide information on income, which limited our ability to break out the results by income level.

Figure 25 shows the home type for households responding to the survey; the vast majority of respondents are in single-family homes. When the responses are broken out by income (results not shown), there are slightly more low-income respondents living in apartments (12%) and mobile homes (6%).

Figure 25: Home Types (n = 136)

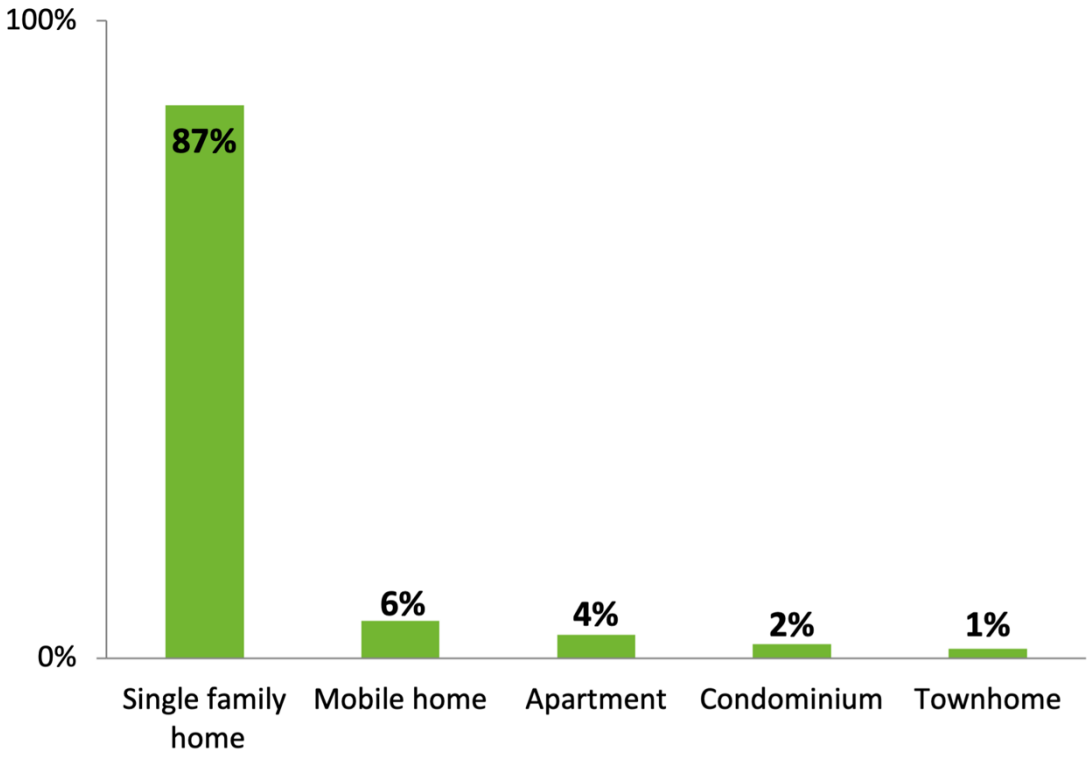


Figure 26

Figure 26 shows that, overall, almost three quarters (73%) of the sample are households with two or fewer people.

Figure 26: Household Size (n=85)

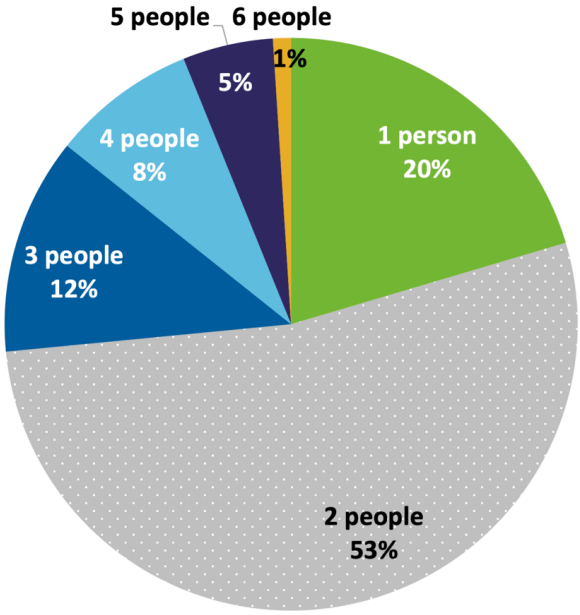


Figure 27 shows how household size varies by income level. Low-income households skew toward larger families, with fewer single-resident households (9%) and over 25 percent of low-income households with four or more people. Overall, low-income households had an average of 1.93 people, compared with 1.59 people for non-low-income households in the sample.

Figure 27: Household Size by Income

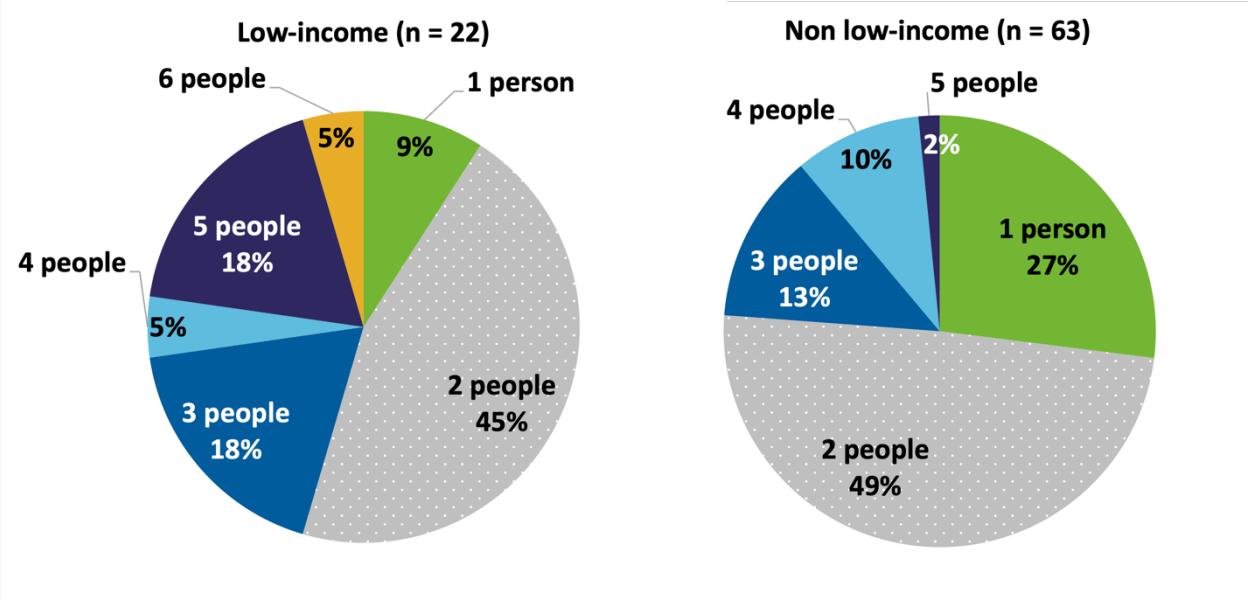


Figure 28 shows the number of low-income households in the sample. Note that less than half the respondents provided information about their income.

Figure 28: Income Breakdown in Survey Sample

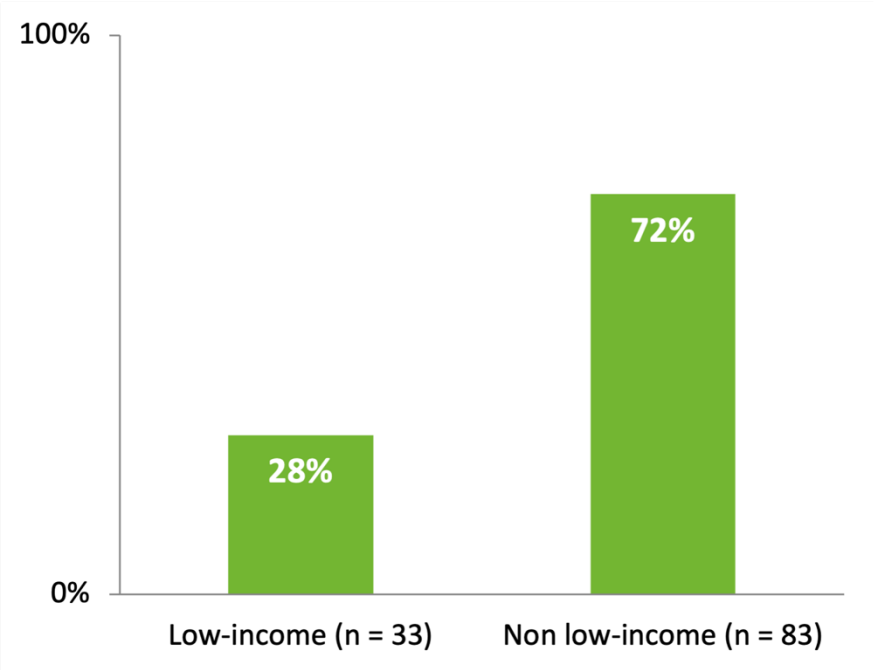


Figure 29 shows the types of lightbulbs purchased over the last year. The majority of the total bulbs purchased were LEDs (58%), and less than 10 percent of bulbs purchased were CFLs.

Figure 29: Bulbs Purchased by Bulb Type

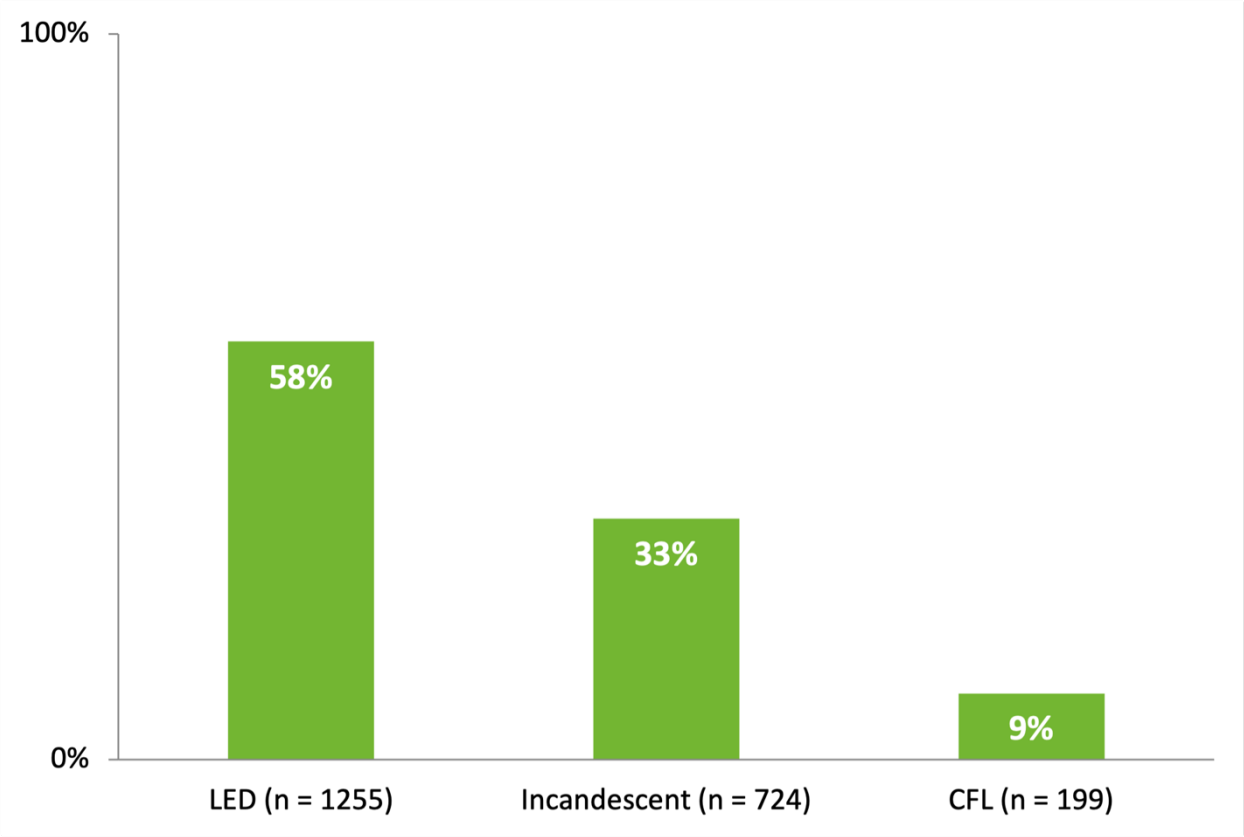
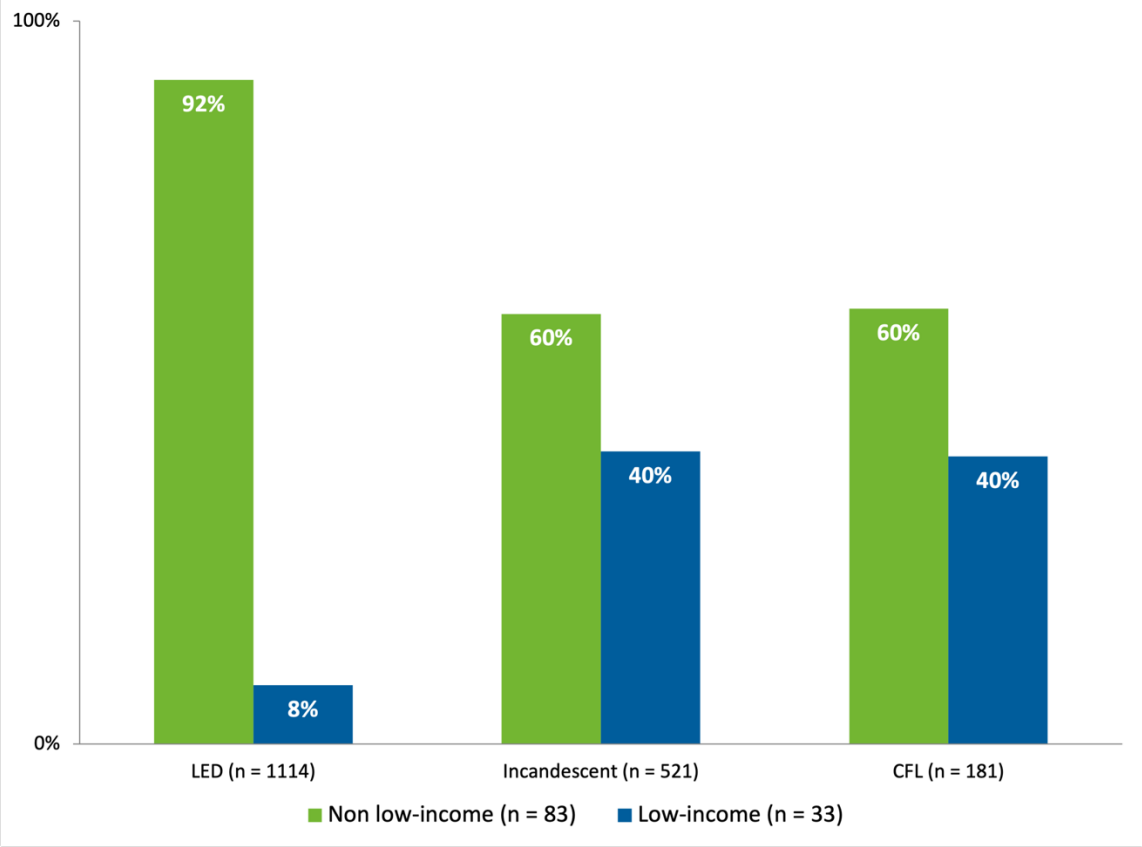


Figure 30 shows the share of each bulb type purchased by income level, for those respondents that provided income information. LEDs are mostly being purchased by non-low-income households, while low-income households are responsible for a greater share of incandescent and CFL purchases (40% for both bulb types).

