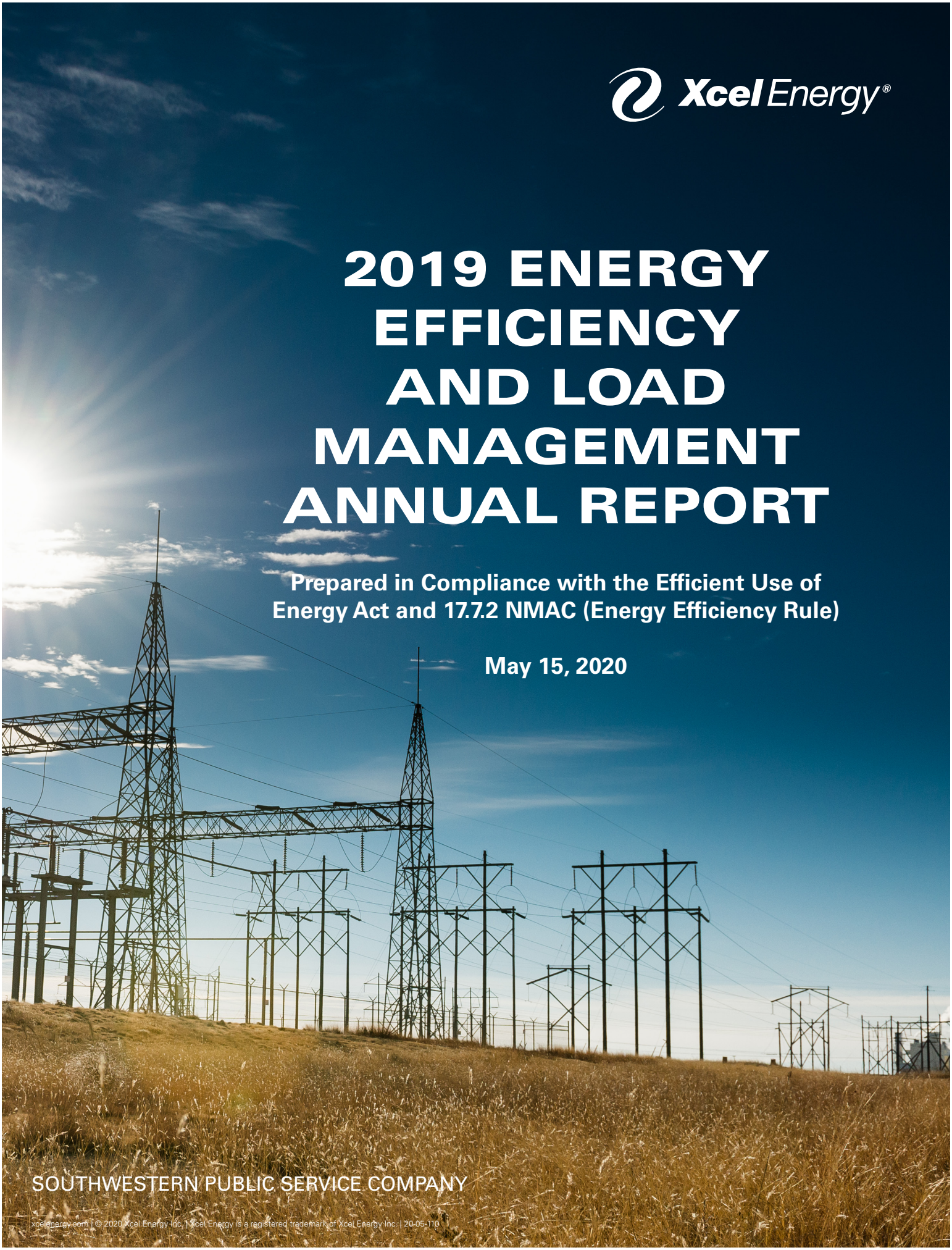

2019 ENERGY EFFICIENCY AND LOAD MANAGEMENT ANNUAL REPORT

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

May 15, 2020

SOUTHWESTERN PUBLIC SERVICE COMPANY

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Glossary of Acronyms and Definition

Acronym/Defined Term	**Definition**
2019 Annual Report	SPS's 2019 Energy Efficiency and Load Management Annual Report
Commission	New Mexico Public Regulation Commission
DR	Demand Response
DSM	Demand-Side Management – refers to the energy efficiency and load management programs collectively
EE	Energy Efficiency
EE Rule	Energy Efficiency Rule (17.7.2 NMAC)
EE/LM	Energy Efficiency and Load Management
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
HER	Home Energy Reports
HVAC	Heating, Ventilation, and Air Conditioning
ICO	Interruptible Credit Option
kW	Kilowatt

Acronym/Defined Term	**Definition**
kWh	kilowatt-hour
LED	light emitting diode
M&V	Measurement and Verification
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. 16-00110-UT
UCT	Utility Cost Test - the cost-effectiveness standard implemented on July 1, 2013, also known as the Program Administrator Test
Xcel Energy	Xcel Energy Inc.

Document Layout

Southwestern Public Service Company's, a New Mexico corporation, ("SPS") 2019 Energy Efficiency and Load Management ("EE/LM") Annual Report ("2019 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 2019, organized into the Residential, Business, and Planning & Research Segments;
- Section IV provides true-up of the 2019 Incentive Mechanism; and
- Appendix A provides the Measurement and Verification ("M&V") Report of SPS's 2019 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") Energy Efficiency ("EE") Rule 17.7.2 NMAC ("EE Rule"), SPS respectfully submits for Commission review its 2019 Annual Report. The EUEA and its associated Rule require public utilities to offer cost-effective energy efficiency and load management programs and authorizes them to receive cost recovery for qualified expenditures. Further, 17.7.2.8.A NMAC requires SPS to file with the Commission on May 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 Rule are discussed in Section II.

Within this 2019 Annual Report, SPS provides the expenditures and savings results for nine EE/LM direct impact programs in the Residential Segment (including Low-Income) and Business Segment (including Large Customer). In addition, the 2019 Annual Report includes a summary of the Planning and Research Segment, which supports the direct impact programs. The M&V Report for SPS's 2019 savings is included as Appendix A.

Background

On May 15, 2018 SPS filed a Petition seeking Commission guidance on how to proceed given that there was an inconsistency between the amended Section 17.7.2.8(A) of the Commission's EE Rule (filing EE/LM plans every three years) and the 2016 Stipulation which would require that SPS make a 2018 filing to comply with the Stipulation. In its petition, SPS requested the Commission determine if SPS would be allowed to amortize the estimated under-spend reflected in the PY 2017 balancing account over a two-year period and apply the amortized amounts to its 2019 and 202 PY budgets. SPS requested this action be subject to Commission review, reconciliation, and approval of the PY 2017 regulatory liability in SPS's Triennial EE Plan Filing. Regarding the PY 2017 incentive under-recovery, SPS proposed to postpone the recovery until the 2019 Triennial Filing. In the Final Order in this proceeding, the Commission found that SPS's recommended approach was reasonable and was permitted to postpone any compliance filing until May 15, 2019 when SPS's Triennial Plan filing was due.

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 2019 portfolio with adjustments to program budgets to account for additional 3% spending not forecasted in 2019's plan filing.

In 2019, SPS achieved verified net electric savings of 9,415 kilowatts ("kW") and 39,420,766 kilowatt-hours ("kWh") at the customer level, for a total cost of $9,876,113 (see Table 1

below.) This equals 130% of SPS's 2019 approved energy goal, while spending 99.53% of the approved budget. The portfolio was cost-effective with a UCT ratio of 2.69.

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 2019. While each of the products listed below is discussed in more detail later in the Status Report, a summary of the primary reasons for individual programs falling below 1.0 on the UCT follows.

- Residential Cooling: The program received a low UCT in 2019 due to slow return of rebate forms. In 2019, SPS relied on Heating, Ventilation, and Air Conditioning ("HVAC") contractors to promote customer rebates and help customers apply for the rebates and SPS saw lower participation than expected.

- Interruptible Credit Option ("ICO"): ICO had no participants in 2019 and therefore achieved a UCT ratio of 0.0.

- Residential Saver's Switch: The program received a low UCT in 2019 due to a sizeable portion of installed devices found to be not working, not receiving over-the-air signals, or not connected to functioning air conditioning units. The program closed down by year-end 2019.

- Smart Thermostat Pilot: The program received a low UCT in 2019 due to the cost of thermostat installations being higher than initially budgeted. Program enrollment was halted in 2017 and 2018 and was reopened 2019 in anticipation of a thermostat demand response program being launched in 2020. Due to the 2-year gap in installation, a local installer was not in place; consequentially, the Company's Denver based installer had to conduct installations which dramatically increased program costs.

Table 1: Estimated and Actual Program Data for 2019

Program	2019 Estimated								2019 Reported and Verified							
	Participants	Budget	Peak Demand Savings (Customer kW)	Annual Energy Savings (Customer kWh)	Peak Demand Savings (Generator kW)	Annual Energy Savings (Generator kWh)	Utility Avoided Cost	Utility Cost Test	Participants	Expenditures	Peak Demand Savings (Net Customer kW)	Annual Energy Savings (Net Customer kWh)	Peak Demand Savings (Net Generator kW)	Annual Energy Savings (Net Generator kWh)	Utility Avoided Cost	Utility Cost Test
Residential Segment																
Residential Energy Feedback	18,090	$133,045	421	2,999,949	502	3,401,303	$ 158,377	1.19	30,760	$139,711	954	3,340,050	1,138	3,786,905	$ 228,635	1.64
Residential Cooling	250	$175,908	104	401,451	124	455,160	$ 388,556	2.21	76	$82,537	20	74,785	24	84,790	$ 70,401	0.85
Home Energy Services: Residential & Low Income	1,850	$2,634,220	657	5,541,450	784	6,282,823	$ 4,094,848	1.55	3,181	$3,022,041	1,953	9,736,553	2,331	11,039,176	$ 8,225,986	2.72
Home Lighting & Recycling	298,000	$2,094,918	1,274	9,480,242	1,520	10,748,574	$ 7,426,561	3.55	351,086	$1,277,708	1,904	11,204,986	2,272	12,704,066	$ 7,200,752	5.64
Residential Saver's Switch	4,203	$203,250	3,653	35,241	4,359	39,956	$ 297,358	1.46	4,272	$216,684	668	0	797	0	$ 138,762	0.64
School Education Kits	2,500	$163,417	1,773	547,183	30	964,480	$ 330,992	2.03	2,515	$152,729	186	571,588	222	648,059	$ 217,144	1.42
Smart Thermostat Pilot	2,032	$318,628	1,213	230,062	1,447	260,842	$ 208,108	0.65	703	$165,209	730	277,838	871	315,009	$ 61,174	0.37
Residential Segment Total	**326,925**	**$5,723,386**	**9,095**	**19,235,579**	**8,767**	**22,153,138**	**$ 12,904,800**	**2.25**	**392,593**	**$5,056,618**	**6,415**	**25,205,800**	**7,655**	**28,578,005**	**$ 16,142,855**	**3.19**
Business Segment																
Business Comprehensive	716	$3,570,861	1,694	11,152,158	1,890	12,082,511	$ 7,302,365	2.04	241	$4,410,548	3,001	14,214,966	3,349	15,400,829	$ 10,226,703	2.32
Interruptible Credit Option	2	$45,569	789	7,000	881	7,584	$ 171,297	3.76	0	$6,672	0	0	0	0	$ -	0.00
Business Segment Total	**718**	**$3,616,430**	**2,483**	**11,159,158**	**2,771**	**12,090,095**	**$ 7,473,661**	**2.07**	**241**	**$4,417,220**	**3,001**	**14,214,966**	**3,349**	**15,400,829**	**$ 10,226,703**	**2.32**
Planning & Research Segment																
Market Research		$90,000								$80,999						
Measurement & Verification		$12,000								$8,027						
Planning & Administration		$285,242								$209,318						
Product Development		$195,859								$103,931						
Planning & Research Segment Total		**$583,101**								**$402,275**						
2019 TOTAL	**327,643**	**$9,922,917**	**11,578**	**30,394,736**	**11,538**	**34,243,233**	**$ 20,378,461**	**2.05**	**392,834**	**$9,876,113**	**9,415**	**39,420,766**	**11,004**	**43,978,833**	**26,369,558**	**2.69**

Table 2: Variance Comparison of 2019 Estimated and Reported/Verified Data

Program	2019 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								
Residential Energy Feedback	170%	105%	227%	111%	227%	111%	144%	137%
Residential Cooling	30%	47%	19%	19%	19%	19%	18%	39%
Home Energy Services: Residential & Low Income	172%	115%	297%	176%	297%	176%	201%	175%
Home Lighting & Recycling	118%	61%	149%	118%	149%	118%	97%	159%
Residential Saver's Switch	102%	107%	18%	0%	18%	0%	47%	44%
School Education Kits	124%	48%	15%	248%	15%	248%	104%	218%
Smart Thermostat Pilot	28%	101%	41%	51%	2906%	33%	18%	18%
Residential Segment Total	120%	88%	71%	131%	87%	129%	125%	142%
Business Segment								
Business Comprehensive	34%	124%	177%	127%	177%	127%	140%	113%
Interruptible Credit Option	0%	15%	0%	0%	0%	0%	0%	0%
Business Segment Total	34%	122%	121%	127%	121%	127%	137%	112%
Planning & Research Segment								
Market Research		90%						
Measurement & Verification		67%						
Planning & Administration		73%						
Product Development		53%						
Planning & Research Segment Total		69%						
2019 TOTAL	120%	100%	81%	130%	95%	128%	129%	131%

As shown in Tables 1 and 2 (above), SPS met, or came close to meeting, most of its program forecasts for 2019. 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 2019 and were within their budgets. The Residential Energy Feedback, Home Energy Services, 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;
(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 90,500 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 2019, SPS offered seven residential programs with opportunities for all residential customers, including low-income customers, to participate. In total, SPS spent $5,056,618 on these programs and achieved 6,415 kW and 25,205,800 kWh net savings at the customer level.