Figure 30: Bulb Types Purchased by Income Level



We also looked at how many of the purchased bulbs were stored versus installed (Figure 31) and examined stored versus installed bulbs by income (Figure 32). Overall, across all bulb types and income levels, respondents were more likely to install the bulbs they purchased compared to storing them. Non-low-income households tended to store incandescent bulbs at a greater rate, while low-income households were more likely to store LEDs for future use compared to non-low-income households.

Figure 31: Number of Bulbs Installed vs. Stored by Bulb Type

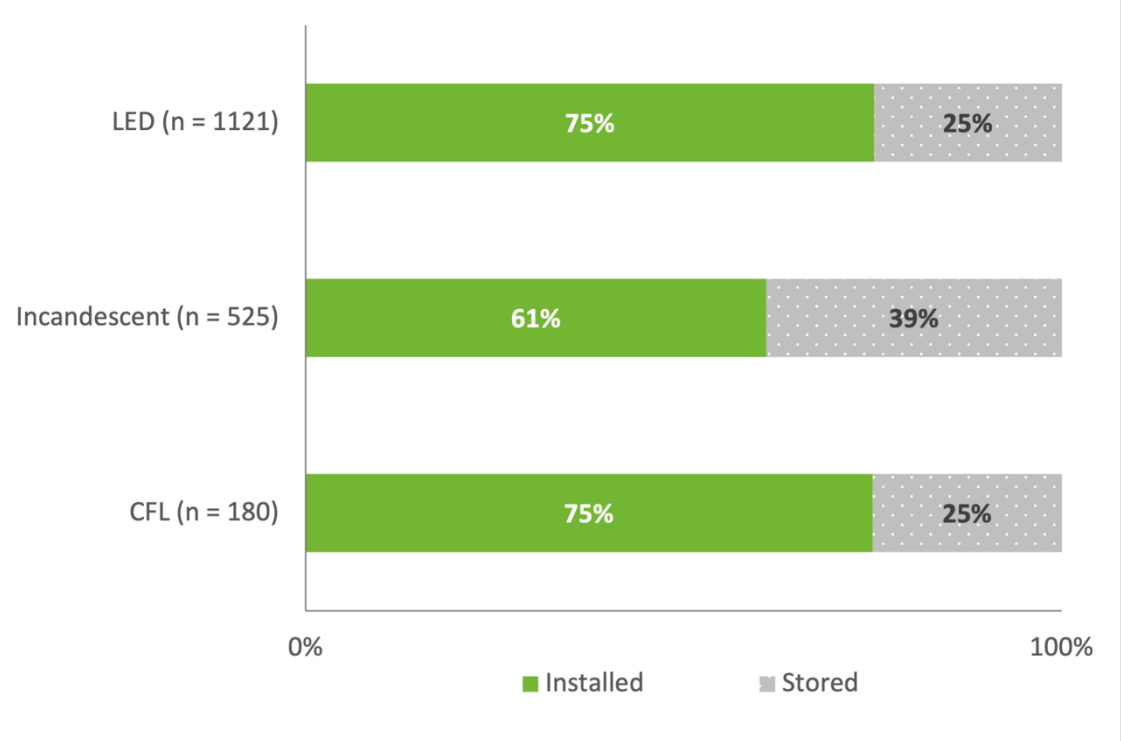
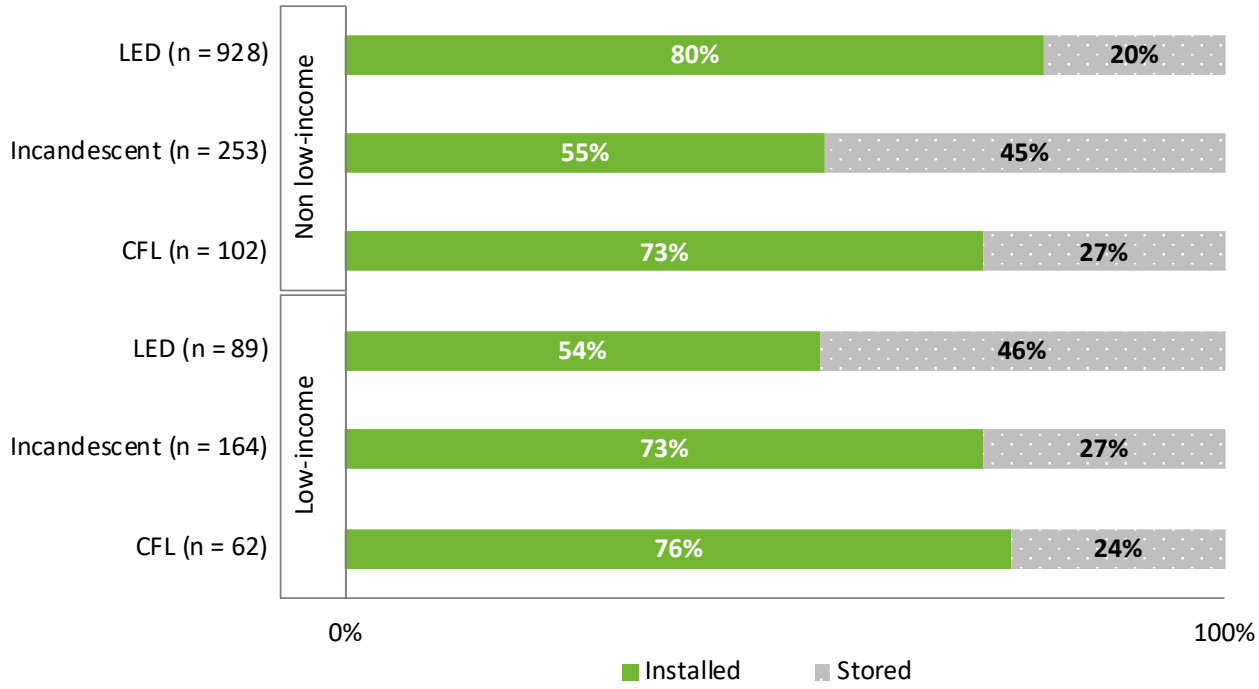


Figure 32: Number of Bulbs Installed vs. Stored by Bulb Type and Income



The following charts (Figure 33 through Figure 38) show where households typically purchased each bulb type, broken out by the full respondent population and income level. Note that with the small sample sizes for income, it is difficult to draw definite conclusions by income type. LEDs are generally purchased by all households at larger big box stores (Home Depot, Walmart, Costco, etc.). With incandescents, there is a greater incidence of purchases through online retailers, particularly with non-low-income households. Most CFLs are also purchased at larger big box stores. Although the sample sizes are small, these results do not support the theory that a significant number of CFLs and incandescents are purchased by low-income households at dollar stores or other similar outlets; most of these bulbs are being purchased at the large box stores, across all income types.

Figure 33: Purchases by Store Type: LEDs (# bulbs=148)

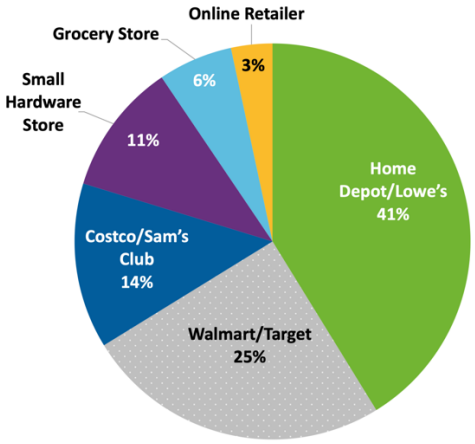


Figure 34: Purchases by Store Type: LEDs (# bulbs=108)

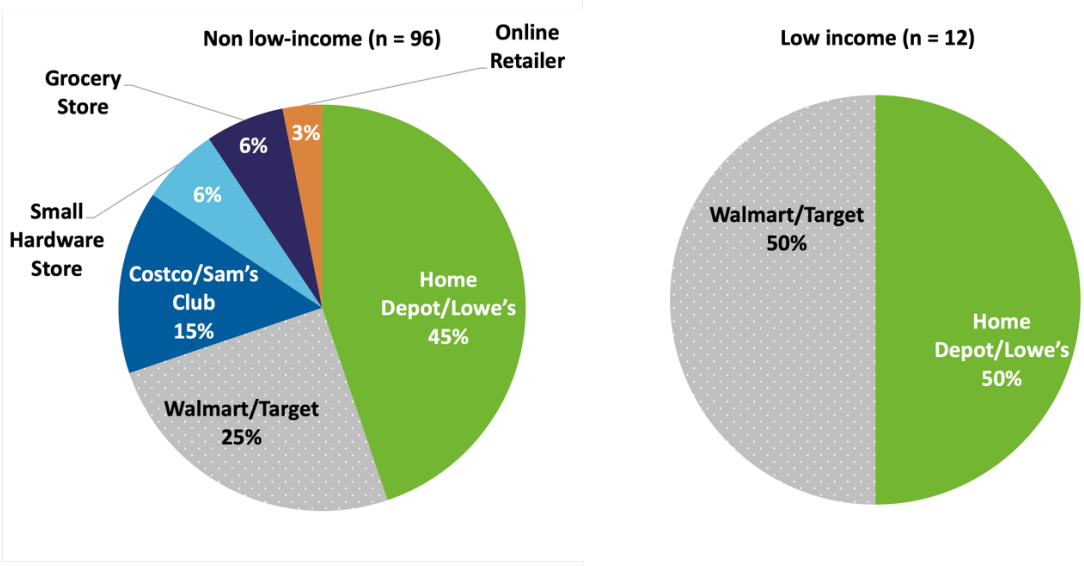


Figure 35: Purchases by Store Type: Incandescents (# bulbs=137)

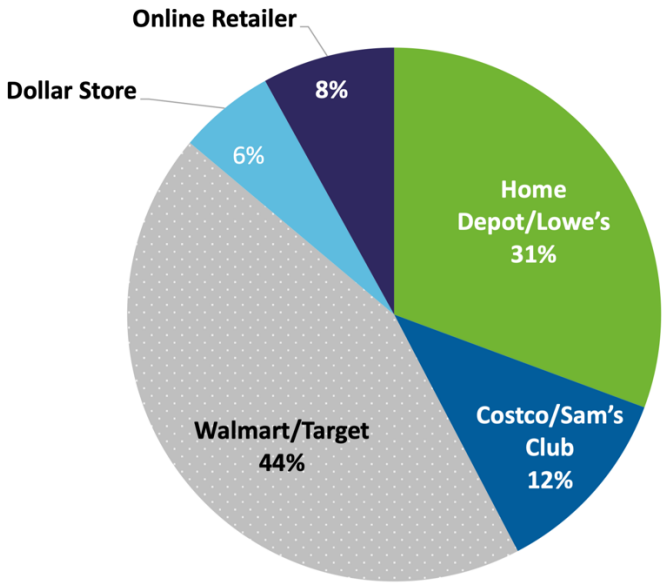


Figure 36: Purchases by Store Type and Income: Incandescents (# bulbs=92)

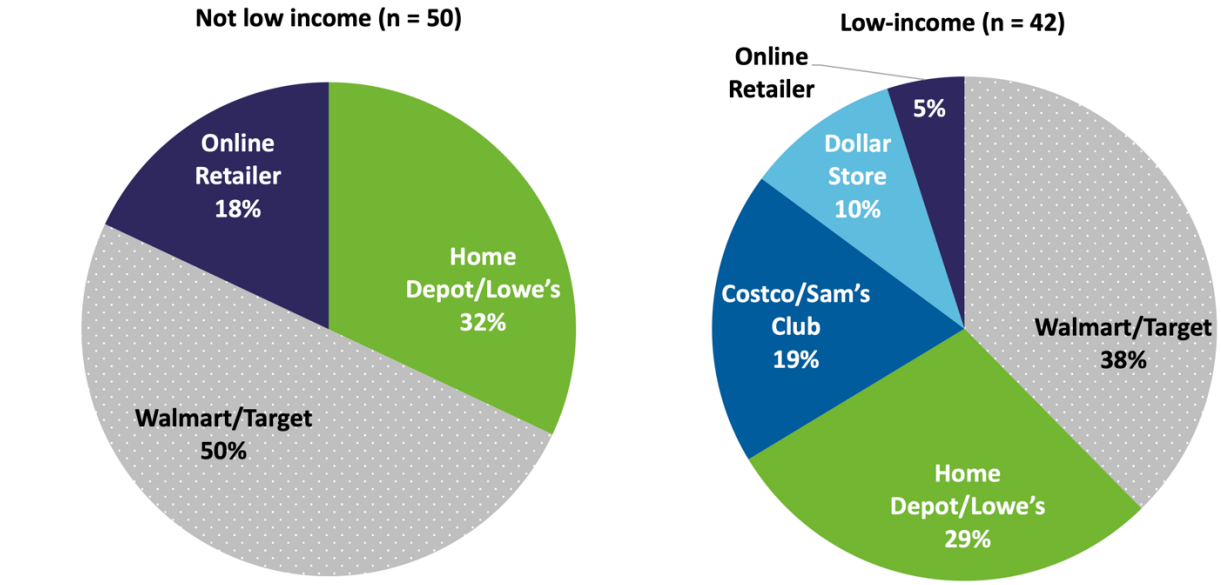


Figure 37: Purchases by Store Type: CFLs (# bulbs=36)