Overall, the Residential Segment of programs was cost-effective with a UCT of 3.19. The segment achieved 131% of the annual kWh goal with significant contributions from the Home Lighting & Recycling, Residential Energy Feedback and Home Energy Services programs. All of the programs under the Residential Segment are discussed in more detail below.

Residential Energy Feedback

The Residential Energy Feedback Program provides participating customers with different forms of feedback regarding their energy consumption. The feedback communication strategies and associated tips and tools result in a decrease in energy usage by encouraging changes in the behavior of participating customers. Furthermore, the program attempts to build a persistent increase in, or earlier adoption of, energy efficient technologies and energy efficient practices.

The program ended 2019 with 34,173 participants total in the control and recipient groups[1]. The program year began with 18,883 recipient participants and ended with 16,856, due to an annual attrition rate of 10.7%. Attrition occurs primarily for two reasons: customers who move out of their residence and those that choose to opt-out of the program. Participants consist of the Legacy Group, which entered the program in early 2012; a 2015 Refill Group that started receiving Home Energy Reports ("HERs") in the summer of 2015, and a 2017 Refill Group that began receiving HERs in the summer of 2017. Participants receive their HER approximately once a quarter; however, the cadence varies based on the program design. Each report provides actionable energy saving tips and information on the customer's energy usage. For comparison purposes, the customer's energy consumption is benchmarked with that of 100 similar customers. Accessible through My Account, the My Energy online tool provides the same information that customers receive in the HER, with a more robust set of customization options and energy savings tools. These tools are available

[1] The recipient group receives paper or electronic Home Energy Reports while the control group does not. These groups are compared as a part of the randomized control trial to determine energy savings realized by the recipient group.

to all customers served by SPS, and in 2019 over 750 customers took advantage of the offerings.

Table 4: 2019 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 Energy Feedback	30,760	18,090	$ 139,711	$ 133,045	954	421	3,340,050	2,999,949	1.64

Deviations from Goal
The Residential Energy Feedback Program surpassed its estimated savings impact goals in 2019, and remains cost-effective under the UCT. Participants in the 2015 refill group continue to save a lower than expected amount of energy due to the statistical noise present when attempting to measure savings.

Changes in 2019
SPS has selected a new implementer for the Energy Feedback Program. The first round of HERs were mailed to treatment customers on April 2020.

Residential Cooling
The Residential Cooling Program provides a cash rebate to electric customers who purchase and permanently install high-efficiency evaporative cooling, high efficiency air conditioners, air source heat pumps, mini-split heat pumps, or programmable thermostats for residential use in New Mexico

Table 5: 2019 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	76	250	$ 82,537	$ 175,908	20	104	74,785	401,451	0.85

Deviations from Goal
In 2019, the Residential Cooling Program achieved 19% of its goal primarily due to late submission of rebate forms. Weaker than expected participation is likely attributable to the following issues:

- a low level of customer awareness about rebates and how to apply for them;
- the HVAC contractor community has been slow to recommend high efficiency equipment; and
- premium systems are not stocked by any retailers or contractors in the service territory.

Changes in 2019
Technical Assumptions for some measures were updated to align with the new TRM assumptions that were released in early 2019.

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: 2019 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Home Energy Services: Residential & Low Income	3,181	1,850	$ 3,022,041	$ 2,634,220	1,953	657	9,736,553	5,541,450	2.72

Deviations from Goal

The Home Energy Services Program exceeded its energy savings goals for 2019. The program was also highly cost-effective. The Residential portion of the program performed well, achieving savings of over 9 gigawatt hour ("GWh") at the customer level. SPS recorded over 6 Gigawatt hours of customer savings on the Low-Income portion of the program, with expenditures of $2,002,428. This is approximately 20% of the total New Mexico portfolio spend and in excess of the minimum state requirement of 5% of the New Mexico portfolio spend.

Changes in 2019

SPS's Technical assumptions were revised for some measures to reflect the updated TRM savings that were released in early 2019.

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 extensively through a variety of advertising and promotions, including television, radio, on-line, publications, bill inserts, community events, and point-of-purchase displays. Some of the specific promotions included:

- SPS participated in many community events and implemented bulb giveaways at various events including the Eastern New Mexico State Fair, Light Up Artesia, Tucumcari Fired Up, and the Roswell Christmas Railway.
- SPS continued to partner with Domino's Pizza to deliver free energy-efficient bulbs with each pizza order for a limited time period. This was a unique promotion in that it delivered bulbs directly to customers' homes and was an extremely low-cost way to reach consumers.

Table 7: 2019 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	351,086	298,000	$ 1,277,708	$ 2,094,918	1,904	1,274	11,204,986	9,480,242	5.64

Deviations from Goal
In 2019, the Home Lighting and Recycling Program achieved its energy and demand savings goal. Budget savings were attributed to the continued reduction in the price of LED bulbs and the lower cost of buy-downs.

Changes in 2019
Technical Assumptions for some measures were updated to align with the new TRM assumptions that were released in early 2019.

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

When the program is activated, a control signal is sent to interrupt the air conditioning load during peak periods, typically in the afternoons on weekdays. For air conditioners, SPS utilizes a cycling strategy to achieve a 50% reduction in load. For enrolled electric water heaters, the entire load is shed for the duration of the control period. Due to limitations in available over-the-air control systems, the program is currently available only in the cities of Portales, Hobbs, Clovis, Roswell, Artesia, and Carlsbad.

The 2019 program year was the tenth operational year for the Saver's Switch program. In 2019, there were two control events, for a total of ten hours.

Table 8: 2019 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Residential Saver's Switch	4,272	4,203	$ 216,684	$ 203,250	668	3,653	0	35,241	0.64

Deviations from Goal
In 2019, the program installed a small number of new switches. The program did not meet the forecasted savings goal as a sizeable portion of installed devices are either not working, not receiving over-the-air signals, or not connected to functioning air conditioning units.

Changes in 2019
On February 9th 2020, SPS received approval to remove this program from the 2020 PY portfolio. Please refer to the modified Triennial EE Plan and Final Order in Docket No. 19-00140-UT.

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 two 9 watt LEDs, two 11 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. Students complete surveys to determine the measure installation rates.

Table 9: 2019 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	2,515	2,500	$ 152,729	$ 163,417	186	1,773	571,588	547,183	1.42

Deviations from Goal
The program exceeded its savings goal while remaining under its filed budget for the year.

Changes in 2019
Technical Assumptions for measures were updated to align with the new TRM assumptions that were released in early 2019.

Smart Thermostat Pilot

The Smart Thermostat Pilot is designed to evaluate if Wi-Fi connected communicating smart thermostats can save residential customers energy by installing a smart thermostat device and connecting it to the manufacturer's cloud service. In addition to EE benefits, the Pilot also plans to evaluate DR capacity from smart thermostats in the residential market. SPS offers customers smart thermostats and installation at no cost.

Table 10: 2019 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 Pilot	703	2,032	$ 165,209	$ 318,628	730	1,213	277,838	230,062	0.37

Deviations from Goal
Although the pilot met its targeted savings goal, the program did not reach the target goal of DR participants in 2019. Enrollments were reopened at the end of 2018 and new customers were enrolled in early 2019 in anticipation of launching a demand response program in 2020. However, once the program was converted to an energy efficiency program for the 2020 plan, sign-ups and installations were halted due to cost constraints and changes in program delivery.

Changes in 2019
On February 9th 2020, SPS received approval to modify this program to an energy savings only program for the 2020 PY portfolio and beyond. Please refer to the modified Triennial EE Plan and Final Order in Docket No. 19-00140-UT.

Business Segment

SPS's Business Segment in New Mexico consists of nearly 24,000 commercial, industrial, and agricultural customer premises. In 2019, SPS offered two business programs with opportunities for all commercial and industrial customers to participate.

In total, SPS spent $4,417,220 on these programs and achieved 3,001 kW and 14,214,966 kWh savings at the net customer level.

Overall, the Business Segment of programs was cost-effective with a UCT of 2.32. Achievements were 127% of the annual kWh goal. Both of the programs under the Business Segment are discussed in more detail below.

Business Comprehensive
The Business Comprehensive Program bundles traditional prescriptive and custom products in a way that is more easily understood by customers. Business Comprehensive encompasses the Recommissioning, Computer Efficiency, 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: 2019 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	241	716	$ 4,410,548	$ 3,570,861	3,001	1,694	14,214,966	11,152,158	2.32

Deviations from Goal

The program saw increased participation in the oil and gas sector as a result 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 measure, and several large custom Variable Frequency Drive projects were rebated in 2019.

Changes in 2019

Technical Assumptions for some Cooling product measures were updated to align with the new TRM assumptions that were released in early 2019.

Interruptible Credit Option

The ICO Program was developed to offer significant savings opportunities to SPS business customers who can reduce their electric demand for specific periods of time when notified. In return for participating, customers receive a monthly credit on their demand charges.

Table 12: 2019 Program Achievements

Program	Actual Participants	Forecasted Participants	Actual Spend	Budgeted Spend	Peak Demand Savings kW (Net Customer)	Peak Demand Goal kW (Net Customer)	Annual Energy Savings kWh (Net Customer)	Energy Savings Goal kWh (Net Customer)	Utility Cost Test
Interruptible Credit Option	0	2	$ 6,672	$ 45,569	0	789	0	7,000	0.00

Deviations from Goal

The ICO Program did not have any participants in 2019. This program is best suited for SPS's largest customers, most of whom are in the oil and gas industries. Due to the current economic conditions, most of these large customers have not seen a benefit to the program.

Changes in 2019

On February 9th 2020, SPS received approval to remove this program from the 2020 PY portfolio. Please refer to the modified Triennial EE Plan and Final Order in Docket No. 19-00140-UT.

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 2019

None.

Market Research

The Market Research group spearheads energy efficiency-related research efforts that are used to inform SPS on EE/LM Strategy. In 2019, the Market Research group oversaw the

SPS portion of several Xcel Energy Inc. ("Xcel Energy")-wide subscriptions such as SPS's E-Source Membership, and the Dun & Bradstreet list purchase.

Deviations from Goal
SPS spent less than the forecasted budget. The deviation is largely due to delayed purchase of residential data intended to assist with the development of customer segments to more effectively target market EE/LM programs.

Changes in 2019
Market Research continues to field its proprietary Residential Relationship Study and initiated a similar business study in 2019 to provide more frequent feedback about customer attitudes concerning energy.

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 2018 M&V Report is provided as Appendix A of this document. In compliance with the reporting requirements, the 2018 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. Although Evergreen revised the TRM in the fall of 2018, not all costs associated with the refresh were included in 2018 spend. Additional TRM costs are shown in PY 2019's reporting.

Changes in 2019

None.

Product Development

Product Development identifies, assesses, and develops new energy efficiency and load management products and services. The product development process starts with ideas and concepts from customers, regulators, energy professionals, interest groups, and 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 2019

None.

Section IV: 2019 Incentive Mechanism True-Up

SPS exceeded its 2019 achievement goal of 29.444 GWh by 9.97 GWh, resulting in an earned incentive of $707,504. When compared to the collected amount ($930,520), SPS needs to return $ 223,015.98 (plus interest) to customers related to the 2019 incentive.

Appendix A: Measurement & Verification Report:

SPS 2019 Program Year

Provided by Evergreen

Evaluation of the 2019 Southwestern Public Service Company's Energy Efficiency and Demand Response Programs

Final Report

May 1, 2020

Table of Contents

Executive Summary

This report presents the independent evaluation results for the Southwestern Public Service Company (SPS) energy efficiency and demand response programs for program year 2019 (PY2019).

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.

Within this regulatory framework, the Evergreen evaluation team was chosen to be the independent evaluator for SPS in May 2017, and a project initiation meeting was held with SPS staff on September 14, 2017. The Evergreen evaluation team consisted of the following firms:

- **Evergreen Economics** was the prime contractor and managed all evaluation tasks and deliverables;
- **EcoMetric** provided engineering capabilities and led the review of SPS's savings estimates;
- **Demand Side Analytics** conducted the impact evaluation of the Saver's Switch program; and

[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

- **Research & Polling** fielded all the phone surveys.

For PY2019, the following SPS programs were evaluated:

- Business Comprehensive
- Energy Feedback
- Residential Cooling
- School Education Kits

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, Residential Cooling, and School Education Kits programs.

The remaining programs that were not evaluated for PY2019 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 PY2019 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

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

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.

Residential Cooling. This program offers rebates for prescriptive measures including cooling equipment and ECMs. The *ex ante* deemed savings values were reviewed and compared with the TRM and other source material as part of the gross impact analysis. A participant phone survey was also conducted to complete the self-report net impact analysis and process evaluation.

School Education Kits. This education program provides energy efficient measures to students along with energy saving tips. The measures distributed to students rely on deemed savings values, which were reviewed for the gross impact analysis as part of the evaluation of this program. Information from the student surveys already completed for this program was also analyzed for the process evaluation.

Table 1 summarizes the PY2019 evaluation methods.

Table 1: Summary of PY2019 Evaluation Methods by Program

Program	Deemed Savings Review	Phone Survey	Engineering Desk Reviews	Contractor Interviews	Billing Regression
Business Comprehensive	◆	◆	◆	◆	
Energy Feedback	◆				◆
Residential Cooling	◆	◆	◆	◆	
School Education Kits	◆	◆			

The results of the PY2019 impact evaluation are shown in Table 2 (kWh) and Table 3 (kW), with the programs evaluated in 2019 highlighted in blue. A summary of the NTG ratios by program is shown in Table 4. For the programs not evaluated this year, the totals are based on the *ex ante* savings and NTG values from the SPS tracking data.

Table 2: PY2019 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	13	746,397	0.9733	726,436	0.7030	510,684
Custom Efficiency	84	5,366,518	1.0263	5,507,423	0.7030	3,871,718
Lighting Efficiency	99	3,947,185	1.1067	4,368,451	0.7030	3,071,021
Motors Efficiency	45	9,534,511	1.0088	9,618,125	0.7030	6,761,542
Home Lighting & Recycling	351,086	15,781,670	1.0000	15,781,670	0.7100	11,204,986
Energy Feedback	30,760	3,992,202	1.0000	3,992,202	N/A*	3,340,050
Residential Cooling	76	141,888	0.9213	130,727	0.5721	74,785
School Education Kits	2,515	557,072	1.0261	571,588	1.0000	571,588
Home Energy Services	765	3,590,478	1.0472	3,759,926	0.9708	3,650,136
Home Energy Services Low Income	2,416	5,910,610	1.0297	6,086,417	1.0000	6,086,417
Saver's Switch	-	-	-	-	-	-
Smart Thermostat	703	277,838	1.0000	277,838	1.0000	277,838
Total	**392,834**	**49,846,370**		**50,820,804**		**39,420,766**

*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: PY2019 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	13	310	0.6264	194	0.7030	137
Custom Efficiency	84	940	0.9662	909	0.7030	639
Lighting Efficiency	99	1,312	1.0017	1,315	0.7030	924
Motors Efficiency	45	1,831	1.0108	1,851	0.7030	1,301
Home Lighting & Recycling	351,086	2,681	1.0000	2,681	0.7100	1,904
Energy Feedback	30,760	1,140	1.0000	1,140	N/A*	954
Residential Cooling	76	41	0.8472	35	0.5721	20
School Education Kits	2,515	186	1.0001	186	1.0000	186
Home Energy Services	765	434	1.0000	434	0.9708	422
Home Energy Services Low Income	2,416	1,160	1.3200	1,531	1.0000	1,531
Saver's Switch	4,272	668	1.0000	668	1.0000	668
Smart Thermostat	703	730	1.0000	730	1.0000	730
Total	**392,834**	**11,435**		**11,674**		**9,415**

*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 at the customer level.

Table 4: PY2019 Net-to-Gross Ratios

Program	NTG Ratio
Business Comprehensive	0.7030
Home Lighting & Recycling	0.7100
Energy Feedback	0.8366
Residential Cooling	0.5721
School Education Kits	1.0000
Home Energy Services	0.9889
Saver's Switch	1.0000
Smart Thermostat	1.0000
Overall Portfolio	**0.7908**

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. All programs except Saver's Switch had a UCT of greater than 1.00, and the portfolio overall was found to have a UCT ratio of 2.69.

[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

Table 5: PY2019 Cost Effectiveness

Program	Utility Cost Test (UCT)
Business Comprehensive	2.32
Home Lighting & Recycling	5.64
Energy Feedback	1.64
Residential Cooling	0.85
School Education Kits	1.42
Home Energy Services	2.72
Saver's Switch	0.64
Smart Thermostat	0.37
Overall Portfolio	**2.69**

Based on the data collection and analysis conducted for this evaluation, the evaluation team found that, overall, SPS is operating high quality programs that are achieving significant energy and demand savings and producing satisfied participants.

The impact evaluation—which included engineering desk reviews for a sample of Business Comprehensive and Residential Cooling projects, and statistical models for Energy Feedback—resulted in relatively high realized gross savings. Adjustments to savings based on the Business Comprehensive desk reviews were due to two main factors: project-specific calculation inputs were documented solely in the processing database, and adjustments were made when existing lighting fixture wattages were not 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.

1 Evaluation Methods

The analysis methods used for the evaluated PY2019 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.

Residential Cooling. This program offers rebates for prescriptive measures including cooling equipment and ECMs. The *ex ante* deemed savings values were reviewed and compared with the TRM and other source material as part of the gross impact analysis. A participant phone survey was also conducted to complete the self-report net impact analysis and process evaluation.

School Education Kits. This education program provides energy efficient measures to students along with energy saving tips. The measures distributed to students rely on deemed savings values, which were reviewed for the gross impact analysis as part of the evaluation of this program. Information from the student surveys already completed for this program were also analyzed for the process evaluation.

1.1 Phone Surveys

Participant phone surveys were fielded in late 2019 for participants in the Business Comprehensive and Residential Cooling 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 and Residential Cooling programs, the original goal was to complete as many surveys as possible, and a census of participants was contacted for these programs. Ultimately, 31 phone surveys were completed with Business Comprehensive participants and 15 were completed for the Residential Cooling program (Table 6).

Table 6: Business Comprehensive and Residential Cooling Phone Survey Summary

Program	Number of Customers with Valid Contact Info	Completed Surveys
Business Comprehensive	57	31
Residential Cooling	25	15
Total	**82**	**46**

The final survey instrument for the Business Comprehensive program is included in Appendix A, and the final survey instrument for the Residential Cooling program is included in Appendix B.

1.2 Engineering Desk Reviews

In order to verify gross savings estimates, the evaluation team conducted engineering desk reviews for a sample of the projects in the Business Comprehensive and Residential Cooling programs. The goal of the desk reviews 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/or post-installation reports; and
- Review of post-installation reports detailing differences between installed equipment and documentation, and subsequent adjustments made by the program implementer.

For projects in the Business Comprehensive program that relied on deemed savings values for prescriptive measures, the engineering desk reviews included the following:

- Review of measures available in the New Mexico TRM and the SPS Technical Assumptions documents to determine the most appropriate algorithms that apply to the installed measure;
- Recreation of savings calculations using TRM/Technical Assumptions algorithms and inputs as documented by submitted specifications, invoices, and post-installation inspection reports; and
- Review of TRM/Technical Assumptions 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.

Projects in the Residential Cooling program also used deemed savings values for prescriptive measures, and the engineering desk reviews of these projects included the following:

- Review of measures available in the New Mexico TRM and the SPS Technical Assumptions to determine the most appropriate algorithms that apply to the installed measure;
- Recreation of savings calculations using TRM/Technical Assumptions algorithms and inputs as documented by submitted specifications, invoices, and post-installation inspection reports; and
- Review of TRM/Technical Assumptions 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 measures installation 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.

Specific modeling details are included in the following *Impact Evaluation Results* chapter.

1.4 Net Impact Analysis

1.4.1 Self-Report Approach

The evaluation team estimated net impacts for the Business Comprehensive and Residential Cooling 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 Technical Reference Manual.[7] For the SPS programs, questions regarding free ridership were divided into several primary components:

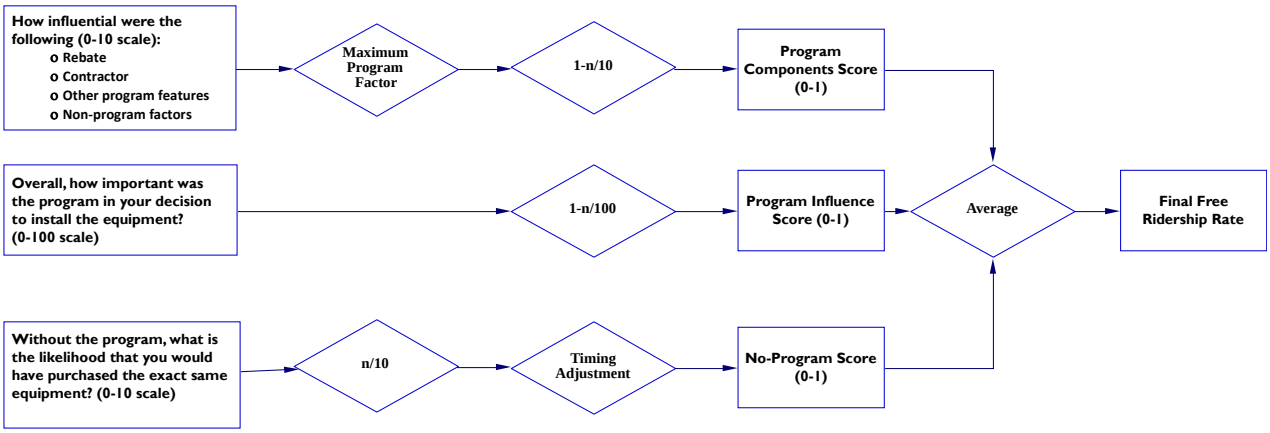
- A ***Program Component*** series of questions that asked about the influence of specific program activities (rebate, customer account rep, contractor recommendations, other assistance offered) on the decision to install energy efficient equipment;
- A ***Program Influence*** question, where the respondent 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.

1.4.1.1 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.

1.4.1.2 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.

1.4.1.3 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.

1.4.1.4 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:

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

1.5 Realized Gross and Net Impact Calculation

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 net-to-gross 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. In order 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).

SPS has different avoided costs of capacity and line loss factors for energy efficiency and load management (demand) programs. Per the guidance of SPS, the cost effectiveness analysis assumes that the Saver's Switch programs are characterized as load management programs, while all others are characterized as energy efficiency programs.

For all programs, the Evergreen team took the energy savings and effective useful life values from the final PY2019 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 Impact Evaluation Results

The results of the PY2019 impact evaluation are shown in Table 7 (kWh) and Table 8 (kW), with the programs evaluated in 2019 highlighted in blue. A summary of the net-to-gross (NTG) ratios by program is shown in Table 9. For the non-evaluated programs, the totals are based on the *ex ante* savings and NTG values from the SPS tracking data.