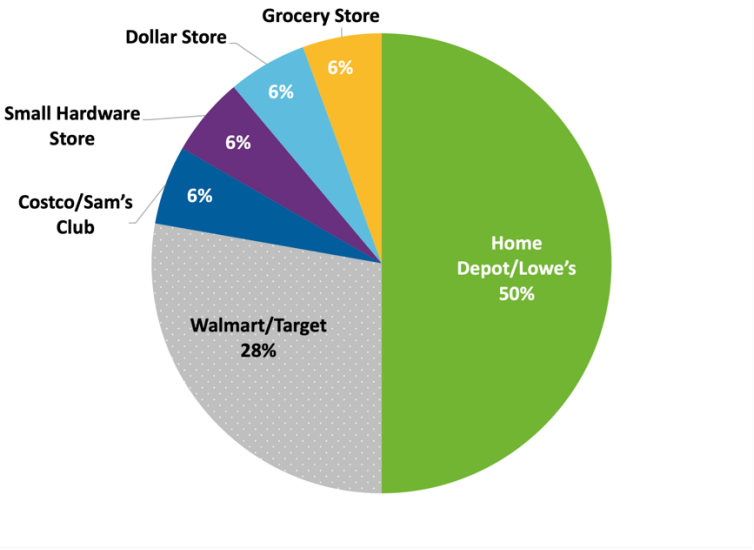
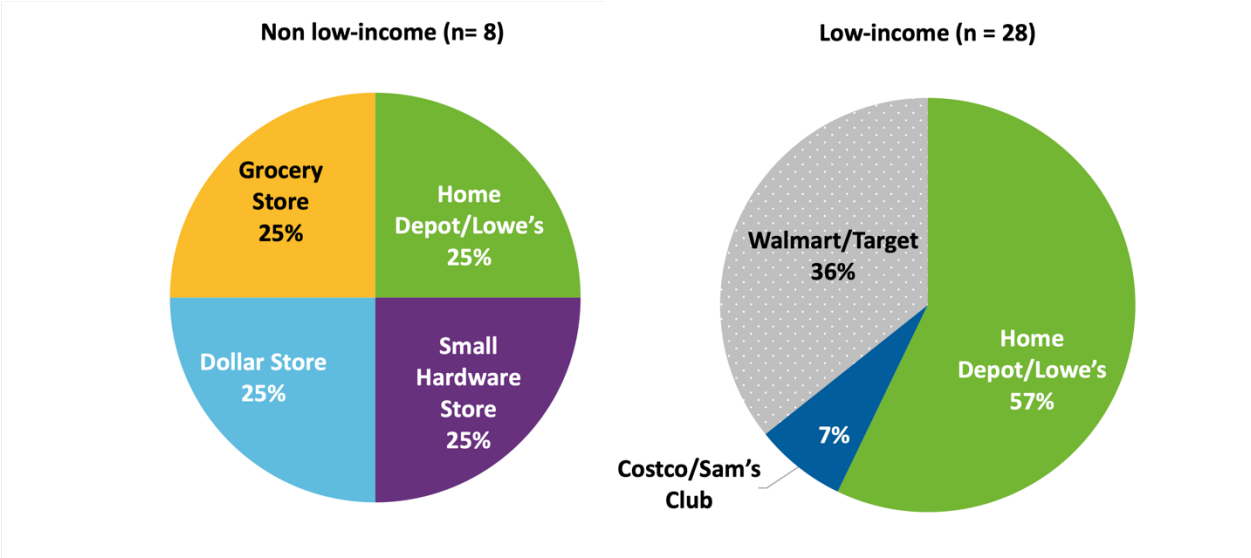
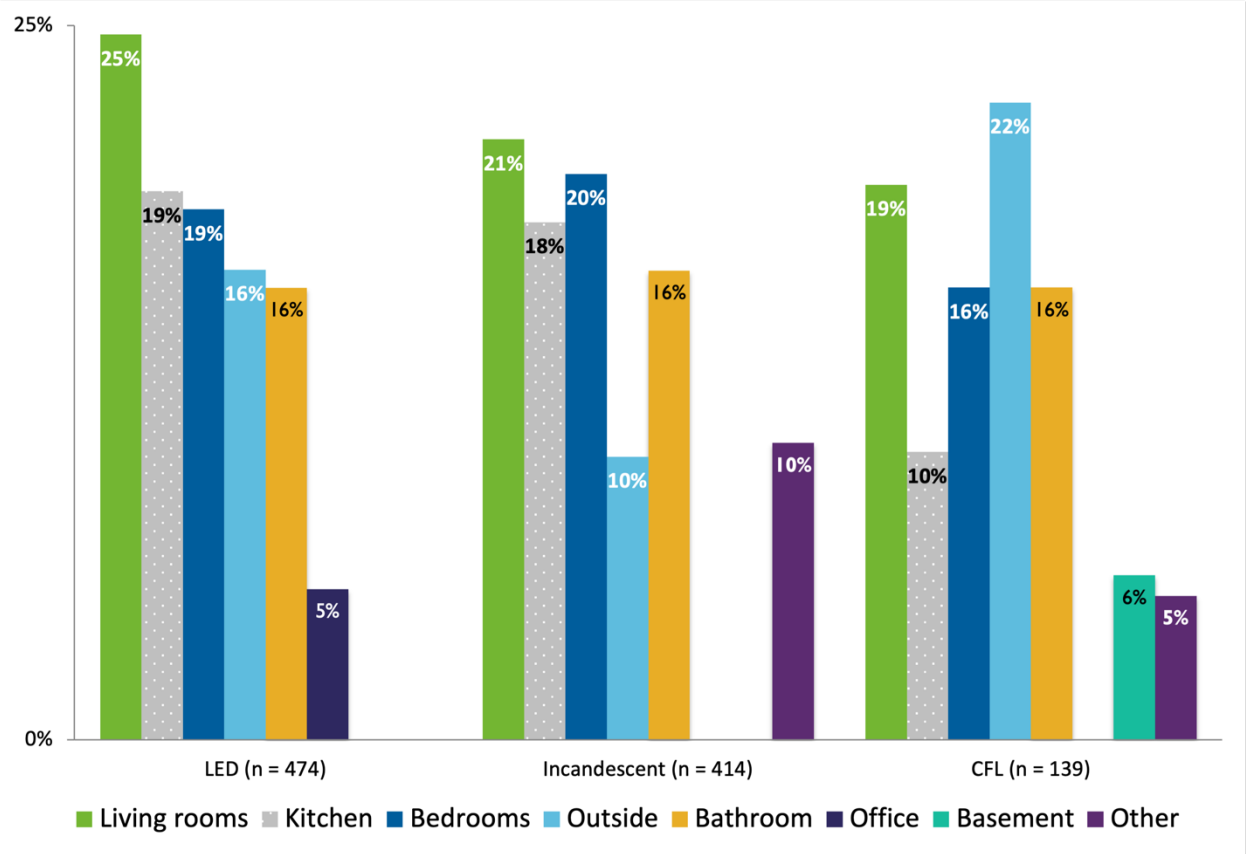


Figure 38: Purchases by Store Type and Income: CFLs (# bulbs=36)



Finally, Figure 39 shows the distribution of rooms where lightbulbs were installed. In general, the same four locations (living rooms, bedrooms, outside, bathrooms) comprise the majority of installations for each bulb type. CFLs tended to be installed more frequently outside and less frequently in the kitchen compared with both LEDs and incandescents.

Figure 39: Percent of Bulb Types Installed by Room



7 Cost Effectiveness Results

The evaluation team calculated cost effectiveness using the Utility Cost Test (UCT) for each individual SPS energy efficiency program, as well as the cost effectiveness of the entire portfolio of programs.[22] The evaluation team conducted these tests in a manner consistent with the California Energy Efficiency Policy Manual.[23]

Cost effectiveness tests compare relative benefits and costs from different perspectives. The specific cost effectiveness test used in this evaluation, the UCT, compares the benefits and costs to the utility or program administrator implementing the program. The UCT explicitly accounts for the benefits and costs shown in Table 30.

Table 30: Utility Cost Test Benefits and Costs

Benefits	Costs
• Utility avoided energy-related costs • Utility avoided capacity-related costs, including generation, transmission, and distribution	• Program overhead/ administrative costs • Utility incentive costs • Utility installation costs

Using net realized savings from this evaluation and cost information provided by SPS, the evaluation team calculated the ratio of benefits to costs for each of SPS's programs and for the portfolio overall. The results of the UCT are shown below in Table 31, and the portfolio overall was found to have a UCT ratio of 2.30.

[22] The Utility Cost Test is sometimes referred to as the Program Administrator Cost Test, or PACT.

[23] http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/EEPolicyManualV5forPDF.pdf

Table 31: PY2021 Cost Effectiveness

Program	Utility Cost Test (UCT)
Business Comprehensive	1.41
Home Lighting & Recycling	9.61
Energy Feedback	0.95
Residential Cooling	0.26
School Education Kits	1.20
Home Energy Services	2.20
Heat Pump Water Heaters	0.23
Smart Thermostat	0.17
Overall Portfolio	**2.30**

Evaluation of the 2021 Southwestern Public Service Company's Energy Efficiency Programs

FINAL Report - Appendices

April 15, 2022

Table of Contents

Appendix A: Business Comprehensive Participant Survey Instrument

QA. *(Once correct respondent is reached.)* **Hello, my name is** *(your name)* **from Research & Polling, Inc. I am calling on behalf of SPS. I'm calling because our records show that you recently completed an energy efficiency project where you installed** *(measure 1)* **at your business located at** *(site address)* **and received a rebate through the SPS** *(rebate program)***. I'd like to ask a short set of questions about your experience with the** *(rebate program)* **program. Your time will help us improve this program for other customers like you. Are you the best person to talk to about the/these energy efficiency upgrade(s) and energy use at your firm?**

Yes	1
No	2
Never installed	3

Q1-M1. (A 1) Our records show in 2021 your business got a rebate through SPS for installing *(measure 1)***. Are you familiar with this project?**

Yes	1
No	2
Never installed	3
Don't know	4

Q1a-M1. Our records show it was installed at *(site address)* **in** *(site city)***. Is that correct?**

Yes	1
No	2
Never installed	3

Q1b-M1. Where was *(measure 1)* **installed?** *(Among those who installed measure 1 at a different location than SPS's records.)*

[Data Processing Use Only] Q2-M1. (A 1a) Is there someone else at your company who would know about buying the *(measure 1)***?**

Yes, transfer and go to intro	1
Yes, no transfer	2

Q3-M1. (A 2) Thinking about the *(measure 1)* **for which you received a rebate, is the** *(measure 1)* **still installed in your facility?**

Yes	1
No	2
Prefer not to answer	3
Don't know	4

Q4a-M1. (A 3) Was the *(measure 1)* **removed?** *(Among those who do not currently have measure 1 installed at their facility.)*

Yes, it was removed	1
No	2
Prefer not to answer	3
Don't know	99

Q4b-M1. (A 3) Was the *(measure 1)* **never installed?** *(Among those who do not currently have measure 1 installed at their facility.)*

Yes, never installed	1
Prefer not to answer	2
Don't know	99

Q5-M1. (A 3a) Why was the *(measure 1)* **removed/never installed?** *(Among those who do not currently have measure 1 installed at their facility or never installed measure 1.)*

Q6-M1. (A 4) Is the *(measure 1)* **still functioning as intended?** *(Among those who currently have measure 1 installed.)*

Yes	1
No	2
Prefer not to answer	3
Don't know	4

Q7-M1. (A 5) Did your firm use a contractor to install the *(measure 1)* **or did internal staff do the work?**

Contractor	1
Internal Staff	2
Prefer not to answer	3
Don't know	99

Q8-M1. (A 6) Why did your firm choose to use internal staff instead of a contractor? *(Among those who had internal staff install measure 1.)*

Prefer not to answer	98
Don’t know	99

Q10. (B 1) How did your company FIRST learn about the program?

Word of mouth (business associate, co-worker)	1
Utility program staff	2
Utility website	3
Utility bill insert	4
Utility representative	5

Utility advertising	6
Email from utility	7
Contractor/distributor	8
Building audit or assessment	9
Television Advertisement - Mass Media	10
Other mass media (sign, billboard, newspaper/magazine ad)	11
Event (conference, seminar, workshop)	12
Online search, web links	13
Participated or received rebate before	14
Retailer	15
No way in particular	98
Don't know	99

Q11. (B 2) What other sources did your company use to gather information about the program? ... Were there any others?

Word of mouth (business associate, co-worker)	1
Utility program staff	2
Utility website	3
Utility bill insert	4
Utility representative	5
Utility advertising	6
Email from utility	7
Contractor/distributor	8
Building audit or assessment	9
Television Advertisement - Mass Media	10
Other mass media (sign, billboard, newspaper/magazine ad)	11
Event (conference, seminar, workshop)	12
Online search, web links	13
Participated or received rebate before	14
None	98
Don't know	99

Q12. (B 3) Of all the sources you mentioned, which did you find most useful in helping you decide to participate in the program? *(Among those who mentioned additional sources used to gather information.)*

None in particular	97
Prefer not to answer	98
Don’t know	99

[Data Processing Use Only] POLLER NOTE: Was Measure Installed?

Yes	1
No	2

Q13a. (C 1) Did the equipment that your firm installed replace existing equipment?

Yes (i.e. all equipment was replacing old equipment)	1
Some equipment was a replacement and some was a new addition	2
No (i.e. all equipment was an addition to existing equipment)	3
Prefer not to answer	4
Don't know	5

Q13b. (C 1) Is the equipment that your firm purchased intended to replace existing equipment? *(Among those who did not install the measure.)*

Yes (i.e. all equipment is replacing old equipment)	1
Some equipment is a replacement and some was a new addition	2
No (i.e. all equipment is an addition to existing equipment)	3
Prefer not to answer	4
Don't know	5

Q14a. (C 2) Was the replaced equipment ... *(Among those who installed the measure and some or all new equipment was replacing old equipment.)*

Fully functional and not in need of repair?	1
Functional, but needed minor repairs?	2
Functional, but needed major repairs?	3
Not functional?	4
Prefer not to answer	5
Don’t know	6

Q14b. (C 2) Is the equipment you intend to replace ... *(Among those who did not install the measure.)*

Fully functional and not in need of repair?	1
Functional, but needs minor repairs?	2
Functional, but needs major repairs?	3
Not functional?	4
Prefer not to answer	5
Don't know	6

Q15a. (C 3a) About how old, in years, was the equipment prior to replacement? *(Among those who installed the measure, and some or all new equipment was replacing old equipment, and the replaced equipment was functional.)*

Number of years _____

Q15b. (C 3b) About how old, in years, is the equipment you are replacing? *(Among those who did not install the measure, some or all new equipment was replacing old equipment, and the replaced equipment was functional.)*

Number of years _____

Q16. (C 4) How much longer (in years) do you think your old equipment would have lasted if you had not replaced it? *(Among those who installed the measure, and some or all new equipment was replacing old equipment, and the replaced equipment was functional.)*

Less than a year	1
1 - 2 years	2
3 - 5 years	3
6 - 10 years	4
More than 10 years	5
Prefer not to answer	6
Don't know	7

Q17. (C 5a) Next I will read a list of reasons your firm may have considered when you decided to conduct your project. For each one, please tell me if it was *not at all important*, a *little important*, *somewhat important*, *very important* or *extremely important*. ***How important was reducing environmental impact of the business on your decision to conduct your project?***

1 - Not Important At All	1
2 - A Little Important	2
3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

Q18. (C 5b) ***How important was upgrading out-of-date equipment on your decision to conduct your project?***

1 - Not Important At All	1
2 - A Little Important	2
3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

Q19. (C 5c) ***How important was improving comfort at the business on your decision to conduct your project?***

1 - Not Important At All	1
2 - A Little Important	2
3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

[Data Processing Use Only] POLLER NOTE: Was HVAC Measure Installed?

Yes	1
No	2

Q20. (C 5d) ***How important was improving air quality on your decision to conduct your project?*** *(Among those who installed HVAC measure.)*

1 - Not Important At All	1
2 - A Little Important	2
3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

Q21. (C 5e) ***How important was receiving the rebate on your decision to conduct your project?*** *(Among those who did not use direct install.)*

1 - Not Important At All	1
2 - A Little Important	2
3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

Q22. (C 5f) ***How important was reducing energy bill amounts on your decision to conduct your project?***

1 - Not Important At All	1
2 - A Little Important	2
3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

[Data Processing Use Only] POLLER NOTE: Did respondent answer "Contractor" in Q.7?

Yes	1
No	2

Q23. (C 5g) ***How important was the contractor recommendation on your decision to conduct your project?*** *(Among those who used a contractor to install the measure.)*

1 - Not Important At All	1
2 - A Little Important	2

3 - Somewhat Important	3
4 - Very Important	4
5 - Extremely Important	5
Don't Know/Won't Say	6

[Data Processing Use Only] POLLER NOTE: Did respondent answer "Contractor" in Q.7?

Yes	1
No	2

Q24. (D 1a) Next, I'm going to ask you to rate the importance of each of the following factors on your decision to determine how energy efficient your project would be. Please rate the importance of each of these factors in determining your project's energy efficiency level using a scale from 0 to 10, where 0 means *not at all important* and 10 means *extremely important*. Please let me know if the factor is not applicable. ***How important was the contractor who performed the work in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q25. (D 1b) ***How important was the dollar amount of the rebate in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10

Don't know	97
Prefer not to answer	98
N/A	99

Q26. (D 1c) ***How important was technical assistance received from SPS staff in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q27. (D 1d) ***How important was endorsement or recommendation by your SPS account manager or other SPS staff in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q28. (D 1e) ***How important was information from SPS marketing or informational materials in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q29. (D 1f) ***How important was previous participation in a SPS program in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q30. (D 1g) ***How important was endorsement or recommendation by a contractor in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5

6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q31. (D 1h) ***How important was endorsement or recommendation by a vendor or distributor in determining how energy efficient your project would be?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q32. (D 1i) ***How important was endorsement or recommendation by CLEAR Result, the program implementer in determining how energy efficient your project would be?***

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q33. (D 1j) Now, I would like to read you some factors that are <u>not</u> related to the rebate program. Using the same scale from 0 to 10, where 0 means *not at all important* and 10 means *extremely important*., please rate the following non program factors' importance in determining your project's energy efficiency. ***How important was <u>the age or condition of the old equipment</u> in determining your project's energy efficiency?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q34. (D 1k) ***How important was <u>corporate policy or guidelines</u> in determining your project's energy efficiency?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q35. (D 1l) ***How important was <u>minimizing operating cost</u> in determining your project's energy efficiency?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3

4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q36. (D 1m) ***How important was scheduled time for routine maintenance in determining your project's energy efficiency?*** *(Among those who did not use direct install.)*

0 – Not important at all	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 – Extremely important	10
Don't know	97
Prefer not to answer	98
N/A	99

Q37. (D 2) Of the items I just asked you about, think of the program factors as relating to assistance provided by the utility, such as the rebate, marketing from SPS, recommendation by a contractor and technical assistance from SPS. I also asked you about some non-program factors, which included the age and condition of the old equipment, company policy, operating costs and routine maintenance.

If you had to divide 100% of the influence on your decision to determine how energy efficient your new equipment would be between the SPS program and non-program factors, what percent would you give to the importance of the program factors? *(Among those who did not use direct install.)*

Percentage Program Factors _____%

Q38. (D 3) And what percent would you give to the importance of the non-program factors? *(Among those who did not use direct install and provided a percentage for the importance of program factors on their decision.)*

Percentage Non-Program Factors _____%

Q39. (D 5) Did you first learn about the *(rebate program)* **BEFORE or AFTER you decided how energy efficient your equipment would be?** *(Among those who did not use direct install.)*

Before	1
After	2
Prefer not to answer	3
Don't know	4

Q40. (D 6) Using a scale from 0 to 10, where 0 means *not at all likely* and 10 means *extremely likely*, please rate the likelihood that you would have installed the same equipment with the exact same level of energy efficiency if the *(rebate program)* **was not available.** *(Among those who did not use direct install.)*

0 - Not at all likely	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10 - Extremely likely	10
Don't know	97
Prefer not to answer	98
N/A	99

Q41. (D 7) You just rated your likelihood to install the same equipment without any assistance from the program as a(n) *(response from Q40)* **out of 10. Earlier, when I asked you to rate the importance of each program factor on your decision, the highest rating you gave was a** *(highest rating/s from Q24-Q32)* **out of 10 for the importance of** *(re-read question wording for highest responses Q24-Q32)***. Can you briefly explain why you were likely to install the equipment without the program, but also rated the program as highly influential in your decision?** *(Among those who did not use direct install, stated that they were 08, 09, or 10 as extremely likely to install the same equipment if the rebate program was not available, and rated one or more program factors as 08, 09, or 10 on the previous list.)*

Q42. (D 8) You just rated your likelihood to install the same equipment without any assistance from the program as a(n) *(response from Q40)* **out of 10. Earlier, when I asked you to rate the importance of each program factor on your decision, the highest rating you gave was a(n)** *(lowest rating/s from Q24-Q32)* **out of 10. Can you briefly explain why you said you were not likely to install the equipment without help from the program, yet did not rate the program as highly influential in your decision?** *(Among those who did not use direct install, stated that they were 00, 01, or 02 as not at all likely to install the same equipment if the rebate program was not available, and rated one or more program factors as 00, 01, or 02 on the previous list.)*

Q43. (D 9) If the *(rebate program)* **was not available, would you have delayed starting the project to a later date?** *(Among those who did not use direct install.)*

Yes	1
No	2
Would not have done the project at all	3
Prefer not to answer	4
Don't know	5

Q44. (D 10) Approximately how much later would you have done the project if the *(rebate program)* **was not available? Would it have been …** *(Among those who did not use direct install and stated they would have delayed starting the project if the rebate program was not available.)*

Within one year	1
Between 12 months and less than 2 years	2
Between 2 years and 3 years	3
Greater than 3 years	4
Would not have installed the equipment at all	5
Prefer not to answer	6
Don't know	7

Q45. (D 11) Using a scale from 0 to 10, where 0 means *not at all likely* and 10 means *extremely likely*, please rate the likelihood that you would have conducted this project within 12 months of when you actually completed this project if the *(rebate program)* **was not available.** *(Among those who did not use direct install and stated they would have delayed starting the project within one year if the rebate program was not available.)*

0 - Not at all likely	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

9	9
10 - Extremely likely	10
Don't know	97
Prefer not to answer	98
N/A	99

Q46. (D 12) Can you briefly describe in your own words whether the availability of the rebate influenced the timing and/or scope of your project?

Q47. (E 1a) For each of the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **SPS as an energy provider.**

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q48. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with SPS as an energy provider.)*

Q49. (E 1b) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The rebate program overall.**

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q50. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the rebate program overall.)*

Q51. (E 1c) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The equipment installed through the program.**

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3

Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q52. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the equipment installed through the program.)*

[Data Processing Use Only] POLLER NOTE: Was installation done by "Contractor" in Q.7?

Yes	1
No	2

Q53. (E 1d) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The contractor who installed the equipment.** *(Among those who used a contractor to do the installation.)*

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q54. Can you tell me why you gave that rating? *(Among those who used a contractor to do the installation and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the contractor who installed the equipment.)*

Q55. (E 1e) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The overall quality of the equipment installation.** *(Among those who used a contractor to do the installation.)*

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q56. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the overall quality of the equipment installation.)*

Q57. (E 1f) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The amount of time it took to receive your rebate for your equipment.** *(Among those who did not use direct install.)*

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q58. Can you tell me why you gave that rating? *(Among those who did not use direct install and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the amount of time it took to receive the rebate for the equipment.)*

Q59. (E 1g) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The dollar amount of the rebate for the equipment.** *(Among those who did not use direct install.)*

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q60. Can you tell me why you gave that rating? *(Among those who did not use direct install and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the dollar amount of the rebate for the equipment.)*

Q61. (E 1h) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **Interactions with SPS.**

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7

Don't know	8

Q62. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with interactions with SPS.)*

Q63. (E 1l) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The overall value of the equipment your company received for the price you paid.**

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q64. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the overall value of the equipment their company received for the price they paid.)*

Q65. (E 1j) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The amount of time and effort required to participate in the program.**

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5
Not applicable	6
Prefer not to answer	7
Don't know	8

Q66. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the amount of time and effort required to participate in the program.)*

Q67. (E 1k) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The project application process.** *(Among those who did not use direct install.)*

Very Dissatisfied	1
Somewhat Dissatisfied	2
Neither Satisfied nor Dissatisfied	3
Somewhat Satisfied	4
Very Satisfied	5

Not applicable	6
Prefer not to answer	7
Don't know	8

Q68. Can you tell me why you gave that rating? *(Among those who did not use direct install and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the project application process.)*

Q69. (E 2) Do you have any recommendations for improving the *(rebate program)* **program?**

No	97
Prefer not to answer	98
Don't know	99

Q70. (E 3) On a scale from 0 to 10, where 0 is "not at all likely" and 10 is "very likely," how likely is it that you would recommend the [REBATE_PROGRAM] to a colleague or professional contact?

0 - Not at all likely	00
1	01
2	02
3	03
4	04
5	05
6	06
7	07
8	08
9	09
10 - Extremely likely	10
Don't know	97
Prefer not to answer	98
N/A	99

Q71. Can you tell me why you gave that rating? *(Among those who rated their likelihood of recommending the rebate program to a colleague or professional contact an 8 or lower.)*

Have already recommended the program	97
Prefer not to answer	98
Don't know	99

Q72. (Gen 1) Finally, we have a few questions about your firm for classification purposes only. Do you own or lease your building where the project was completed?

Own	01
Lease/Rent	02
Prefer not to answer	03
Don't know	99

Q73. (Gen 1a) Does your firm pay your SPS bill, or does someone else (e.g., a landlord)? *(Among those who answered that they own, lease, or rent the building where the project was completed.)*

Pay own	1
Someone else pays	2
Prefer not to answer	3
Don't know	4

Q74. (Gen 2) Approximately what is the total square footage of the building where the project was completed?

Less than 1,000 square feet	1
Between 1,000 and 1,999 square feet	2
Between 2,000 and 4,999 square feet	3
Between 5,000 and 9,999 square feet	4
Between 10,000 and 49,999 square feet	5
Between 50,000 and 99,999 square feet	6
100,000 square feet or more	7
Prefer not to answer	8
Don't know	9

Q75. (Gen 3) Approximately what year was your firm's building built?

1939 or earlier	01
1940 to 1949	02
1950 to 1959	03
1960 to 1969	04
1970 to 1979	05
1980 to 1989	06
1990 to 1999	07
2000 to 2009	08
2010 to 2019	09
2020 or later	10
Prefer not to answer	11
Don't know	12

Q76. (Gen 4) Approximately, how many full-time equivalent (FTE) employees does your company currently have in the state of New Mexico?

Less than 5	01
5-9	02
10-19	03
20 - 49	04
50 - 99	05
100 - 249	06

250 - 499	07
500 - 999	08
1,000 - 2,500	09
More than 2,500	10
Prefer not to say	11
Don't know	12

Q77. (Gen 5) And this is my last question. How long has your company been in business?

Number of years_____

Appendix B: Home Energy Services Survey Instrument

QA. *(Once correct respondent is reached.)* **Hello, my name is** *(your name)* **from Research & Polling, Inc. I am calling on behalf of Xcel Energy. I'm calling because our records show that you recently completed an energy efficiency project where you installed an energy efficient** *(measure 1)* **and received a rebate from Xcel Energy. I'd like to ask a short set of questions about your experience with this rebate program. Your time will help us improve this program for other customers like you. Are you the best person to talk to about these energy efficiency upgrades and energy use in your home**

Yes 1
No 2
Never installed 3

Q1a. Just to confirm, our records show that a program contractor completed [MEASURE_TYPE1] at your home in 2021. Is this correct?

Yes 1
No 2
Don't know 3

POLLER NOTE: Is there a Measure 2?

Yes .. 1
No ... 2

Q1b. Just to confirm, our records show that a program contractor completed [MEASURE_TYPE2] at your home in 2021. Is this correct? (Among those with a measure 2)

Yes 1
No 2
Don't know 3

POLLER NOTE: Is there a Measure 3?

Yes .. 1
No ... 2

Q1c. Just to confirm, our records show that a program contractor completed [MEASURE_TYPE3] at your home in 2021. Is this correct? (Among those with a measure 3)

Yes 1
No 2
Don't know 3

Q2. (B 1) Did you initially contact a contractor, or did a contractor reach out to you directly to suggest a home assessment? [NOTE: this could be any contractor with whom the household discussed the assessment they did, not just the one who did the work.]

I contacted a contractor about the assessment 1
A contractor contacted me 2
Other 3
Don't know 4

Landlord made arrangements 5
Contacted the program 6
Got mail about the program 7

Q3. (B 2) How did you determine which contractor or contractors to call? (Among those who contacted a contractor about the assessment)

Q4. (B 3) With how many different contractors did you ultimately discuss the home assessment with? (Among those who remembered speaking with a contractor)

1 1
2-3 2
More than 3 3
Don't know . 4

Q5. (B 4) Did the contractor that ended up doing the home assessment and provided the energy efficiency upgrades mention specifically that the program was being offered by Xcel Energy?