As noted previously, each program is required to be evaluated a minimum of once every three years. For 2019, the evaluated programs covered 49 percent of the *ex ante* kWh savings and 19 percent of the *ex ante* kW savings.

Table 7: PY2019 Savings Summary – kWh[8]

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Business Comprehensive						
Cooling Efficiency	13	746,397	0.9733	726,436	0.7030	510,684
Custom Efficiency	84	5,366,518	1.0263	5,507,423	0.7030	3,871,718
Lighting Efficiency	99	3,947,185	1.1067	4,368,451	0.7030	3,071,021
Motors Efficiency	45	9,534,511	1.0088	9,618,125	0.7030	6,761,542
Home Lighting & Recycling	351,086	15,781,670	1.0000	15,781,670	0.7100	11,204,986
Energy Feedback	30,760	3,992,202	1.0000	3,992,202	N/A*	3,340,050
Residential Cooling	76	141,888	0.9213	130,727	0.5721	74,785
School Education Kits	2,515	557,072	1.0261	571,588	1.0000	571,588
Home Energy Services	765	3,590,478	1.0472	3,759,926	0.9708	3,650,136
Home Energy Services Low Income	2,416	5,910,610	1.0297	6,086,417	1.0000	6,086,417
Saver's Switch	-	-	-	-	-	-
Smart Thermostat	703	277,838	1.0000	277,838	1.0000	277,838
Total	**392,834**	**49,846,370**		**50,820,804**		**39,420,766**

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

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

Table 8: PY2019 Savings Summary – kW[9]

Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Business Comprehensive						
Cooling Efficiency	13	310	0.6264	194	0.7030	137
Custom Efficiency	84	940	0.9662	909	0.7030	639
Lighting Efficiency	99	1,312	1.0017	1,315	0.7030	924
Motors Efficiency	45	1,831	1.0108	1,851	0.7030	1,301
Home Lighting & Recycling	351,086	2,681	1.0000	2,681	0.7100	1,904
Energy Feedback	30,760	1,140	1.0000	1,140	N/A*	954
Residential Cooling	76	41	0.8472	35	0.5721	20
School Education Kits	2,515	186	1.0001	186	1.0000	186
Home Energy Services	765	434	1.0000	434	0.9708	422
Home Energy Services Low Income	2,416	1,160	1.3200	1,531	1.0000	1,531
Saver's Switch	4,272	668	1.0000	668	1.0000	668
Smart Thermostat	703	730	1.0000	730	1.0000	730
Total	**392,834**	**11,435**		**11,674**		**9,415**

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

[9] All kW savings shown in this table and throughout the report are peak coincident kW at the customer level.

Table 9: PY2019 Net-to-Gross Ratios

Program	NTG Ratio
Business Comprehensive	0.7030
Home Lighting & Recycling	0.7100
Energy Feedback	0.8366
Residential Cooling	0.5721
School Education Kits	1.0000
Home Energy Services	0.9889
Saver's Switch	1.0000
Smart Thermostat	1.0000
Overall Portfolio	**0.7908**

Details on the individual program impacts are summarized below, with additional details on the analysis methods and results for some programs included as appendices where noted.

2.1 Business Comprehensive Program

2.1.1 Business Comprehensive Gross Impacts

The *ex ante* 2019 impacts for the Business Comprehensive program are summarized in Table 10. In total, the Business Comprehensive program accounted for approximately 39 percent of *ex ante* energy impacts in SPS's overall portfolio.

Table 10: PY2019 Business Comprehensive Savings Summary

Sub-Program	# of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
Cooling Efficiency	13	746,397	310
Custom Efficiency	84	5,366,518	940
Lighting Efficiency	99	3,947,185	1,312
Motors Efficiency	45	9,534,511	1,831
Total	**241**	**19,594,611**	**4,394**

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. In some cases, very large projects were assigned to a "certainty" stratum and were automatically added to the sample (rather than randomly assigned). This allowed for the largest projects to be included in the desk reviews and maximized the amount of savings covered in the sample. 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 11. The resulting sample achieved a relative precision of 90/7.2 overall, with precision ranging from 85/36 to 85/1 for the individual sub-programs.

Table 11: Business Comprehensive Desk Review Sample

Sub-Program	Group	Stratum	Count	Average kWh	Total kWh Savings	% of Savings	Final Sample
Cooling	Cooling	Certainty	2	305,248	610,497	3.1%	2
		1	11	12,355	135,900	<1%	4
Custom	Custom	Certainty	5	837,676	3,646,584	18.6%	5
		1	8	160,642	1,285,138	6.6%	3
		2	71	6,124	434,796	2.2%	3
Lighting	Exterior	1	18	37,931	682,753	3.5%	3
	Interior	1	3	152,534	457,601	2.3%	2
	Interior	2	18	23,319	419,750	2.1%	4
	Linear	1	5	168,685	843,427	4.3%	3
	Linear	2	13	64,458	837,954	4.3%	3
	Linear	3	42	16,802	705,700	3.6%	3
Motors	Non-VFD	Certainty	4	43,963	175,853	<1%	4
	VFD	Certainty	4	1,098,034	3,947,004	20.1%	4
	VFD	1	5	519,343	2,596,714	13.3%	3
	VFD	2	32	87,967	2,814,940	14.4%	3
Total			**241**	**240,017**	**19,594,611**	**100%**	**49**

As discussed in the *Evaluation Methods* chapter, 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. 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. Additionally, the custom lighting calculator used by SPS for certain projects included slight deviations from the New Mexico TRM. 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 2018 New Mexico TRM to be the "safe harbor" and did not make negative adjustments to SPS calculations that correctly adhered to the TRM. Other incentivized measures existed only in the SPS Technical Assumptions, and so these algorithms were reviewed for accuracy and adjusted as necessary to verify savings estimates.

For custom projects, the evaluation team recreated savings analyses when possible (e.g., simple spreadsheet calculations). For more complex analyses (e.g., whole building energy simulations), 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.

Reviewing engineers conducted phone interviews with selected participants. During the phone interviews, evaluation team engineers confirmed installation of incentivized equipment and verified operational parameters integral to the calculation of estimated savings. The evaluation team completed six engineering interviews for the 2019 evaluation, which were in addition to the participant surveys also conducted for this program.

Engineering adjustment factors varied significantly from 100 percent for three main reasons:

- **Project-specific calculation inputs documented solely in processing database.** For multiple projects, the evaluation team followed the algorithms contained in the SPS Technical Assumptions but arrived at savings that differed from those reported by SPS. Specific algorithm inputs and any project-specific adjustments were not documented in the materials available to the evaluation team for the desk reviews, which prevented the evaluation team from identifying the specific sources of discrepancies for roughly one-third of the sampled projects.
- **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. While the program tracking data had a field for the existing fixture type, the data did not include the existing fixture input wattage. Therefore, the evaluation team was not able to verify the baseline fixture wattage SPS used to calculate the *ex ante* savings for the prescriptive lighting projects.

Table 12 and Table 13 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 1.0319 for kWh and 0.9714 for kW.

Table 12: PY2019 Business Comprehensive Gross kWh Impact Summary

Sub-Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings
Cooling Efficiency	13	746,397	0.9733	726,436
Custom Efficiency	84	5,366,518	1.0263	5,507,423
Lighting Efficiency	99	3,947,185	1.1067	4,368,451
Motors Efficiency	45	9,534,511	1.0088	9,618,125
Total	**241**	**19,594,611**	**1.0319**	**20,220,435**

Table 13: PY2019 Business Comprehensive Gross kW Impact Summary

Sub-Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings
Cooling Efficiency	13	310	0.6264	194
Custom Efficiency	84	940	0.9662	909
Lighting Efficiency	99	1,312	1.0017	1,315
Motors Efficiency	45	1,831	1.0108	1,851
Total	**241**	**4,394**	**0.9714**	**4,268**

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

2.1.2 Business Comprehensive Net Impacts

Net impacts for the Business Comprehensive program were calculated using NTG ratios from the participant phone survey or *ex ante* values, depending on the sub-program. For the Cooling, Custom, Lighting, and Motors sub-programs, the NTG ratio was developed using the self-report method described in the *Evaluation Methods* chapter using participant phone survey data.

Due to the small sample sizes available, the 2019 self-report survey results were averaged with the 2018 NTG results for each sub-program, and then an overall program average was calculated for PY2019. Note that in the case of Motors, there were no survey results available for 2018 and consequently only the 2019 survey data were used. The resulting program-level NTG ratio is 0.7030.

Table 14 and Table 15 summarize the PY2019 net impacts for the Business Comprehensive program using the NTG ratios described above. Net realized savings for the program overall are 14,214,966 kWh, and net realized demand savings are 3,001 kW.

Table 14: PY2019 Business Comprehensive Net kWh Impact Summary

Sub-Program	# of Projects	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Cooling Efficiency	13	726,436	0.7030	510,684
Custom Efficiency	84	5,507,423	0.7030	3,871,718
Lighting Efficiency	99	4,368,451	0.7030	3,071,021
Motors Efficiency	45	9,618,125	0.7030	6,761,542
Total	**241**	**20,220,435**	**0.7030**	**14,214,966**

Table 15: PY2019 Business Comprehensive Net kW Impact Summary

Sub-Program	# of Projects	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Cooling Efficiency	13	194	0.7030	137
Custom Efficiency	84	909	0.7030	639
Lighting Efficiency	99	1,315	0.7030	924
Motors Efficiency	45	1,851	0.7030	1,301
Total	**241**	**4,268**	**0.7030**	**3,001**

2.2 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 also 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.

2.2.1 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 three deployment waves for the Energy Feedback program, each of which is tracked separately and has its own matched control group. Table 16 shows the participation numbers at the beginning of each wave, in January 2019, and in December 2019.

Table 16: Participation By Deployment Wave

Wave	Group	Participants – Start Date	Participants – January 1, 2019	Participants – December 31, 2019
Wave 1: 201203	Recipient	15,500	9,283	8,860
	Control	15,500	9,697	9,194
Wave 2: 201507	Recipient	5,250	2,795	2,576
	Control	5,250	2,815	2,603
Wave 3: 201705	Recipient	10,000	6,540	5,808
	Control	10,000	6,614	5,926
Total	**Recipient**	**30,750**	**18,618**	**17,244**
	Control	**30,750**	**19,126**	**17,723**

Figure 2 shows the program attrition among recipients, due to opt out or account closure.

Figure 2: 2019 Treatment Recipient Attrition by Wave

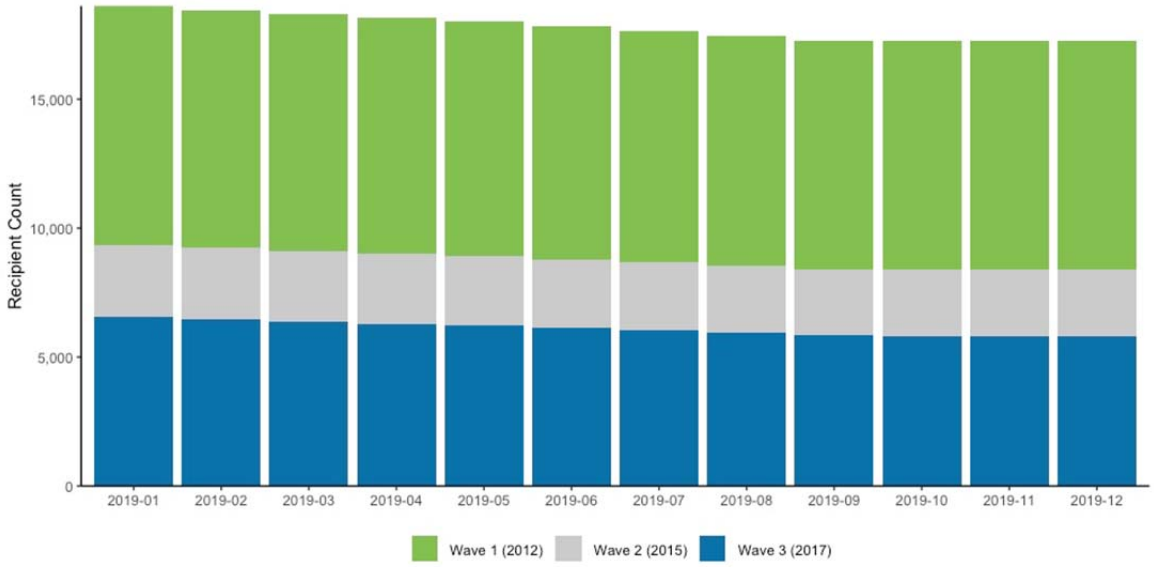


Table 17 provides a summary of the data screens and the number of program participants that were not included in the billing regression analysis. These screens reduced our sample from 61,522 customers to 51,466. The most substantial loss of participants came from a lack of billing data for the distinct 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.