Yes 1
No 2
Don't know/don't recall 3

Q6. (B 5) How did the contractor explain the free and discounted energy efficiency upgrades? (Among those whose contractor did not mention the program was sponsored by Xcel Energy)

Q7. (C 1) How did you <u>first</u> hear about Xcel Energy's Home Energy Services program offering energy efficiency upgrades?

Xcel Energy website 1
Digital/web advertisement 2
Newspaper advertisement 3
Contractor outreach or marketing 4
Friend or family 5
Social media 6
Xcel Energy representative 7

Mailing 8
Bill insert 9
Landlord/property manager 10
Chavez County Fair..... 11
Bulletin Board..... 12
Prefer not to answer 98
Don't know 99

Q8. (C 2a) How important was <u>reducing environmental impact of your home</u> on your decision to make the upgrades?

Not important at all 1
A little important 2
Somewhat important 3
Very important 4
Extremely important 5
Don't know 6
Prefer not to answer 7
N/A 8

Q9. (C 2b) How important was <u>improving the comfort of your home</u> on your decision to make the upgrades?

Not important at all 1
A little important 2
Somewhat important 3
Very important 4
Extremely important 5
Don't know 6
Prefer not to answer 7
N/A 8

Q10. (C 2e) How important was <u>receiving financial incentive</u> on your decision to make the upgrades?

Not important at all 1
A little important 2
Somewhat important 3
Very important 4
Extremely important 5
Don't know 6
Prefer not to answer 7
N/A 8

Q11. (C 2f) How important was <u>reducing energy bill amounts</u> on your decision to make the upgrades?

Not important at all 1
A little important 2
Somewhat important 3
Very important 4
Extremely important 5
Don't know 6
Prefer not to answer 7
N/A 8

Q12. (C 2g) How important was <u>the contractor recommendations</u> on your decision to make the upgrades?

Not important at all 1
A little important 2
Somewhat important 3
Very important 4
Extremely important 5
Don't know 6
Prefer not to answer 7
N/A 8

Q13. (C 3) Were there any other reasons that you made the upgrades that were more important than the ones we have mentioned?

No, none in particular 97
Prefer not to answer 98
Don't know 99

POLLER NOTE: Is the file marked as low income?

Yes .. 1
No ... 2

Q14. (D 1) Before participating in the Xcel Energy program, do you recall receiving any other rebates from Xcel Energy for making energy efficiency upgrades at your home? (Among those who are not low income)

Yes 1
No 2
Prefer not to answer 3
Don't know 4

Q15. (D 2a) How influential was <u>the available discount on services or equipment</u> on your decision to make the upgrade? (Among those who are not low income)

0 - Not influential at all . 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely influential 10
Don't know 97
Prefer not to answer 98
N/A 99

Q16. (D 2b) How influential was <u>the home energy assessment</u> on your decision to make the upgrade? (Among those who are not low income)

0 - Not influential at all . 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely influential 10
Don't know 97
Prefer not to answer 98
N/A 99

Q17. (D 2c) *How influential was <u>the contractor recommendation</u> on your decision to make the upgrade?* (Among those who are not low income)

0 - Not influential at all . 00
1 01
2 02
3 03
4 04
5 05
6 06

7 07
8 08
9 09
10 - Extremely influential 10
Don't know 97
Prefer not to answer 98
N/A 99

Q18. (D 2d) ***How influential was information from Xcel Energy marketing or informational materials on your decision to make the upgrade?*** **(Among those who are not low income)**

0 - Not influential at all . 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely influential 10
Don't know 97
Prefer not to answer 98
N/A 99

Q19. (D 2e) ***How influential was previous participation in an Xcel Energy program on your decision to make the upgrade?*** **(Among those who are not low income)**

0 - Not influential at all . 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely influential 10
Don't know 97
Prefer not to answer 98
N/A 99

Q20. (D 3) Did you first learn about the Xcel Energy efficiency program BEFORE or AFTER you decided to make the energy efficient upgrades? (Among those who are not low income)

Before 1
After 2
Prefer not to answer 3
Don't know 4

Q21. (D 4) If you had not received the reduced cost item(s) and services during the home assessment, what is the likelihood you would have sought out similar services or installed [MEASURE_TYPE1], [MEASURE_TYPE2], or [MEASURE_TYPE3] within the next 12 months? (Among those who are not low income)

0 - Not at all likely 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely likely 10
Don't know 97
Prefer not to answer 98
N/A 99

Q22. (D 5) If you had not received the reduced cost item(s) and services during the home assessment, what is the likelihood you would have purchased the <u>exact same</u> equipment or services? (Among those who are not low income)

0 - Not at all likely 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely likely 10
Don't know 97
Prefer not to answer 98

N/A 99

Q23. (D 6) In your own words, how would you describe the influence the Xcel Energy efficiency program had – including the available discounts, contractor support, and any other program information you may have received – on your decision to make the efficiency upgrades and the timing of those upgrades? (Among those who are not low income)

Q24. (F 1a) For each of the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **Xcel Energy as an energy provider.**

Very Dissatisfied 1
Somewhat Dissatisfied 2
Neither Satisfied nor Dissatisfied 3
Somewhat Satisfied 4
Very Satisfied 5
Not applicable 6
Prefer not to answer 7
Don't know 8

Q25. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with Xcel Energy as an energy provider.)*

Q26. (F 1b) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The energy efficiency program overall.**

Very Dissatisfied 1
Somewhat Dissatisfied 2
Neither Satisfied nor Dissatisfied 3
Somewhat Satisfied 4
Very Satisfied 5
Not applicable 6
Prefer not to answer 7
Don't know 8

Q27. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the energy efficiency program overall.)*

Q28. (F 1c) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The equipment and services that were discounted through the program.**

Very Dissatisfied 1
Somewhat Dissatisfied 2
Neither Satisfied nor Dissatisfied 3

Somewhat Satisfied 4
Very Satisfied 5
Not applicable 6
Prefer not to answer 7
Don't know 8

Q29. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the equipment and services that were discounted through the program.)*

Q30. (F 1d) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The contractor who completed the home assessment and efficiency upgrades.**

Very Dissatisfied 1
Somewhat Dissatisfied 2
Neither Satisfied nor Dissatisfied 3
Somewhat Satisfied 4
Very Satisfied 5
Not applicable 6
Prefer not to answer 7
Don't know 8

Q31. Can you tell me why you gave that rating?

Q32. (F 1e) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The overall value of the efficiency upgrades you received for the price you paid.**

Very Dissatisfied 1
Somewhat Dissatisfied 2
Neither Satisfied nor Dissatisfied 3
Somewhat Satisfied 4
Very Satisfied 5
Not applicable 6
Prefer not to answer 7
Don't know 8

Q33. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the overall value of the efficiency upgrades you received for the price you paid.)*

Q34. (F 2) Do you have any recommendations for improving the Xcel Energy program?

Q35. (Gen 1) Finally, we have a few questions about your household for classification purposes only. Do you own or rent your home where the equipment was installed?

Own 1
Rent 2
Prefer not to answer 3
Don't know 99

Q36. (Gen 1a) Do you pay your Xcel Energy bill, or does someone else (e.g., a landlord)? *(Among those who answered that they own, lease, or rent the building where the project was completed.)*

Pay own 1
Someone else pays . 2
Prefer not to answer 3
Don't know 4

Q37. (Gen2) Which of the following best describes the building you reside in?

Single-family detached home 1
Single-family attached home (e.g. townhome) 2
Mobile home 3
Multifamily (i.e. more than one residence in building) 4
Prefer not to answer 98
Don't know 99

Q38. (Gen2a) How many units are in the structure? (Among those who answered Q37 and do not live in a single-family detached home)

2 to 4 1
5 to 10 2
11 to 25 3
26 to 50 4
More than 50 5
Prefer not to answer 98
Don't know 99

Q39. (Gen 3) Approximately what is the total square footage of your home?

Less than 1,000 square feet 1
Between 1,000 and 1,499 square feet 2
Between 1,500 and 1,999 square feet 3
Between 2,000 and 2,499 square feet 4
Between 2,500 and 2,499 square feet 5
Between 3,000 and 3,999 square feet 6
4,000 square feet or more 7
Prefer not to answer 8

Don't know 9

Q40. (Gen 4) Approximately what year was your home built?

1939 or earlier 1
1940 to 1949 2
1950 to 1959 3
1960 to 1969 4
1970 to 1979 5
1980 to 1989 6
1990 to 1999 7
2000 to 2009 8
2010 to 2019 9
2020 or later 10
Prefer not to answer 11
Don't know 12

Q41. (Gen 5) How many people live in your household?

Q42. (Gen 6) How long have you lived in this home?

Less than 6 years 1
6 to 10 years 2
11 to 15 years 3
16 to 20 years 4
21 to 25 years 5
26 to 30 years 6
More than 30 years 7
Prefer not to answer 8
Don't know 9

Appendix C: General Population Lighting Survey Instrument

Hello, my name is [NAME] and I am calling from Research and Polling on behalf of the New Mexico Public Utilities Commission and your electric utility. We are doing a study on the types of light bulbs people buy, and your responses will be used to help design better energy efficiency programs in New Mexico. Your response is important to us, we want to make sure our findings represent families like yours.

Q1. Have you purchased any light bulbs for your home in the last 12 months?

a. Yes
b. No [Thank & Terminate]
c. Don't know [Thank & Terminate]

Q2. How many bulbs did you purchase that were incandescent or halogen (higher wattage i.e. 60 or 75 W bulbs) in the past 12 months?

Incandescent or Halogen: An incandescent bulb is a traditional light bulb that you are most familiar with; it has been available for 100 years. Halogens are a type of incandescent bulb that look similar, but the interior contains a little capsule that produces the light.

a. Free response [number validated]

Q3. How many bulbs did you purchase that were CFLs (Compact Fluorescent Lamps) in the past 12 months?

CFL (Compact Fluorescent Lamp): CFLs are the ones with the twisty spiral that have been around for about 20 years. Some CFLs may have a plastic or glass cover over the spiral tube to make them look more like a traditional lightbulb.

a. Free response [number validated]

Q4. How many LED light bulbs did you purchase in the past 12 months?

LED: LEDs are the newest type of light bulb on the market and typically cost more than the other type of lightbulbs. An LED usually has a plastic base above the screw in part, sometimes with ridges.

a. Free response [number validated]

Bulb Battery

[Ask blub battery for each [BULBTYPE] where a>0 in Q2 through Q4]

Q5. Where did you buy the [BULBTYPE](s)? [Select categories mentioned by respondents]

a. Home Depot or Lowe's
b. Other Large Home Improvement Store (Dixieline, Orchard Supply)

c. Costco or Sam's Club
d. Walmart or Target
e. Small Hardware Store (such as Ace or True Value)
f. Dollar Store (Dollar General, Dollar Tree, Family Dollar)
g. Convenience Store
h. Grocery Store (Sprouts, Vons, Ralph's, Safeway, Albertsons)
i. Lighting and Electronics Store (such as best buy or Frys)
j. Online Purchase from Online Retailer (such as Amazon.com or 1000 bulbs)
k. Retail Store Website (such as HomeDepot.com or Walmart.com)
l. Other [Specify: _____]
m. Don't know

Q6. [If more than one answer selected for Q5 ask:] Of the [answer from Q4/Q3/Q2 depending on BULBTYPE] [BULBTYPE]s you said you bought in the past 12 months, how many [BULBTYPE]s did you buy from [STORE from Q5]?

Repeat for each store type mentioned in Q5.

Q7. [If sum of responses from Q6 ≠ Q4/Q3/Q2 (depending on BULBTYPE) ask] The amount of [BULBTYPE]s you mentioned totaled [sum of responses in Q6] but you mentioned that you bought [answer from Q4/Q3/Q2]. Is the total amount of [BULBTYPE]s purchased incorrect or should we make changes to one of the stores?
a. The total is incorrect [Repeat Q4/Q3/Q2 and then return to Q7]
b. One of the store answers was incorrect [Repeat Q6 and then return to Q7]

Q8. How many of the [BULBTYPE] bulbs did you install?
a. Don't know [Skip to **Error! Reference source not found.**]
b. I didn't install any bulbs [Skip to 0**Error! Reference source not found.**]
c. Number of [BULBTYPE] (number validated)
    a. [value]

Q9. [IF Q8 = C] Of the [answer from Q8] [BULBTYPE]s you said you installed, please indicate the number installed in each room.
a. Bedrooms
b. Living room
c. Outside
d. Bathroom
e. Kitchen
f. Basement
g. Office
h. Other: _____

Repeat for each location mentioned in **Error! Reference source not found.**.

Q10. [If sum of responses from Q9 ≠ Q8 ask] The amount of [BULBTYPE]s you mentioned installing totaled [sum of responses in Q8] but when we went room by room it totaled [answer from Q9]. Is the total amount of [BULBTYPE] installed incorrect or should we make changes to the room counts?

a. The total is incorrect [Repeat Q4/Q3/Q2 and then return to Q10]
b. One of the room answers was incorrect [Repeat Q9 and then return to Q10]
c. The total is correct.

Demographics Battery

Q11. How many people live in your home year round?

Q12. Is your home a single family home, apartment, townhome, condo or mobile home?

a. Single family home
b. Apartment
c. Townhome
d. Condominium
e. Mobile home
f. Other:_____

Q13. Lastly, which of these ranges does your income fall in?

a. $0 to $20k
b. $21k to 40k
c. $41k to 60k
d. $61k to 80k
e. $80k to 100k
f. $100k or more
g. Refused

T&T: Thank you for taking the time to help us with this important research

Appendix D: Home Energy Services Contractor Interview Guide

Introduction

Talking points for recruitment

- Evergreen Economics is conducting an evaluation of Xcel Energy's Home Energy Services program for the New Mexico Public Regulation Commission and Xcel Energy.
- We have identified contractors that provided services or installed equipment through this program in 2021 for brief telephone interviews.
- We would need about 20 minutes for the interview.
- Your responses will be anonymous, but will be very helpful in helping Xcel Energy ensure their energy efficiency programs best serve their customers.
- When would be a good time to talk?

Talking points for starting the interview

- Identify self.
- This should take about 20 minutes.
- Your responses will be anonymous, so please feel free to speak candidly.
- Do you have any questions before we begin?
- Would you feel comfortable if I record this call for note taking purposes? We will not share the recording with anyone outside our company and will not attribute anything you say back to you.

Interviewee Background

Let's begin with a couple of background questions….

A1. To start, please tell me a bit about your company.