Table 17: Energy Feedback Data Screens

Description	Removed		Remaining
Total program participants	-		61,522
Include in test analysis (Y/N indicator)	1	0%	61,521
Billing data available for unique premise/customer	10,015	16%	51,506
Remove readings after program opt out and account close	34	0%	51,472
Remove billing periods consisting of 0 days	1	0%	51,471
Remove bad zip codes (outside of NM)	5	0%	51,466

The 10,056 customers that were dropped from the billing regression analysis were balanced across the treatment and control groups, as shown in Table 18. After the exclusion of these customers, the pre-period average daily energy consumption was essentially equal across treatment and control, indicating that the initial structure of the randomized controlled trial remained balanced.

Table 18: Billing Regression Data Filters by Wave

Wave	Group	Excluded from Billing Regression Analysis
Wave 1: 201203	Recipient	4,087
	Control	4,025
Wave 2: 201507	Recipient	929
	Control	885
Wave 3: 201705	Recipient	57
	Control	73
Total	**Recipient**	**5,073**
	Control	**4,983**

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.[10] 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.

[10] 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.

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

For each deployment wave, the post-program period of interest was the 2019 calendar year. The pre-program period varied for each wave, and was the calendar year prior to the original start date of each wave.[11] Table 19 summarizes key dates and time periods for each deployment wave.

Table 19: 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, 2019 – Dec 31, 2019
Wave 2: 201507	July 2015	Jan 1, 2014 – Dec 31, 2014	Jan 1, 2019 – Dec 31, 2019
Wave 3: 201705	May 2017	Jan 1, 2016 – Dec 31, 2016	Jan 1, 2019 – Dec 31, 2019

[11] Pre and post indicators were set using the start date of a billing period.

2.2.2 Findings

The results of the models we estimated for each of the three deployment waves are provided in Table 20, with a 90 percent confidence interval for the customer level energy savings. We found statistically significant savings in energy usage for recipients in all of the waves, 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 20: Savings by Deployment Wave

		Daily Savings (kWh)	
Wave	**N**	**Post * Treatment**	**%**
Wave 1: 201203	22,910	-0.53 ± 0.17	1.19% ± 0.39%
Wave 2: 201507	8,684	-0.38 ± 0.36	0.67% ± 0.64%
Wave 3: 201705	19,869	-0.57 ± 0.16	1.49% ± 0.43%

To calculate program level savings, each recipient's program participation duration was calculated for 2019. If a customer did not opt out of the program or cancel their electric service, they received 365 participation days. If a participant canceled their electric service or opted out in 2019, 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 2019 due to one of the other data screens (Table 18), then they were not included in the savings total for 2019. Customers that were dropped due to a lack of billing data prior to 2019 are the largest factor contributing to the difference in the energy savings calculated by the evaluation team and the original savings estimates calculated by the Energy Feedback program implementer.

The total participation days was multiplied by daily savings to obtain net savings. Table 21 shows the annual net savings for PY2019.

Table 21: PY2019 Energy Feedback Net Impact Summary

Deployment Wave	Net kWh Savings	Net kW Savings
Wave 1: 20120	1,736,540	548
Wave 2: 201507	365,603	201
Wave 3: 201705	1,237,907	205
Total	3,340,050	**954**

2.3 Residential Cooling

2.3.1 Residential Cooling Gross Impacts

Projects in the Residential Cooling program used deemed savings values for prescriptive measures, and the engineering desk reviews of these projects included the following:

- Review of measures available in the New Mexico 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, invoices, and applications; and
- Review of TRM/TA algorithms to identify candidates for future updates and improvements.

For the desk reviews, a sample of 13 projects were included in the 2019 review process. Ultimately, the engineering reviews resulted in adjustments made to the savings algorithm inputs based on more recent references. Specifically, the evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI). The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999[12] and 2001[13] as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program.[14] The evaluation team calculated the *ex post* savings using a 10 percent Loss_No_QI as noted in the Illinois TRM.[15]

This adjustment to the derating factor resulted in an engineering adjustment factor of 0.9213 for kWh and 0.8472 for kW.

2.3.2 Residential Cooling Net Impacts

Net impacts for the Residential Cooling program were calculated using NTG ratios from the participant phone survey or *ex ante* values, depending on the measure. For the AC and Heat Pump measures, the NTG ratio was developed using the self-report method described in the *Evaluation Methods* chapter using 2019 participant phone survey data. For

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[12] *New Jersey Residential HVAC Baseline Study*, XENERGY, Inc. November 16, 2001
[13] *Energy Saving Potential from Addressing Residential Air Conditioner and Heat Pump Installation Problems*, Chris Neme, February 1999
[14] http://www.energystar.gov/index.cfm?c=hvac_install.hvac_install_index
[15] https://s3.amazonaws.com/ilsag/IL-TRM_Effective_010119_v7.0_Vol_3_Res_092818_Final.pdf

the ECM measures, the *ex ante* NTG ratio of 0.66 was applied, which was derived based on participant phone surveys from the PY2018 evaluation. For the PY2019 program, the resulting NTG for all residential cooling measures is 0.5721.

Table 22 summarize the PY2019 net impacts for the Residential Cooling program using the NTG ratios described above.

Table 22: PY2019 Residential Cooling Impact Summary

Program	# of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings	NTG Ratio	Realized Net Savings
Res Cooling – kWh Impacts	76	141,888	0.9213	130,727	0.5721	74,785
Res Cooling – kW Impacts	76	41	0.8472	35	0.5721	20

2.4 School Education Kits

2.4.1 School Education Kits Gross and Net Impacts

The SPS School Education Kits program provides energy efficiency education and kits of easy-to-install energy efficiency and water saving measures such as LEDs, faucet aerators, and low-flow showerheads to students through participating schools. In 2019, 2,515 kits were distributed, with a total of 557,072 kWh and 186 kW gross savings claimed. To evaluate the impacts of the School Education Kits program, the evaluation team conducted a deemed savings review of the energy saving measures included in the school kits.

In the deemed savings review, we attempted to replicate the per unit savings values used by SPS based on the assumptions in the SPS Technical Assumptions. For all measures in the program, we found that the deemed savings values were being correctly applied from the Technical Assumptions documentation. The only adjustment was made to reflect the wattages of the four LEDs included in the kits. The program documentation references both 9 watt and 11 watt bulbs that are included in the kits, and so for the impact evaluation, it was assumed that two of the LEDs were 9 watts and two were 11 watts. This resulted in a gross engineering adjustment of 1.0261 for kWh and 1.0001 for kW. Based on our discussion with the program staff, it appears that the discrepancy was due to an internal data tracking issue that has since been resolved.

The NTG ratio for the School Education Kits program is stipulated at 1.00, and as a result, the realized net savings are equal to the realized gross savings of 571,588 kWh and 186 kW.

Table 23: PY2019 School Education Kits kWh Impact Summary

Program	# of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings	NTG Ratio	Realized Net Savings
School Education Kits – kWh Impacts	2,515	557,072	1.0261	571,588	1.0000	571,588
School Education Kits – kW Impacts	2,515	186	1.0001	186	1.0000	186

3 Cost Effectiveness Results

The evaluation team calculated cost effectiveness using the Utility Cost Test (UCT) for each individual SPS energy efficiency and demand response program, as well as the cost effectiveness of the entire portfolio of programs.[16] The evaluation team conducted these tests in a manner consistent with the California Energy Efficiency Policy Manual.[17]

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 24.

Table 24: 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 25. All programs except Saver's Switch had a UCT of greater than 1.00, and the portfolio overall was found to have a UCT ratio of 2.69.

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

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

Table 25: PY2018 Cost Effectiveness

Program	Utility Cost Test (UCT)
Business Comprehensive	2.32
Home Lighting & Recycling	5.64
Energy Feedback	1.64
Residential Cooling	0.85
School Education Kits	1.42
Home Energy Services	2.72
Saver's Switch	0.64
Smart Thermostat	0.37
Overall Portfolio	**2.69**

4 Process Evaluation Results

This chapter summarizes key methods and findings from the PY2019 process evaluation of the SPS Business Comprehensive, Residential Cooling, and School Education Kits programs. For these programs, we conducted phone surveys with program participants and phone interviews with contractors who were active in these programs in PY2019. These findings, along with findings from the impact evaluation, informed the conclusions and recommendations presented in the following chapter.

4.1 Business Comprehensive Participant Surveys

As part of the process evaluation, the evaluation team conducted telephone surveys with representatives from 31 participating companies that received rebates through the SPS Business Comprehensive program. The sample included participants in the Lighting and Motors sub-programs, and ultimately, surveys were completed with 15 participants from the Lighting sub-program, eight from the Custom sub-program, and eight from the Motors sub-program. The surveys were completed in March 2020 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.

SPS provided program data on the Business Comprehensive participant projects, which allowed the evaluation team to select a sample for surveys. The following subchapters report results on company demographics, sources of program awareness, motivations for participation, and program satisfaction.

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. Unlike past program years, the interviewed participants for 2019 did not include direct install participants.

4.1.1 Company Demographics

Participants were first asked demographic questions related to their businesses. Ninety-one percent of participants reported that they owned the building where their energy efficient measures were installed (Figure 3).

Figure 3: Building Ownership

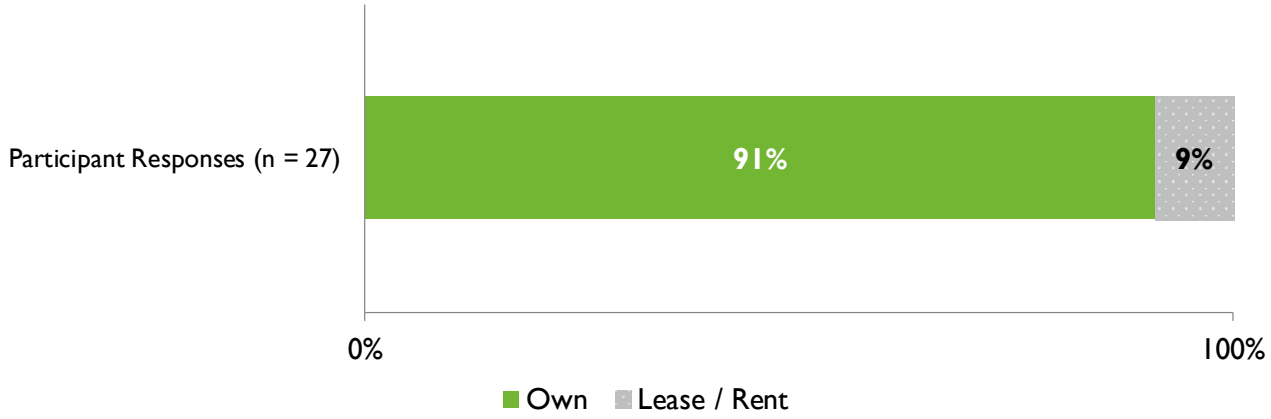


Figure 4 and Figure 5 summarize the survey respondents' number of employees and building size. Seventy-four percent of participants reported having 250 or more full-time employees, and 50 percent of participants stated that they occupied buildings of 50,000 square feet or more.