- Probe to understand:
    - Services offered
    - Types of customers (esp. sector – residential, commercial, or both)
    - Regions served
    - Length of time involved in Home Energy Services program in New Mexico
    - Interviewee role

Program Awareness and Engagement

B1. Do you recall how you first learned about and got involved with the Home Energy Services program through Xcel Energy?

- Listen (and probe as needed) for:
  - Any reservations about participating
  - Any barriers to participating
  - Whether or not they work with any other New Mexico rebate programs and Xcel Energy programs in Texas (or elsewhere)

B2. Could you describe what involvement with the New Mexico Home Energy Services program as a contractor involves?

Probe as needed:

- In what ways do you interact with Xcel Energy or their implementer, Frontier Energy, about this program?
- What information or services do you receive from Xcel Energy (beyond the ability to offer these services to your customers at a discounted rate)?

B3. In what ways is the Home Energy Services program helpful to you in your business? [Note to interviewers: this is a required question for all interviewees]

- [If not mentioned in interviewee's response, ask specifically about these three topics]:
  - Being able to offer reduced cost of services and equipment to customers
    - Increases customer satisfaction with us
    - Increases business
    - Helps us up-sale to higher efficiency levels
  - Ability to mention the connection with the Xcel Energy program
  - Xcel Energy messaging to customers on benefits of energy efficiency upgrades

B4. What share of your residential projects within Xcel Energy's New Mexico territory are for the Home Energy Services program?

a. In other words (if needed): how much residential work do you do in Xcel Energy's New Mexico territory that is not for the Home Energy Services program? If possible, describe separately other work that **is** eligible for Xcel Energy rebates (e.g. residential cooling) and work that is **not** eligible for Xcel Energy rebates.

B5. What share of your **total business** (in terms of number of projects) is for Xcel Energy's Home Energy Services program in New Mexico?

B6. Does Xcel Energy make it clear which products and services are eligible for the Home Energy Services program?

Probe as needed:

- Is there anything Xcel Energy should do to more clearly communicate that?

B7. Has the program influenced what services or equipment you suggest to a customer?

a. Does that differ depending on whether the customer is in [UTILITY] territory or outside of [UTILITY] territory?

B8. Do you have any suggestions for Xcel Energy's contractor services and support – either overall or for the Home Energy Services program specifically?

Program Processes

C1. What is your approach to marketing and outreach to get new customers to participate in the Home Energy Services program?

C2. How often do customers contact you requesting services or equipment that are eligible for the Home Energy Services program (as opposed to you initiating outreach to potential customers)?

C3. Can you briefly describe the paperwork and process required for each project you complete for the program?

Probe to understand:

- Time required for paperwork and whether that is a burden
- Time it takes to receive reimbursement from Xcel Energy for project costs
- Recommended improvements

C4. When and how do you bring up the discounts available through the Home Energy Services program when talking with customers?

Listen for (and probe as needed):

- What share of customers are already aware of the discounts/program before the contractor brings it up
- What it is the most effective sales tool or message to get customers to make efficiency upgrades
- What role the discounted price plays in motivating upgrades
- What particular services or equipment is easier or harder to get customers to upgrade and why

C5. Do you have any comments about the program offerings? Is there anything missing? Anything not needed? Or anything that could be better?

Market Response

D1. Overall, to what degree do you see the program increasing the interest and demand for energy efficient services and equipment?

Probe to understand:

- Why is that?
- Is the program having a large or small effect on the market?

D2. Are there segments of the residential market* that you feel the Home Energy Services program is reaching well? Not well? [*Note to interviewer: if needed, examples of markets could be low income/non-low income, geographic areas, or certain housing types (single family, manufactured homes/mobile homes, multifamily)]

Probe to understand:

- Suggested approaches that might expand the reach of the program into markets that may be underserved by the program.

D3. Overall, what issue(s), if any, may affect future program participation by customers? What about future program participation by contractors? [INTERVIEWER NOTE: Example issues are changes to building codes and standards being promoted and program, availability of higher efficiency equipment or trained staff, incentive levels].

Program Satisfaction

E1. Finally, I'd like to ask about your and your customers' satisfaction with the Home Energy Services program. Please rate your overall satisfaction with the program on a 1 to 5 scale where 1 is not at all satisfied, 2 is somewhat dissatisfied, 3 is neither satisfied nor dissatisfied, 4 is somewhat satisfied and 5 is very satisfied?

- What is your satisfaction?
- How do you think your customers would rate the program?

- [IF RATING < 5] What could [UTILITY] do to increase your satisfaction with the program?

Probe if needed:

- What is working best?
- What is most challenging or needs improvement?

E2. Have you had any feedback from your customers about their experiences with the program that you think Xcel Energy should know?

E3. Aside from anything we've already discussed, was there ever an occasion when the program didn't meet your expectations or, conversely, provided you and your customer an exceptional program experience? Please explain.

Closing

F1. Is there anything else we didn't cover that you'd like to mention or discuss about your experiences with the Home Energy Services program in New Mexico?

[THANK AND END]

Appendix E: Additional Tables for SPS Annual Report

Table 1: PY2021 Participation, Savings, and Costs by Program/Category

Program	Participants or Units	Annual Net Savings (kWh)	Annual Net Savings (kW)	Lifetime Net Savings (kWh)	Total Program Costs
Business Comprehensive – Building Tune Up	0	0	0	0	$480
Business Comprehensive – Cooling Efficiency	16	161,871	37	2,552,927	$369,041
Business Comprehensive – Custom Efficiency	10	2,644,232	308	50,240,402	$1,242,006
Business Comprehensive – Lighting Efficiency	123	2,428,427	332	36,603,211	$664,166
Business Comprehensive – Motors Efficiency	79	20,952,679	3,063	314,290,189	$4,889,251
Home Lighting & Recycling	306,243	9,966,365	12,380	181,203,907	$1,194,747
Energy Feedback	44,780	3,858,383	711	3,858,383	$131,823
Residential Cooling	35	13,666	7	245,994	$37,756
School Education Kits	2,561	562,451	15	6,564,710	$133,285
Home Energy Services	1,055	4,433,920	314	79,316,845	$1,090,348
Home Energy Services – LI	1,117	5,123,325	562	80,863,557	$1,152,398
Smart Thermostats	90	57,401	0	574,006	$75,860
Heat Pump Water Heater	2	6,814	1	68,140	$8,225
Other Admin Costs	0	0	0	0	$678,583
Total	**356,111**	**50,209,534**	**17,732**	**756,382,271**	**$11,667,970**

Table 2: PY2021 Net-to-Gross Ratios by Program

Program	NTG Ratio
Business Comprehensive – Cooling Efficiency	0.7309
Business Comprehensive – Custom Efficiency	0.7309
Business Comprehensive – Lighting Efficiency	0.7309
Business Comprehensive – Motors Efficiency	0.7309
Home Lighting & Recycling	0.7100
Energy Feedback	1.0000
Residential Cooling	0.5721
School Education Kits	1.0000
Home Energy Services	0.9455
Home Energy Services – LI	1.0000
Smart Thermostats	0.7070
Heat Pump Water Heater	1.0000

Table 3: PY2021 Economic Benefits by Program/Category

Program/Category	Participants or Units	Cost per kWh Saved (Lifetime)	2021 Economic Benefits	Total Economic Benefits
Business Comprehensive – Building Tune Up	0	N/A	$0	$0
Business Comprehensive – Cooling Efficiency	16	$0.14	$4,616	$72,805
Business Comprehensive – Custom Efficiency	10	$0.02	$64,887	$1,232,844
Business Comprehensive – Lighting Efficiency	123	$0.02	$61,577	$928,145
Business Comprehensive – Motors Efficiency	79	$0.02	$523,646	$7,854,694
Home Lighting & Recycling	306,243	$0.01	$631,450	$11,480,739
Energy Feedback	44,780	$0.03	$125,701	$125,701
Residential Cooling	35	$0.15	$539	$9,704
School Education Kits	2,561	$0.02	$13,706	$159,976
Home Energy Services	1,055	$0.01	$120,329	$2,152,516
Home Energy Services – LI	1,117	$0.01	$175,751	$2,773,953
Smart Thermostats	90	$0.13	$1,255	$12,553
Heat Pump Water Heater	2	$0.12	$187	$1,865
Other Admin Costs	0	N/A	0	0
Total	**356,111**	**$0.02**	**$1,723,644**	**$26,805,496**

Table 4: PY2021 Detailed Costs by Program/Category

Program/Category	Avoided Energy Production Costs	Avoided Capacity Expansion Costs	Low-Income Non-Energy Benefits	Administration Costs	Incentives
Business Comprehensive – Building Tune Up	$0	$0	$0	$480	$0
Business Comprehensive – Cooling Efficiency	$55,047	$17,758	$0	$339,824	$29,217
Business Comprehensive – Custom Efficiency	$1,055,459	$177,385	$0	$1,022,062	$219,944
Business Comprehensive – Lighting Efficiency	$782,084	$146,062	$0	$514,722	$149,444
Business Comprehensive – Motors Efficiency	$6,504,321	$1,350,373	$0	$2,760,711	$2,128,540
Home Lighting & Recycling	$3,666,036	$7,814,703	$0	$739,922	$454,825
Energy Feedback	$116,137	$9,563	$0	$131,823	$0
Residential Cooling	$5,466	$4,238	$0	$32,181	$5,575
School Education Kits	$150,234	$9,743	$0	$87,074	$46,211
Home Energy Services	$1,976,569	$175,947	$0	$276,261	$814,087
Home Energy Services – LI	$2,044,276	$267,352	$462,326	$233,386	$919,012
Smart Thermostats	$12,553	$0	$0	$69,462	$6,399
Heat Pump Water Heater	$1,635	$230	$0	$7,825	$400
Other Admin Costs	$0	$0	$0	$678,583	$0
Total	**$16,369,817**	**$9,973,354**	**$462,326**	**$6,894,316**	**$4,773,653**

Table 5: PY2021 Program Portfolio Summary

Program/ Category	Participants	Net Annual kW	Net Annual kWh	Net Lifetime kWh	Program EUL	Avoided Energy Production Costs	Avoided Capacity Expansion Costs	Low Income Non-Energy Benefits	Program Admin Costs	Incentives
Business Comprehensive – Building Tune Up	0	0	0	0	0.0	$0	$0	$0	$480	$0
Business Comprehensive – Cooling Efficiency	16	37	161,871	2,552,927	15.8	$55,047	$17,758	$0	$339,824	$29,217
Business Comprehensive – Custom Efficiency	10	308	2,644,232	50,240,402	19.0	$1,055,459	$177,385	$0	$1,022,062	$219,944
Business Comprehensive – Lighting Efficiency	123	332	2,428,427	36,603,211	15.1	$782,084	$146,062	$0	$514,722	$149,444
Business Comprehensive – Motors Efficiency	79	3,063	20,952,679	314,290,189	15.0	$6,504,321	$1,350,373	$0	$2,760,711	$2,128,540
Home Lighting & Recycling	306,243	12,380	9,966,365	181,203,907	18.2	$3,666,036	$7,814,703	$0	$739,922	$454,825
Energy Feedback	44,780	711	3,858,383	3,858,383	1.0	$116,137	$9,563	$0	$131,823	$0
Residential Cooling	35	7	13,666	245,994	18.0	$5,466	$4,238	$0	$32,181	$5,575
School Education Kits	2,561	15	562,451	6,564,710	11.7	$150,234	$9,743	$0	$87,074	$46,211

Program/ Category	Participants	Net Annual kW	Net Annual kWh	Net Lifetime kWh	Program EUL	Avoided Energy Production Costs	Avoided Capacity Expansion Costs	Low Income Non-Energy Benefits	Program Admin Costs	Incentives
Home Energy Services	1,055	314	4,433,920	79,316,845	17.9	$1,976,569	$175,947	$0	$276,261	$814,087
Home Energy Services – LI	1,117	562	5,123,325	80,863,557	15.8	$2,044,276	$267,352	$462,326	$233,386	$919,012
Smart Thermostats	90	0	57,401	574,006	10.0	$12,553	$0	$0	$69,462	$6,399
Heat Pump Water Heater	2	1	6,814	68,140	10.0	$1,635	$230	$0	$7,825	$400
Other Admin Costs	0	0	0	0	N/A	$0	$0	$0	$678,583	$0
Total	**356,111**	**17,732**	**50,209,534**	**756,382,271**	**15.1**	**$16,369,817**	**$9,973,354**	**$462,326**	**$6,894,316**	**$4,773,653**

Appendix F: Business Comprehensive Desk Review Detailed Results

Project ID	OID3353707	OID3527750	OID4330549	OID4495520	OID3856801	OID4214408	OID4359708	OID4474951	OID4582142
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Subprogram	Custom Efficiency	Custom Efficiency	Custom Efficiency	Motors & Drives_VFD	Lighting Efficiency_Interior	Lighting Efficiency_Interior	Lighting Efficiency_Exterior	Lighting Efficiency_Exterior	Lighting Efficiency_Interior
Project Description	Installation of VFD to a 450HP Booster Pump	Install VFD on Natural Gas Liquid Pipeline Pumps	Lighting Efficiency	Retrofit of VFD to Pump	Retrofit of Exterior Lighting with Energy Efficient LED	New Construction with interior and exterior lighting	Retrofit of Exterior Lighting with Energy Efficient LED	Retrofit of Exterior Lighting with Energy Efficient LED	New Construction with interior and exterior lighting
Measure Type	Retrofit Lighting	Retrofit Custom	Retrofit Lighting	Retrofit Other	Retrofit Lighting	New Construction Lighting	Retrofit Lighting	Retrofit Lighting	New Construction Lighting
Building Type	Warehouse/ Industrial	Warehouse/ Industrial	Retail	Warehouse/ Industrial	Retail	Miscellaneous	Exterior	Office	Retail
Other Building Type						Church	Hotel/Motel		
Site Visit Being Conducted	No	No	No	No	No	No	No	No	No
Other General Project Info Comments									
Gross Reported First Year Energy Savings (kWh)	384,450	1,031,454	584,427	221,445	248,864	122,113	3,496	10,530	60,705
Gross Reported First Year Peak Demand Savings (kW)	1.85	117.75	95.76	30.48	44.04	32.73	0.00	0.00	10.27
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	384,450	1,030,808	584,290	221,445	260,986	138,244	2,939	10,530	62,681
Gross Verified First Year Peak Demand Savings (kW)	1.85	117.67	95.76	30.48	46.18	30.68	0.00	0.00	10.33
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	1.00	1.00	1.05	1.13	0.84	1.00	1.03
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.05	0.94			1.01
Gross Therm RR									
Ex Ante Calculation Methodology	Custom Calculation	Custom Calculation	Custom Calculation	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology									
Savings Source	Custom Analysis	Custom Analysis	Custom Analysis	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source									
Calculation Assessment									
TRM/Workpaper Assessment									
Reasons for RR(s) <> 1					Variation in RR due to discrepancy between the type, wattage and number of fixtures replaced between the rebate application and the tracking data. As per the rebate application, 206 of the Pulse Start Metal Halide(370W/fixture) fixtures are replaced with 127W LED fixtures. But, as per tracking data, 181 Pulse Start Metal Halide(370W/fixture) and 25 Metal Halide(210W/fixture) fixtures are replaced with 181 LED fixtures of 127W and 25 LED fixtures of 60W. Ex post calculations have referred to the rebate application for the type and number of fixtures retrofitted.	Discrepancy in RR can be due to different HVAC interactive factors, CF and HOUs selected between ex ante and ex post calculations. Discrepancy in LPD baseline for interior lighting as LPD is selected as 1.38 in rebate application, but as per workpaper and TRM, the value is 1.3 . Ex post analysis referenced to SPS deemed savings technical assumptions and NM TRM 2021. As calculation sheet is not provided, exact reason for RR variation could not be determined.	Variation in RR can be due to different HVAC interactive factors, HOUs or input wattage of baseline fixture selected between ex ante and ex post calculations. As calculation sheet is not provided, evaluation team cannot determine the exact cause for variation in RR. Ex post factors are in line with SPS deemed savings technical assumptions 2021.		RR for energy savings is 103.3% and for peak demand savings is 100.6%. Discrepancy in RR can be due to different HVAC interactive factors, CF and HOUs selected between ex ante and ex post calculations. Ex post calculations referred to SPS deemed savings technical assumptions and NM TRM 2021. As calculation sheet is not provided, exact reason for RR variation could not be determined
Include any other important observations here									