Figure 4: Number of Employees

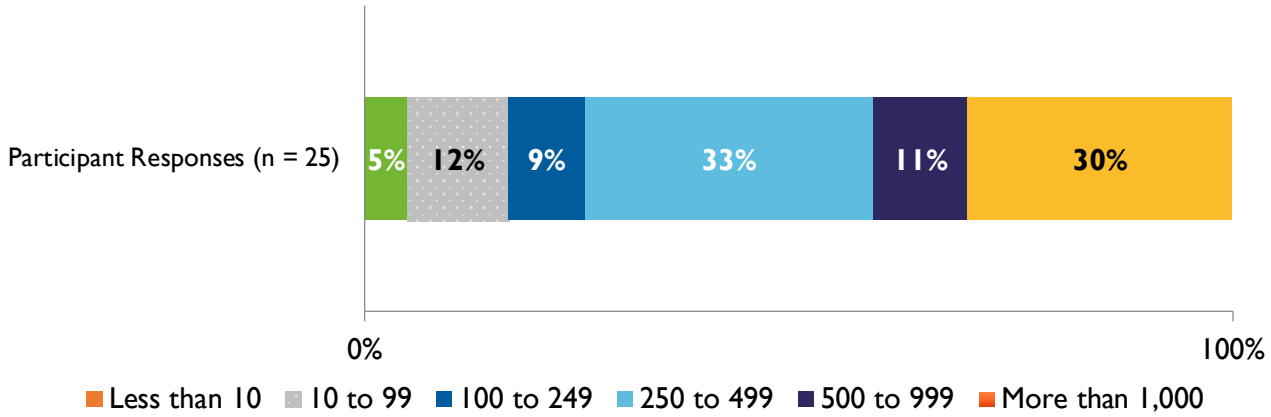
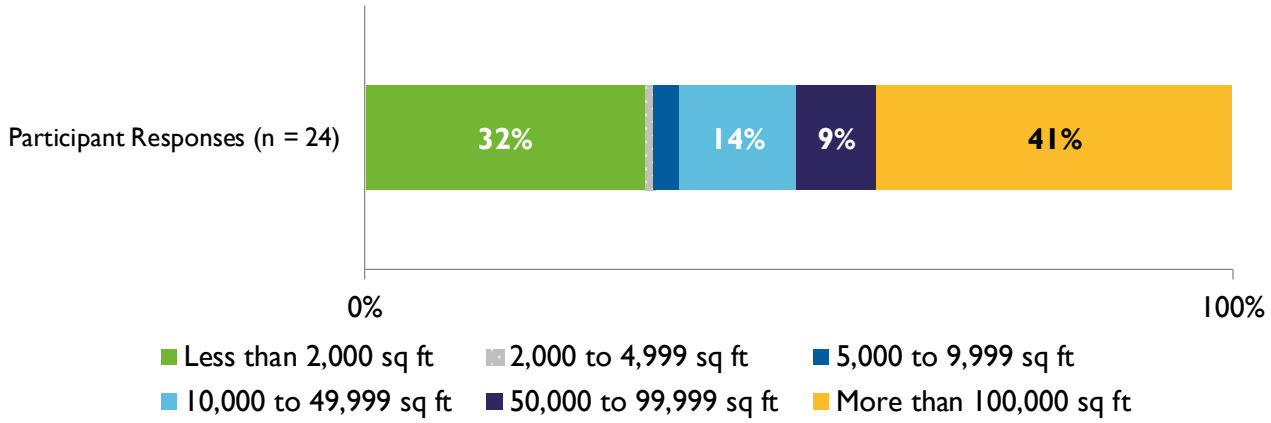
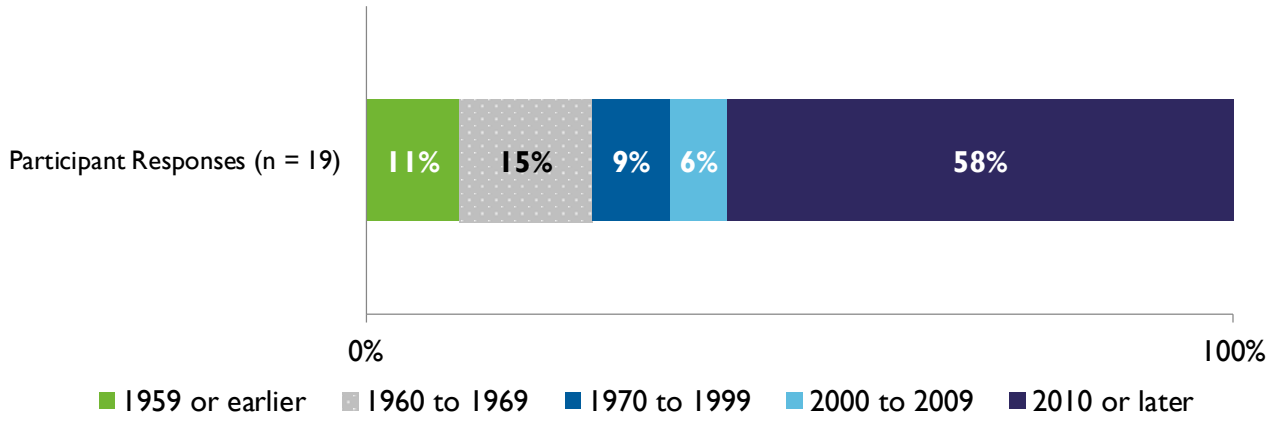


Figure 5: Building Size



Additionally, Figure 6 shows that the majority (58 percent) of participants reported that their buildings were constructed in or after 2010. This is consistent with previous program years, where survey participants represented newer building projects.

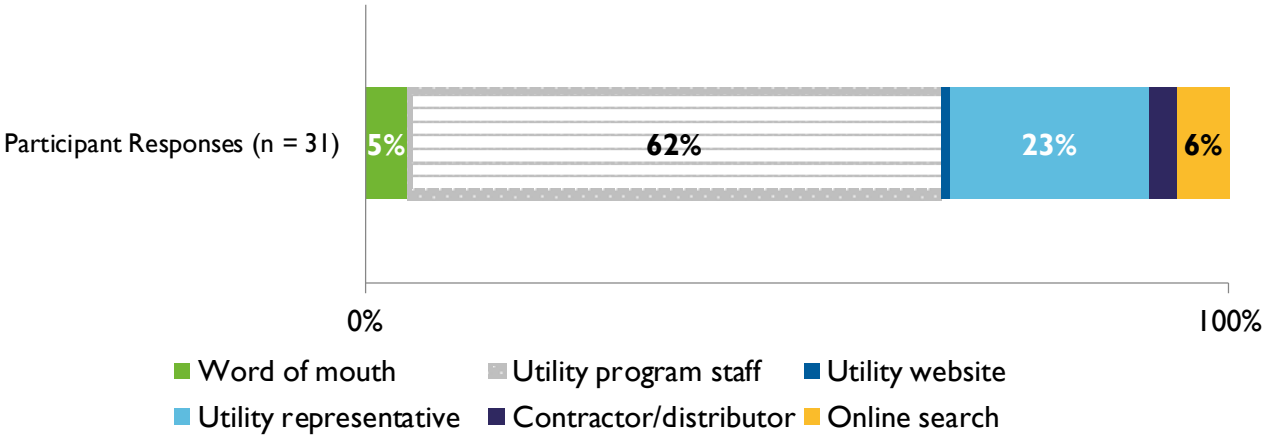
Figure 6: Building Age



4.1.2 Sources of Awareness

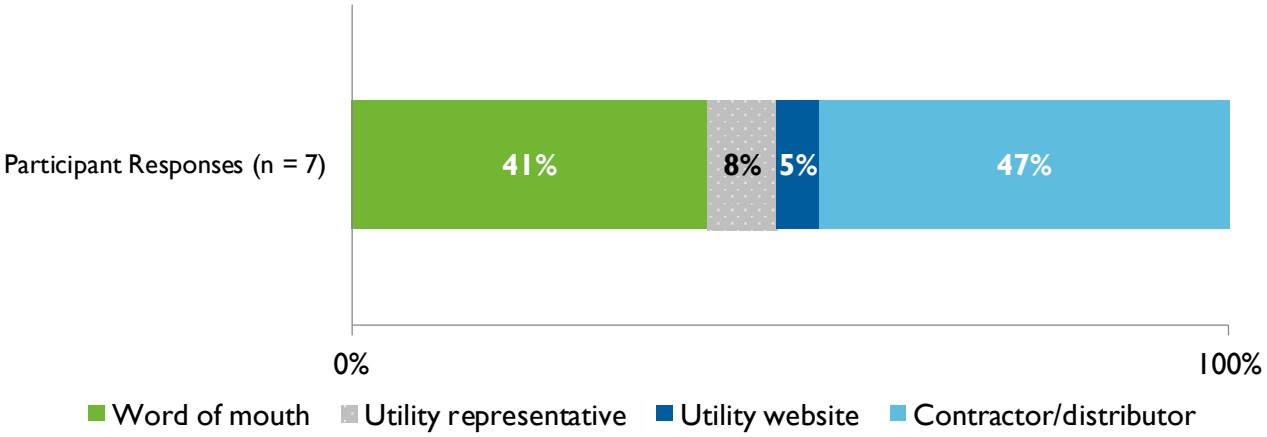
Participants were then asked to recall how they first became aware of the Business Comprehensive program's rebates and assistance (Figure 7). While participants reported learning about the program through a variety of channels (e.g., word of mouth, contractors and/or distributors, interactions with SPS, and online web searches), 86 percent of participants learned about the program offerings through interactions with SPS staff or the SPS website.

Figure 7: Initial Source of Awareness



For those who indicated that they learned about the program through multiple sources, the evaluation team asked which source was the most useful in their decision to participate. As shown in Figure 8, interactions with contractors or distributors were most frequently cited as the most useful source of awareness (47%), followed by word of mouth (41%).

Figure 8: Most Useful Source of Awareness

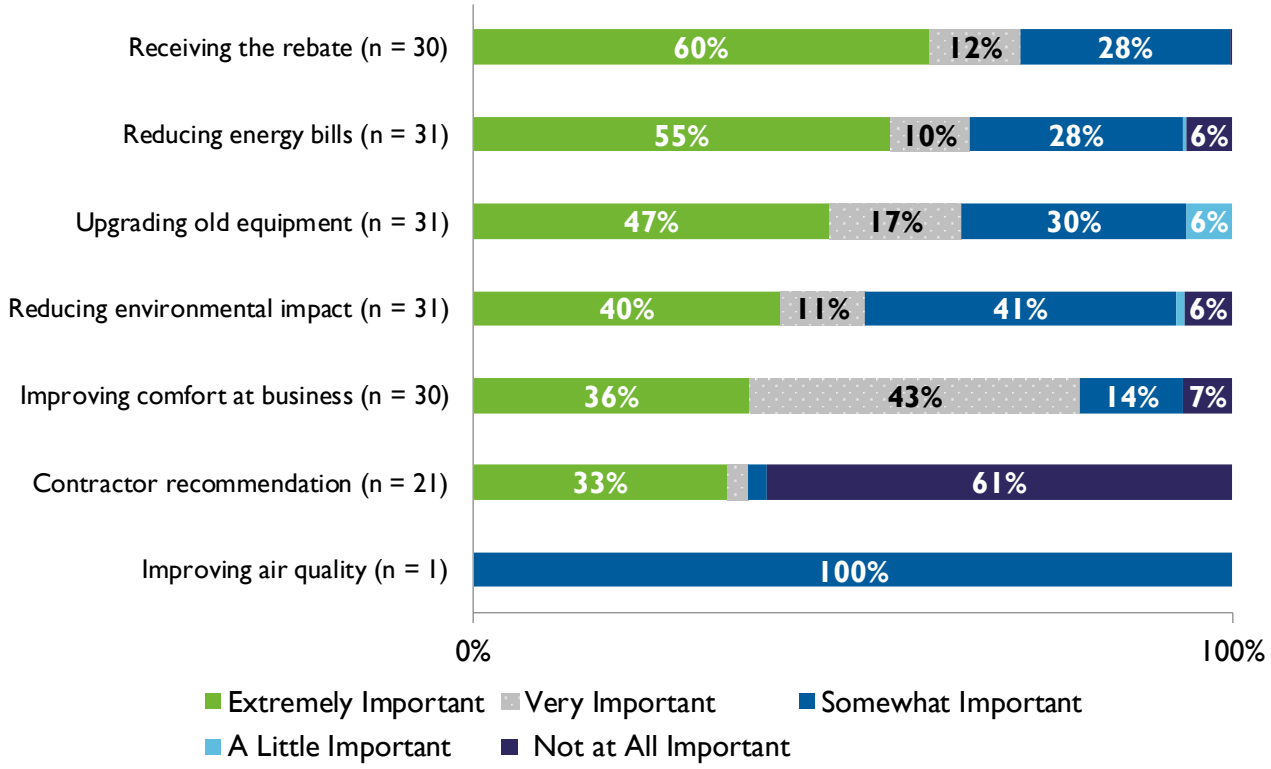


4.1.3 Motivations for Participation

Participants were then asked to rate a list of factors that might have influenced their decision to participate in the program (Figure 9). Receiving the rebate was the most influential factor across all respondents, with 60 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 reducing energy bill amounts (55 percent rating it extremely important) and upgrading out-of-date equipment (47 percent rating it extremely important).

Conversely, participants were less likely to rank the contractor recommendation as an important factor, with 61 percent of participants stating that it was not at all important in their decision-making process.

Figure 9: Motivations for Participation

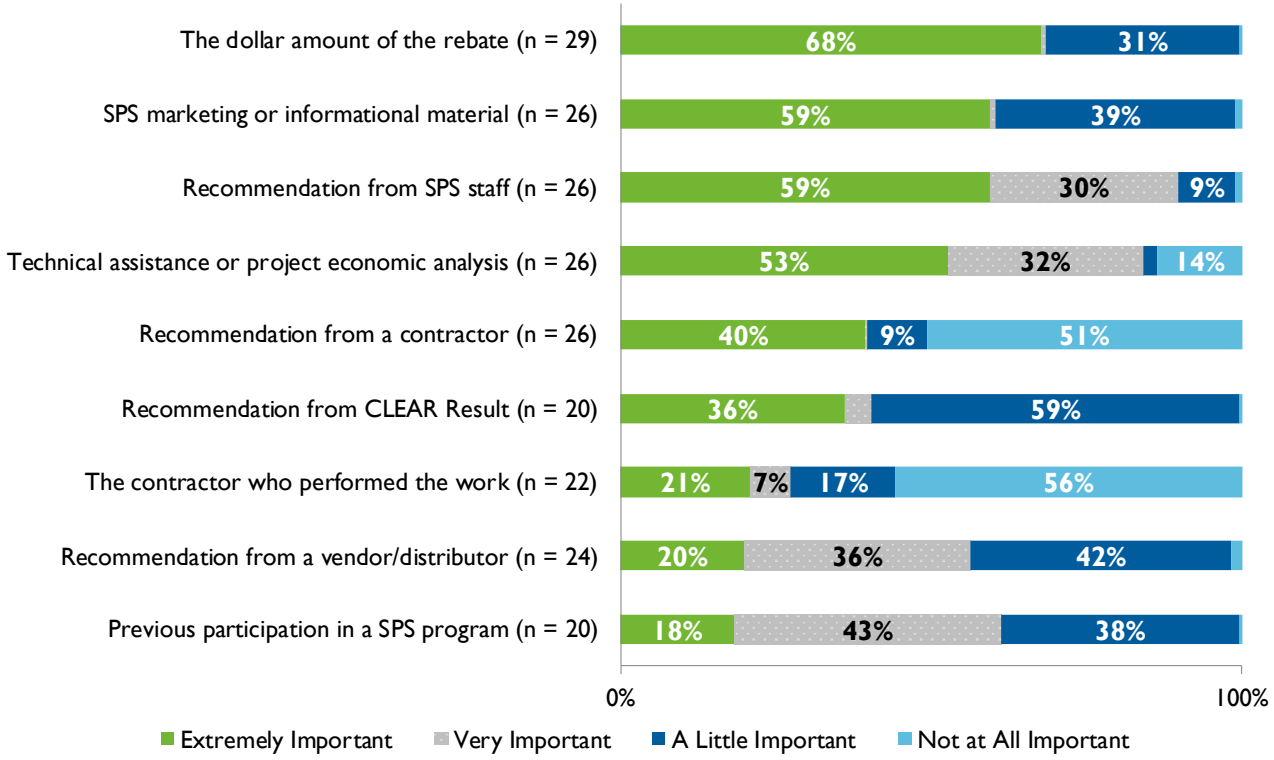


In addition, respondents were given a list of program and non-program factors that may have influenced their decision to participate in the program and were asked to rate each factor on a 0 to 10 point scale.[18] For program factors, as shown in Figure 10, participants were most likely to indicate the dollar amount of the rebate (68%), information provided by SPS (59%), and recommendations from SPS (59%) as extremely important in their decision to upgrade their equipment.

In contrast, previous participation in an SPS program was the least important program factor for participants, with only 18 percent indicating it was extremely important. This is somewhat consistent with previous program years; in 2017, previous participation in an SPS program was also the least important program factor, but in 2018, it was rated as the second most important factor.

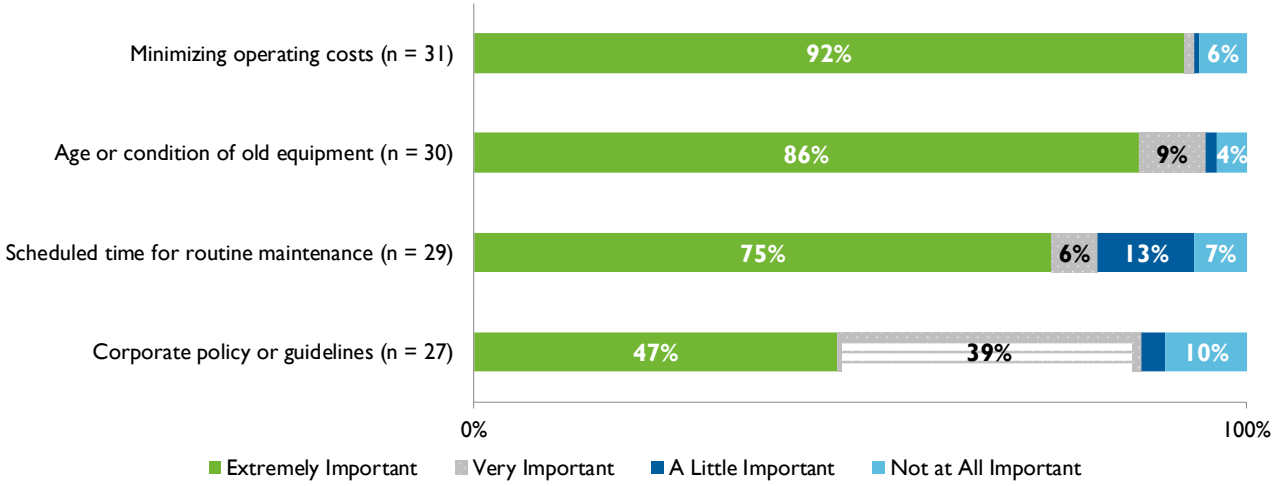
[18] On the 0 to 10-point scale, 0 indicated 'not at all important' and 10 indicated 'extremely important'.

Figure 10: Importance of Program Factors



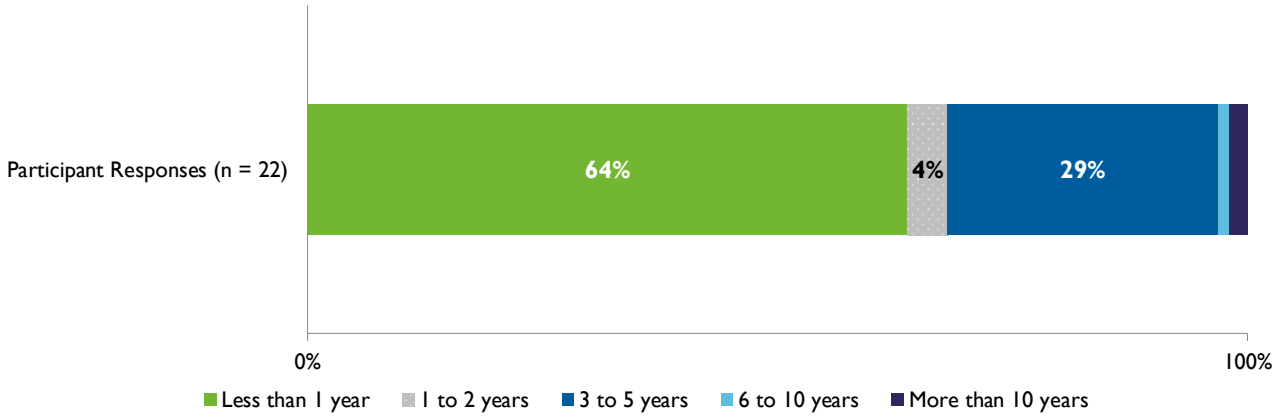
For non-program factors, participants were most likely to rate minimizing operating costs as extremely important (92%; Figure 11), followed by the age or condition of the old equipment (86%), scheduled routine maintenance (75%), and finally, corporate policy and guidelines (47%).

Figure 11: 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. Sixty-four percent of surveyed respondents stated that their equipment would not have lasted more than a year (Figure 12). This suggests that the program may be targeting customers who would have needed to replace equipment anyway (i.e., free riders), rather than targeting customers with functioning equipment.

Figure 12: Equipment Remaining Life



4.1.4 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". The program components included

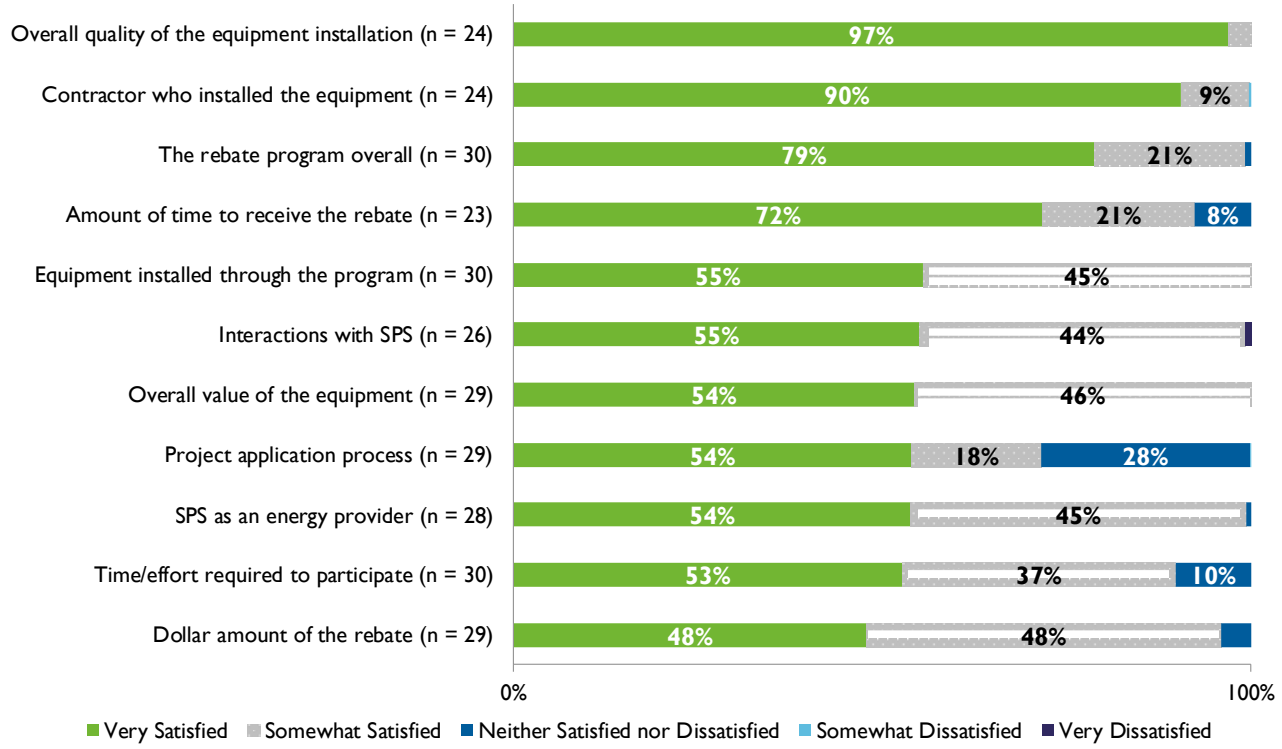
- SPS as an energy provider
- The rebate program overall
- The equipment installed through the program
- The contractor who installed the equipment
- Overall quality of the equipment installation
- The time it took to receive the rebate
- The dollar amount of the rebate
- Interactions with SPS
- The overall value of the equipment for the price they paid
- The time and effort required to participate
- The project application process

Figure 13 summarizes the satisfaction levels of the Business Comprehensive program participants.

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 overall quality of the equipment installation (97%) and the contractor who installed the equipment (90%).

Additionally, the program component with the highest number of "neither satisfied nor dissatisfied" ratings was the project application process, with 28 percent of participants rating the factor in this way.