Project ID	OID4599346	OID3737576	OID3756558	OID3948791	OID4261927	OID4270834	OID4277565	OID4317254	OID4332119
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Subprogram	Lighting Efficiency_Exterior	Lighting Efficiency_Linear	Lighting Efficiency_Linear	Lighting Efficiency_Linear	Motors and Drives_VFD	Motors and Drives_VFD	Motors and Drives_VFD	Custom Efficiency	Cooling Efficiency
Project Description	Retrofit of Exterior Lighting with Energy Efficient LED	Installation of LED Linear tubes to replace fluorescent tubes	Installation of LED linear tubes to replace fluorescent tubes	Installation of LED Linear tubes to replace fluorescent tubes	Installation of VFD on Non-HVAC pump	Installation of VFDs for non HVAC pumps	Installation of VFD on Non-HVAC pump	Interior and exterior LED lighting retrofit	Installation of efficient cooling equipment
Measure Type	Retrofit Lighting	Retrofit Lighting	Retrofit Lighting	Retrofit Lighting	Variable Frequency Drive	Variable Frequency Drive	Variable Frequency Drive	Retrofit Lighting	DX unit < 5.4 tons and DCV
Building Type	Exterior	Miscellaneous	Hotel/Motel	Office	Industrial/Manufacture	Industrial/Manufacture	Industrial/Manufacture	Retail	Restaurant- Sit Down
Other Building Type		Public Library							
Site Visit Being Conducted	No	No	No	No	No	No	No	No	No
Other General Project Info Comments									
Gross Reported First Year Energy Savings (kWh)	12,911	16,273	64,300	44,860	333,579	481,587	83,395	576,482	7,176
Gross Reported First Year Peak Demand Savings (kW)	0.00	3.78	4.72	12.88	45.91	72.05	11.48	97.65	1.09
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	12,900	13,134	58,589	42,203	333,579	453,593	83,395	576,344	6,347
Gross Verified First Year Peak Demand Savings (kW)	0.00	3.05	4.68	12.12	45.91	64.56	11.48	97.65	1.07
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	0.81	0.91	0.94	1.00	0.94	1.00	1.00	0.88
Gross Peak Demand RR		0.81	0.99	0.94	1.00	0.90	1.00	1.00	0.98
Gross Therm RR									
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Custom Calculation	Prescriptive (TRM, Workpaper)
Other Calculation Methodology									
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Custom Analysis	Utility Workpaper
Other Savings Source									
Calculation Assessment									
TRM/Workpaper Assessment									
Reasons for RR(s) <> 1		Variation in RR can be due to different type and wattage for the baseline fixture between ex-ante and ex-post calculations. As per rebate application, the existing lighting was F32-T8-3-lamp fixture whereas, in the tracking data it is mentioned as F32-T8-1-lamp fixture. Variation can also be due to different HOU and HVAC interactive factors. As ex-ante calculations have not been provided, the exact reason for variation cannot be determined. Ex -post calculation algorithm is based on the SPS deemed saving technical assumptions 2021.	Variation in RR can be due to different HOU, HVAC interactive factors and CF between ex-ante and ex-post calculations. The facility is also indicated to be operating lighting 24 hours/day in the rebate application. As ex-ante calculations have not provided, exact reason for variation is not known. Discrepancy in RR can also be due to different wattages for existing fixtures. Ex-post calculations have referred to SPS input wattage guide. Ex-post calculation algorithm is based as per SPS deemed saving technical assumptions 2021.	Variation in RR can be due to different type and wattage for the baseline fixture between ex-ante and ex-post calculations. As per rebate application, the existing lighting was F32-T8-4-lamp fixture whereas, in the tracking data it is mentioned as F32-T8-1-lamp fixture. Variation can also be due to different HOU, HVAC interactive factors and CF. As ex-ante calculations have not been shared, exact reason for variation is not known. Ex-post calculation algorithm is based on the SPS deemed savings technical assumptions 2021.		Variation in RR due to incorrect motor HP and annual operational hours selected during ex ante calculations for the VFD model CFW110180T4SZ. The motor is 100 HP and the VFD is 125 HP. As per the SPS technical assumptions, motor HP is to be selected for the energy and peak demand saving calculations. Ex ante calculations have not been shared, but 125 HP would have been selected as motor HP and its corresponding annual hours for ex ante calculations. Ex post calculation algorithm and assumptions are based on the SPS deemed savings technical assumptions 2021.			Discrepancy in RR for energy savings is due to custom value of annual hours used for DCV during ex ante calculations. For ex post calculations, annual hours is as per the SPS workpapers 2021. Discrepancy in RR for peak demand savings can be due to different EER values for DX unit and CF value for DCV. As ex ante calculations have not been shared, exact reason cannot be determined. Ex post calculations have referred to the SPS deemed savings technical assumptions 2021 and NM TRM 2021.
Include any other important observations here									

Project ID	OID4376697	OID4376765	OID4416378	OID4422770	OID4447074	OID4447546	OID4480321	OID4480398	OID4481395
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Subprogram	Cooling Efficiency	Custom Efficiency	Lighting Efficiency_Exterior	Cooling Efficiency	Motors and Drives_VFD	Lighting Efficiency_Exterior	Motors and Drives_VFD	Motors and Drives_VFD	Lighting Efficiency_Exterior
Project Description	Installation of efficient cooling equipment	Installation of Efficient Lighting Retrofits-LEDs replacing the existing lighting fixtures.	Installation of exterior LED area lighting fixtures and interior LED troffer fixtures	Installation of DX units > 5.4 Tons and RTU Economizers	Installation of VFD on Non-HVAC pump	Installation of exterior LED area lighting fixtures and interior LED troffer fixtures	Installation of VFDs for non HVAC pumps	Installation of VFDs for non HVAC pumps	Installation of exterior LED area lighting and wall pack fixtures
Measure Type	DX unit > 5.4 tons	Retrofit Lighting	Retrofit Lighting	DX units > 5.4 tons with Economizers	Variable Frequency Drive	Retrofit Lighting	Variable Frequency Drive	Variable Frequency Drive	Retrofit Lighting
Building Type	Other	Miscellaneous	Retail	Restaurant-Sit Down	Industrial/Manufacture	Retail	Industrial/Manufacture	Industrial/Manufacture	Grocery
Other Building Type	Truck Stop	Commercial - Theatre	Retail (Greater than 50,000SF)			Retail (Greater than 50,000SF)			Exterior
Site Visit Being Conducted	No	No	No	No	No	No	No	No	No
Other General Project Info Comments									
Gross Reported First Year Energy Savings (kWh)	9,333	18,099	81,263	22,699	403,224	101,145	964,540	788,731	227,156
Gross Reported First Year Peak Demand Savings (kW)	3.07	6.60	3.04	7.96	60.64	5.74	145.51	119.30	0.00
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	9,335	18,099	56,410	22,114	403,224	97,832	964,540	788,731	102,197
Gross Verified First Year Peak Demand Savings (kW)	3.07	6.60	2.84	7.55	60.64	3.12	145.51	119.30	0.00
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	0.69	0.97	1.00	0.97	1.00	1.00	0.45
Gross Peak Demand RR	1.00	1.00	0.93	0.95	1.00	0.54	1.00	1.00	
Gross Therm RR									
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Custom Calculation	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology									
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	0
Other Savings Source									
Calculation Assessment									
TRM/Workpaper Assessment									
Reasons for RR(s) <> 1			Discrepancy in RR can be due to different input wattages, HOUs, HVAC interactive factors and CF between ex-ante and ex-post calculations. Ex-post calculations have considered the facility type as 'Retail (greater than 50,000SF)' upon utilizing Google earth. Ex-post calculation algorithm and assumptions are based on the SPS deemed saving technical assumptions 2021 and SPS input wattage guide.	Discrepancy can be due to different EER_Baseline values and factors for the RTU Economizer. The evaluation team referred to the NM TRM 2021 for the baseline efficiency. As ex ante calculations have not been shared, exact reason cannot be determined. Ex post calculation have referred to SPS deemed savings technical assumptions 2021 and NM TRM 2021.		Discrepancy in RR can be due to different HOUs, HVAC interactive factors and CF between ex-ante and ex-post calculations. As ex-ante calculations have not been shared, the exact reason is not known. Ex-post calculations have considered the facility type as 'Retail (greater than 50,000SF)' upon utilizing Google earth. Ex-post calculation algorithm and assumptions are based on the SPS deemed saving technical assumptions 2021 and SPS input wattage guide.			Variation in RR can be due to differences in the type, number and wattage of existing fixtures between the ex-ante and ex-post calculations. The evaluation team used algorithm input parameters for the Exterior lighting projects listed in the SPS deemed savings technical assumptions. The evaluation team also referred to the Xcel Energy Input Wattage Guide for the baseline fixture wattages.
Include any other important observations here									

Project ID	OID4481784	OID4494998	OID4495699	OID4501996	OID4504558	OID4511291	OID4529068	OID4550092	OID4550171
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Subprogram	Cooling Efficiency	Motors and Drives_VFD	Custom Efficiency	Lighting Efficiency_Linear	Lighting Efficiency_Linear	Cooling-NM	Lighting Efficiency_Linear	Motors and Drives_VFD	Motors and Drives_VFD
Project Description	Installation of efficient cooling equipment	Installation of VFD on Non-HVAC pump	Installation of efficient LED lighting to replace the existing lighting fixtures.	Installation of LED lighting fixtures to replace the existing fixtures.	Installation of Efficient Lighting Retrofits-LEDs replacing the existing lighting fixtures.	Installation of DX units < 5.4 Tons	Installation of LED linear tubes to replace fluorescent lamps	Installation of VFD for HVAC fan	Installation of VFD for HVAC fan
Measure Type	DX unit < 5.4 tons	Variable Frequency Drive	Retrofit Lighting	Retrofit Lighting	Retrofit Lighting	Cooling Efficiency	Retrofit Lighting	Variable Frequency Drive	Variable Frequency Drive
Building Type	Office	Industrial/Manufacture	Exterior	Miscellaneous	Office	Education	Retail	Commercial - Retail Outlet/Mall Type Facility	Commercial - Retail Outlet/Mall Type Facility
Other Building Type	Office/Healthcare facility		Parking Lot	Bank		Education - Primary School	Retail (Less than 50,000SF)		
Site Visit Being Conducted	No	No	No	No	No	No	No	No	No
Other General Project Info Comments									
Gross Reported First Year Energy Savings (kWh)	905	303,346	17,310	37,452	1,885	3,251	11,742	11,760	2,352
Gross Reported First Year Peak Demand Savings (kW)	0.48	46.16	0.00	6.58	0.54	3.59	2.73	0.00	0.00
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	904	303,346	17,310	38,828	1,833	3,251	16,182	11,760	2,352
Gross Verified First Year Peak Demand Savings (kW)	0.40	46.16	0.00	6.90	0.53	3.02	3.76	0.00	0.00
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	1.00	1.04	0.97	1.00	1.38	1.00	1.00
Gross Peak Demand RR	0.84	1.00		1.05	0.97	0.84	1.38		
Gross Therm RR									
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Custom Calculation	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology									
Savings Source	Utility Workpaper	Utility Workpaper	Custom Analysis	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source									
Calculation Assessment									
TRM/Workpaper Assessment									
Reasons for RR(s) <> 1	Variation in RR can be due to difference in CF and EER values between ex ante and ex post calculations. As ex ante calculations have not been shared, exact reason cannot be determined. EER_baseline and EER_Eff are calculated as per the SPS deemed savings 2021 and CF is selected based on the mentioned facility type in the application.			Variation in RR maybe due to discrepancy between the type and number of existing fixtures. As per rebate application, existing fixtures include both 2-lamp and 4-lamp F32 T8 fixtures. Tracking data only mentions the F32 T8 1-lamp fixtures. Variation can also be due to differences in input wattage for existing fixtures between the ex ante and ex post calculations. Ex post calculations have referred SPS input wattage guide.	Variation in RR can be due to differences in the HVAC interactive factors and HOU between ex ante and ex post calculations. Ex post have referred to SPS deemed savings technical assumptions 2021 for the above factors.	Discrepancy in RR can be due to differences in the CF and EER values between ex ante and ex post calculations. As ex ante calculations have not been shared, exact reason cannot be determined. EER_baseline and EER_Eff are calculated as per the SPS deemed savings 2021 and CF is selected based on the mentioned facility type in the application.	Variation in RR can be due to difference in the input wattage of baseline fixtures between ex-ante and ex-post calculations. Variation can also be due to different HVAC interactive factors, CF and HOU between ex-ante and ex-post calculations. As ex-ante calculation sheet has not been provided, exact reason for variation cannot be determined. Ex-post calculation algorithm is based on the SPS deemed savings technical assumptions 2021.		
Include any other important observations here									

Project ID	OID4558620	OID4572032	OID4572253	OID4580385	Database Review
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Subprogram	Custom Project- Lighting Efficiency	Lighting Efficiency_Linear	Cooling Efficiency	Cooling NM	Dropship Lighting
Project Description	Replacement of Fluorescent tubes with LED tubes	Installation of Efficient Lighting Retrofits-LEDs replacing the existing lighting fixtures.	Installation of efficient cooling equipment	Installation of efficient DX unit < 5.4 tons.	Lighting Replacement
Measure Type	Retrofit Lighting	Retrofit Lighting	Air Cooled Chillers	Cooling Efficiency	Lighting
Building Type	Miscellaneous	Retail	Commercial	Commercial	Warehouse, Retail, Restaurant, Office, Hotel and Misc.
Other Building Type	Clothing Alteration and Laundry			Office - Small	
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported First Year Energy Savings (kWh)	4,216	32,017	12,516	326	335,032
Gross Reported First Year Peak Demand Savings (kW)	1.64	7.43	6.44	0.17	84.27
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	4,216	31,896	12,516	326	328,210
Gross Verified First Year Peak Demand Savings (kW)	1.64	7.41	6.44	0.15	84.41
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	1.00	1.00	0.98
Gross Peak Demand RR	1.00	1.00	1.00	0.84	1.00
Gross Therm RR					
Ex Ante Calculation Methodology	Custom Calculation	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology					
Savings Source	Custom Analysis	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source					NM 20.B.0 Lighting Efficiency
Calculation Assessment					The evaluator was able to replicate reported ex ante savings for Linear Tubes and Lamps.
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1				Variation in RR could be due to difference in the facility type selected between ex ante and ex post calculations. Rebate application only mentions the facility type as 'Commercial'. Ex post calculations assumed the facility type as 'Office - Small' after completing additional research. Variation in RR can also be due to difference in the EER and CF values between the ex ante and ex post calculations. As calculation sheet has not been shared, exact reason cannot be determined.	The discrepancy between the Ex Ante and Ex Post kWh savings for is due to rounding and consideration of 0.91 ISR for DI Lamps in ex post savings calculations.
Include any other important observations here					For linear tubes, the evaluator verified deemed savings technical assumptions such as cooling kW and kWh savings factors, hours of use, and CF in workbook for Linear Tubes. As per ex ante savings calculations, a total of 16 projects with opportunity measures that have negative savings in Salesforce were marked as "need to be fixed". Rounding error may have caused the issue. This changed the ex ante savings from 54,294 kWh and 16.83 kW to 34,024 kWh and 9.995 kW. SPS hired an electrical contractor to install the LED Linear Tubes. Therefore, the evaluation team used a direct install ISR 100% to calculate the verified savings. For lamps, based on our understanding of the program, the evaluation team adjusted ISR from 1.0 to 0.91, a combination of direct install and kits. The evaluator verified direct install weighted aggregate for CF, HOU, kW factor, kWh factor and baseline lamp efficacy for Lamps.

Appendix G: Home Energy Services Desk Review Detailed Results

Project ID	OID4597974	OID4597982	OID4598003	OID4598029	OID4598062	OID4598073
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram			Low Income			
Project Description	Air Infiltration	Ceiling Insulation and Duct Sealing	Air Infiltration	Ceiling Insulation	Ceiling Insulation	Ceiling Insulation & Duct Leakage
Measure Type	Air Infiltration	Ceiling Insulation	Air Infiltration and Duct Leakage	Ceiling Insulation	Ceiling Insulation and Duct Leakage	Ceiling Insulation
Building Type	Residential	Residential	Residential	Residential	Residential	Residential
Other Building Type						
Site Visit Being Conducted	No	No	No	No	No	No
Other General Project Info Comments						
Gross Reported First Year Energy Savings (kWh)	2,447	666	9,261	1,316	711	6,834
Gross Reported First Year Peak Demand Savings (kW)	0.32	1.07	0.52	0.23	1.00	0.47
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	2,447	1,668	9,521	1,316	1,563	7,247
Gross Verified First Year Peak Demand Savings (kW)	0.32	1.07	0.52	0.23	1.00	0.46
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	2.50	1.03	1.00	2.20	1.06
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Therm RR						
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology						
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source						
Calculation Assessment						
TRM/Workpaper Assessment						
Reasons for RR(s) <> 1		There were no reported ex ante energy (kWh) savings for the Duct Sealing measure while there were reported peak demand (kW) savings listed for the same measure. The evaluation team calculated energy savings for the Duct Sealing measure which increased the savings.	The evaluation team calculated the savings for the air infiltration and duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.		There were no reported ex ante energy (kWh) savings for the Duct Sealing measure while there were reported peak demand (kW) savings listed for the same measure. The evaluation team calculated energy savings for the Duct Sealing measure which increased the savings.	The discrepancy between the ex ante and ex post savings is not clear based on the project documentation supplied. The evaluation team calculated the savings for the duct leakage & ceiling insulation measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.
Include any other important observations here						

Project ID	OID4598115	OID4598131	OID4598179	OID4598197	OID4598199	OID4598222
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram	Low Income					
Project Description	Air Infiltration	Ceiling Insulation	Ceiling Insulation	Air Infiltration & Duct Leakage	Duct leakage and air infiltration	Duct Leakage
Measure Type	Air Infiltration and Duct Leakage	Ceiling Insulation	Ceiling Insulation	Air Infiltration	Duct Leakage	Air Infiltration and Duct Leakage
Building Type	Residential	Residential	Residential	Residential	Residential	Residential
Other Building Type						
Site Visit Being Conducted	No	No	No	No	No	No
Other General Project Info Comments						
Gross Reported First Year Energy Savings (kWh)	568	3,749	21,105	557	6,917	8,598
Gross Reported First Year Peak Demand Savings (kW)	0.64	0.59	2.59	0.66	0.36	0.40
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	991	3,749	22,365	1,020	7,174	9,065
Gross Verified First Year Peak Demand Savings (kW)	0.64	0.59	2.60	0.66	0.36	0.40
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.75	1.00	1.06	1.83	1.04	1.05
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Therm RR						
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology						
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source						
Calculation Assessment						
TRM/Workpaper Assessment						
Reasons for RR(s) <> 1	There were no reported ex ante energy (kWh) savings for the Duct Sealing measure while there were reported peak demand (kW) savings listed for the same measure. The evaluation team calculated energy savings for the Duct Sealing measure which increased the savings.		The evaluation team calculated the savings for the ceiling insulation and the duct sealing measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	There were no reported ex ante energy (kWh) savings for the Duct Sealing measure while there were reported peak demand (kW) savings listed for the same measure. The evaluation team calculated energy savings for the Duct Sealing measure which increased the savings.	The evaluation team calculated the savings for the duct leakage and air infiltration measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	The evaluation team calculated the savings for the air infiltration and duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.
Include any other important observations here						

Project ID	OID4598258	OID4598300	OID4598301	OID4598319	OID4598378	OID4614711
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram						
Project Description	Air Infiltration & Duct Leakage	Air Infiltration & Duct Leakage	Air Infiltration & Duct Leakage	Air Infiltration	Air Infiltration & Duct Leakage	Air infiltration and duct leakage
Measure Type	Air Infiltration	Air Infiltration	Air Infiltration	Air Infiltration	Air Infiltration	Duct Leakage
Building Type	Residential	Residential	Residential	Residential	Residential	Residential
Other Building Type						
Site Visit Being Conducted	No	No	No	No	No	No
Other General Project Info Comments						
Gross Reported First Year Energy Savings (kWh)	5,881	3,648	3,537	3,115	8,902	4,936
Gross Reported First Year Peak Demand Savings (kW)	0.73	0.40	0.39	0.34	0.49	0.45
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	6,337	3,856	3,731	3,303	9,164	4,936
Gross Verified First Year Peak Demand Savings (kW)	0.73	0.40	0.39	0.34	0.49	0.45
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.08	1.06	1.05	1.06	1.03	1.00
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Therm RR						
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology						
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source						
Calculation Assessment						
TRM/Workpaper Assessment						
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post savings is not clear based on the project documentation supplied. The evaluation team calculated the savings for the air infiltration & duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	The discrepancy between the ex ante and ex post savings is not clear based on the project documentation supplied. The evaluation team calculated the savings for the air infiltration & duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	The discrepancy between the ex ante and ex post savings is not clear based on the project documentation supplied. The evaluation team calculated the savings for the air infiltration & duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	The evaluation team calculated the savings for the air infiltration and duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	The evaluation team calculated the savings for the air infiltration & duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.	
Include any other important observations here						

Project ID	OID4614725	OID4614738	OID4614827	OID4614834	OID4614858	OID4614862
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram						Low Income
Project Description	Duct leakage and air infiltration	Air Infiltration	Air Infiltration & Duct Leakage weatherization	Air Infiltration & Duct Leakage	Air Infiltration & Duct Leakage	Duct Leakage
Measure Type	Duct Leakage	Air Infiltration	Air Infiltration	Air Infiltration	Ceiling Insulation	Duct Leakage and Air Infiltration
Building Type	Residential	Residential	Residential	Residential	Residential	Residential
Other Building Type						
Site Visit Being Conducted	No	No	No	No	No	No
Other General Project Info Comments						
Gross Reported First Year Energy Savings (kWh)	6,651	1,407	8,478	9,767	9,412	10,207
Gross Reported First Year Peak Demand Savings (kW)	0.75	0.90	0.45	0.64	0.59	0.66
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	6,651	1,406	8,341	9,767	9,412	10,207
Gross Verified First Year Peak Demand Savings (kW)	0.75	0.90	0.45	0.64	0.59	0.66
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	0.98	1.00	1.00	1.00
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Therm RR						
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology						
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source						
Calculation Assessment						
TRM/Workpaper Assessment						
Reasons for RR(s) <> 1			The discrepancy between the ex ante and ex post savings is not clear based on the project documentation supplied. The evaluation team calculated the savings for the air infiltration & duct leakage measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.			
Include any other important observations here						

Project ID	OID4617992	OID4618005	OID4643441	OID4643443	OID4643531	OID4643533
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram						
Project Description	Duct Leakage & Ceiling Insulation	Duct Leakage & Ceiling Insulation	Duct Leakage	Duct Leakage		Duct Leakage & Ceiling Insulation
Measure Type	Duct Leakage	Duct Leakage	Ceiling Insulation	Duct Leakage	Ceiling Insulation	Ceiling Insulation
Building Type	Residential	Residential	Residential	Residential	Residential	Residential
Other Building Type						
Site Visit Being Conducted	No	No	No	No	No	No
Other General Project Info Comments						
Gross Reported First Year Energy Savings (kWh)	11,566	10,413	5,084	5,207	12,147	11,361
Gross Reported First Year Peak Demand Savings (kW)	0.76	0.56	0.20	0.21	1.39	1.34
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	11,567	10,537	5,084	5,207	12,164	11,378
Gross Verified First Year Peak Demand Savings (kW)	0.76	0.56	0.20	0.21	1.40	1.34
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.01	1.00	1.00	1.00	1.00
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Therm RR						
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology						
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source						
Calculation Assessment						
TRM/Workpaper Assessment						
Reasons for RR(s) <> 1		The discrepancy between the ex ante and ex post savings is not clear based on the project documentation supplied. The evaluation team calculated the savings for the duct leakage & ceiling insulation measures using the algorithms in the NM TRM/SPS technical assumptions. Custom algorithm input parameters were referenced from the supplied Field Report.				
Include any other important observations here						

Project ID	OID4681012	OID4681066	OID4681099	OID4681139	OID4723517	OID4723549
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram	Low Income	Low Income				
Project Description	Ceiling Insulation	Air Infiltration, Ceiling Insulation and Duct Leakage	Air Infiltration & Duct Leakage	Air Infiltration, Ceiling Insulation, and Duct Sealing	Air Infiltration and Duct Leakage	Duct Leakage & Ceiling Insulation
Measure Type	Ceiling Insulation	Air Infiltration, Ceiling Insulation and Duct Leakage	Ceiling Insulation	Ceiling Insulation	Air Infiltration and Duct Leakage	Ceiling Insulation
Building Type	Residential	Residential	Residential	Residential	Residential	Residential
Other Building Type						
Site Visit Being Conducted	No	No	No	No	No	No
Other General Project Info Comments						
Gross Reported First Year Energy Savings (kWh)	6,393	10,376	1,184	11,411	1,084	5,503
Gross Reported First Year Peak Demand Savings (kW)	1.11	0.81	0.76	1.13	0.70	0.63
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	6,422	10,375	1,183	11,412	1,085	5,510
Gross Verified First Year Peak Demand Savings (kW)	1.11	0.81	0.76	1.13	0.70	0.63
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Peak Demand RR	1.00	1.00	1.00	1.00	1.00	1.00
Gross Therm RR						
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology						
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source						
Calculation Assessment						
TRM/Workpaper Assessment						
Reasons for RR(s) <> 1						
Include any other important observations here						

Project ID	OID4723589	OID4723803	OID4723817	OID4723822
Utility	SPS Xcel	SPS Xcel	SPS Xcel	SPS Xcel
Program	Home Energy Services	Home Energy Services	Home Energy Services	Home Energy Services
Subprogram			Low Income	Low Income
Project Description	Duct Leakage	Air Infiltration & Duct Leakage	Ceiling Insulation	Air Infiltration, Duct Leakage and Ceiling Insulation
Measure Type	Ceiling Insulation	Ceiling Insulation	Ceiling Insulation	Air Infiltration, Duct Leakage and Ceiling Insulation
Building Type	Residential	Residential	Residential	Residential
Other Building Type				
Site Visit Being Conducted	No	No	No	No
Other General Project Info Comments				
Gross Reported First Year Energy Savings (kWh)	1,970	695	3,580	16,646
Gross Reported First Year Peak Demand Savings (kW)	0.15	0.45	0.62	1.32
Gross Reported First Year Gas Savings (therms)	0.00	0.00	0.00	0.00
Gross Verified First Year Energy Savings (kWh)	1,970	695	3,597	16,687
Gross Verified First Year Peak Demand Savings (kW)	0.15	0.45	0.62	1.33
Gross Verified First Year Gas Savings (therms)	0.00	0.00	0.00	0.00
Gross Energy Savings RR	1.00	1.00	1.00	1.00
Gross Peak Demand RR	1.00	1.00	1.00	1.00
Gross Therm RR				
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Calculation Methodology				
Savings Source	Utility Workpaper	Utility Workpaper	Utility Workpaper	Utility Workpaper
Other Savings Source				
Calculation Assessment				
TRM/Workpaper Assessment				
Reasons for RR(s) <> 1				
Include any other important observations here				