Figure 13: Participant Program Satisfaction



4.1.5 Net Promoter Score

In order 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.

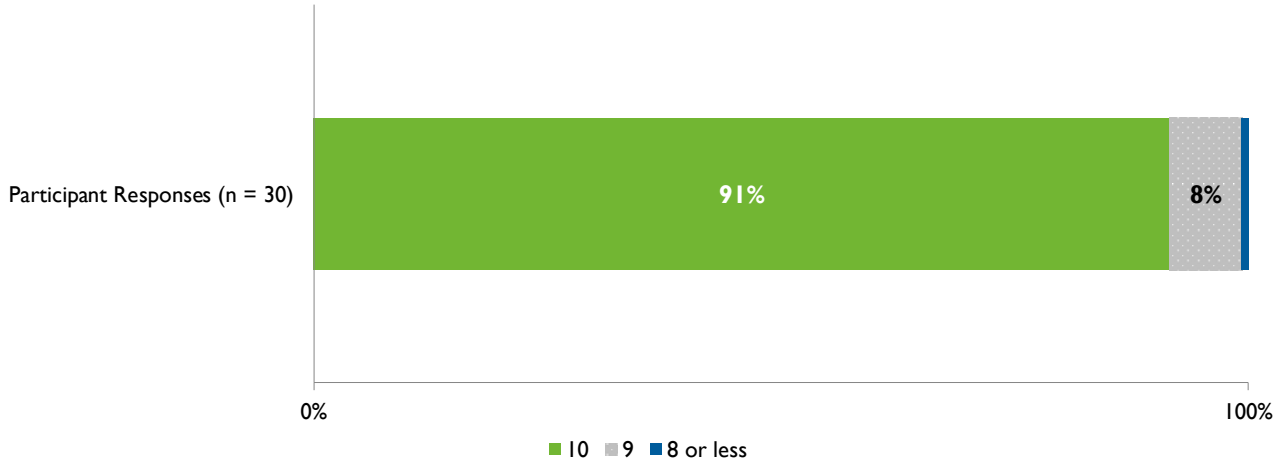
The net promoter score is then calculated using the following formula:

Net Promoter Score = % of Promoters - % Detractors

Responses from participating customers yielded a net promoter score of 99 percent. Figure 14 shows the distribution of responses, with 99.3 percent of respondents counting as promoters and 0.2 percent as detractors.

Participants who answered with a score of 8 or less were asked to elaborate on their scores. While two participants declined to answer this question, one participant who gave a rating of 7 stated that they liked the program, while the participant who gave a rating of 5 stated that other cost factors influenced their decision to rate the program as a 5.

Figure 14: Distribution of Net Promoter Question Responses



4.2 Business Comprehensive Contractor Interviews

SPS provided contact information for six contractors that were active in the Business Comprehensive program in 2019. From this list, the evaluation team completed interviews with two contractors, and these interviews focused on the following topics:

- Contractor background and program involvement;
- Program satisfaction; and

- Role and influence of the SPS programs in the market.

Due to the low number of interviews and the depth of discussion, this section presents results in a qualitative fashion to show the range of perceptions and responses.

4.2.1 Contractor Background and Program Involvement

Interviewed contractors from the Business Comprehensive program reported that most of their projects in 2019 were completed in the commercial sector. The two interviewed contractors were both project managers and primarily specialize in lighting and HVAC equipment.

4.2.2 Program Satisfaction

Contractors were asked to quantify their level of satisfaction with the program overall using a 1 to 5-point scale, with 1 indicating very dissatisfied and 5 indicating very satisfied. Both contractors with the Business Comprehensive program rated the program a 5 (very satisfied).

Both interviewed contractors were satisfied with the program and praised SPS for consistent and clear communication. Both contractors mentioned that SPS has made the program offerings clear and easy to navigate, resulting in the contractors being able to easily market and upsell to higher efficiency equipment.

When asked to describe their experience with the process of completing the paperwork required for the program, the consensus was positive overall; however, only one of the two interviewed contractors were involved in the paperwork process. The contractor who is involved with the process of completing the paperwork went on to say "The rebate portion is pretty simple. The bigger projects require a little more paperwork but it's still easy enough."

4.2.3 Program Influence

In an effort to gauge the level of influence the Business Comprehensive program has on the market for energy efficient equipment, the evaluation team explored what role the program played in the contractors' and customers' ultimate choices, and how contractors became aware of the SPS programs. Only one of the two interviewed contractors answered this battery of questions.

The one contractor who answered these questions believes that the Business Comprehensive program will continue to increase the interest and demand for energy efficient equipment, noting that businesses are constantly looking to lower operating costs and will continue to look at energy efficient measures to accomplish that. The contractor went on to note that their customers are typically aware of the rebate before speaking with them but due to the large budgets and facilities their firm works with, "the rebate is

typically second hand – they want to use the higher efficiency equipment because it's better and more cost effective, and not necessarily because the rebate is available."

However, this observation is somewhat inconsistent with what we see in Figure 9 where 72 percent of respondents indicated that receiving the rebate was either extremely or very important in their decision to conduct the project.

When asked to recall how they first became involved with the program, one interviewed contractor reported they first heard about the program through SPS roughly 15 years ago. The other contractor learned about the program through the previous company he was working for. Both contractors reported facing no barriers and had no reservations about participating.

The assessment of program influence is similar to what was found when we interviewed contractors during the PY2018 evaluation. In last year's evaluation, contractors provided mixed opinions on the influence of the program, with some indicating that it was less effective to use the program as a marketing tool due to declining rebate levels.

The contractor results from both years are consistent with the conclusions drawn from the participant surveys and net impact analysis—that the program support is one of several influences affecting customer equipment choice. While the program is having a positive effect on efficiency, there are also non-program factors driving these decisions including minimizing operating costs, the age or condition of the old equipment, scheduled time for routine maintenance, and corporate policy or guidelines. Ultimately, this is reflected in the free ridership calculations.

One possibility for decreasing free ridership is to increase the program emphasis on earlier replacements. While this is already emphasized to some degree by the program, many participants surveyed (64%) indicated that they had less than one year left on their current equipment, that the decision was driven in part by a desire to reduce operating costs (92% extremely important), and/or that it was part of scheduled maintenance (75% extremely important). Reaching customers that have less urgent equipment replacement needs may make them more receptive to considering an energy efficient upgrade, as these other non-program factors may have a lower level of influence when the equipment is still operating satisfactorily and not in imminent need of replacement.

Residential Cooling

For the Residential Cooling program process evaluation, the evaluation team conducted surveys with participating customers and interviews with contractors that installed high efficiency air conditioners or heat pumps. A sample of 25 participants with information on the type of energy efficient air conditioner or heat pump installed was used for the phone survey. The participant phone survey was designed to verify that program rebated

measures are still installed and functional as well as to gather information on participant satisfaction and to calculate the free ridership rate. For the contractor interviews, SPS provided a list of the six contractors with rebated air conditioners or heat pump installations in 2019. The contractor interviews were designed to gather information on their typical approach to heat pump and energy efficient cooling system upgrades, how the Residential Cooling program fits in to what they offer their customers, how influential the program is in the customer's decision to install the rebated measures, and the contractors' satisfaction with the program.

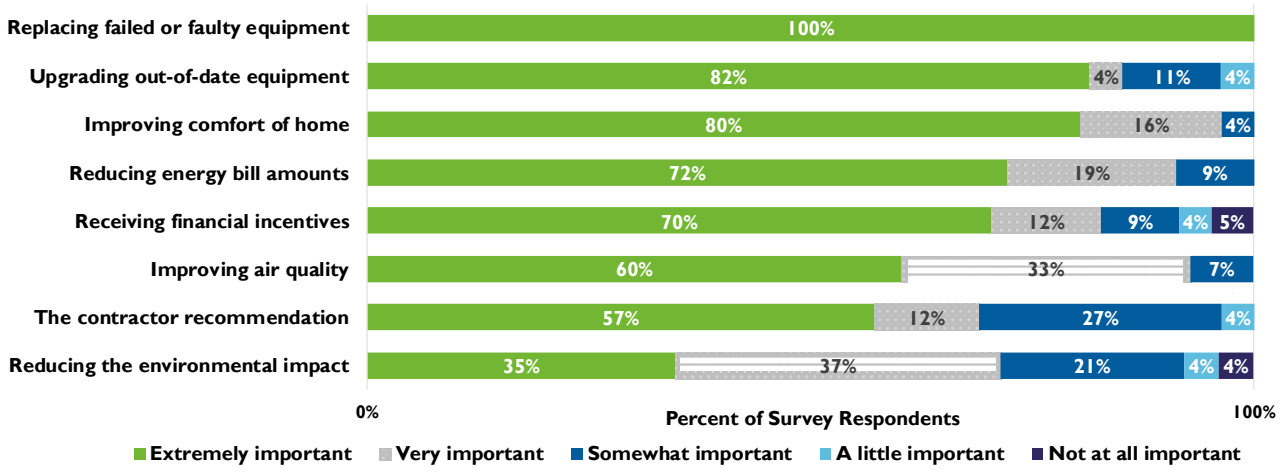
4.2.4 Participant Surveys

The evaluation team recruited and conducted 15 full telephone surveys with program participants who had been identified by SPS as active participants in the utility's Residential Cooling program. All program participants that completed the full survey reported they own the home where the rebated measure was installed and live in homes of between 1,500 to 2,499 square feet (70%) and 2,500 to 3,999 square feet (30%).

To better understand what motivates customers to participate in the Residential Cooling program, the evaluation team asked the survey respondents the level of importance of a variety of factors that might be influencing customers to participate in the program. The majority of all survey respondents reported all factors as being very or extremely important in their decision to upgrade their air conditioner or heat pump. Replacing failed or faulty equipment[19], improving the comfort of the home, improving air quality, and reducing energy bill amounts were the most important factors, with at least 91 percent of respondents reporting they were very or extremely important in their decision. The contractor recommendation was the least important factor on average (but still important), with 69 percent reporting it was very or extremely important in their decision (Figure 15).

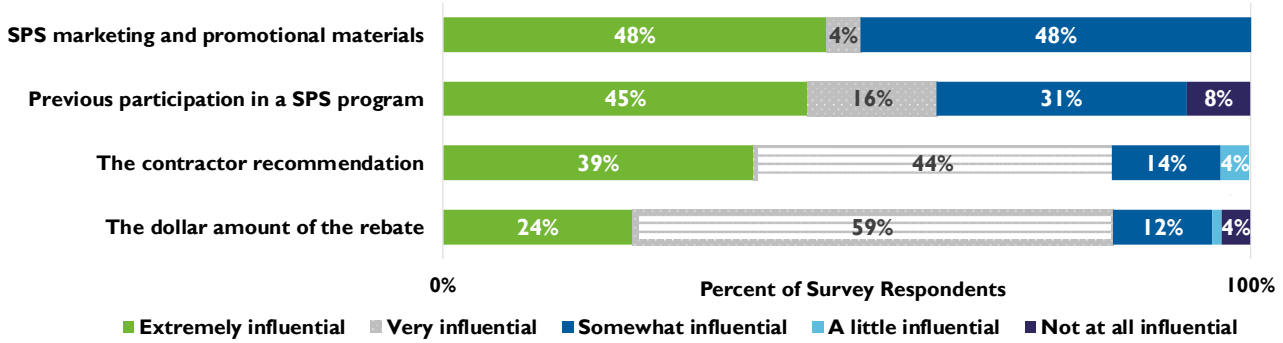
[19] Note that replacing failed or faulty equipment is not easily categorized as either a program factor or non-program factor, since a standard efficiency replacement option is always available. This issue will be explored in more detail in a future evaluation.

Figure 15: Importance of Non-Program Factors on Decision to Participate in Program



In addition to motivations for participating, respondents were given a list of potential factors that may have influenced their decision to upgrade to an energy efficient air conditioner or heat pump and were then asked to rate their influence on a 0 to 10 point scale where 0 was "not at all influential" and 10 was "extremely influential". As shown in Figure 16, the contractor recommendation and dollar amount of the rebate were reported as the most influential factors, with 83 percent of survey respondents reporting they were either very or extremely influential in their decision to install the energy efficient air conditioner or heat pump. SPS marketing and promotional materials were the least influential (but still influential), with 52 percent reporting it was very or extremely influential. Sixty-one percent of respondents reported that previous participation in an SPS program was very or extremely influential in their decision.

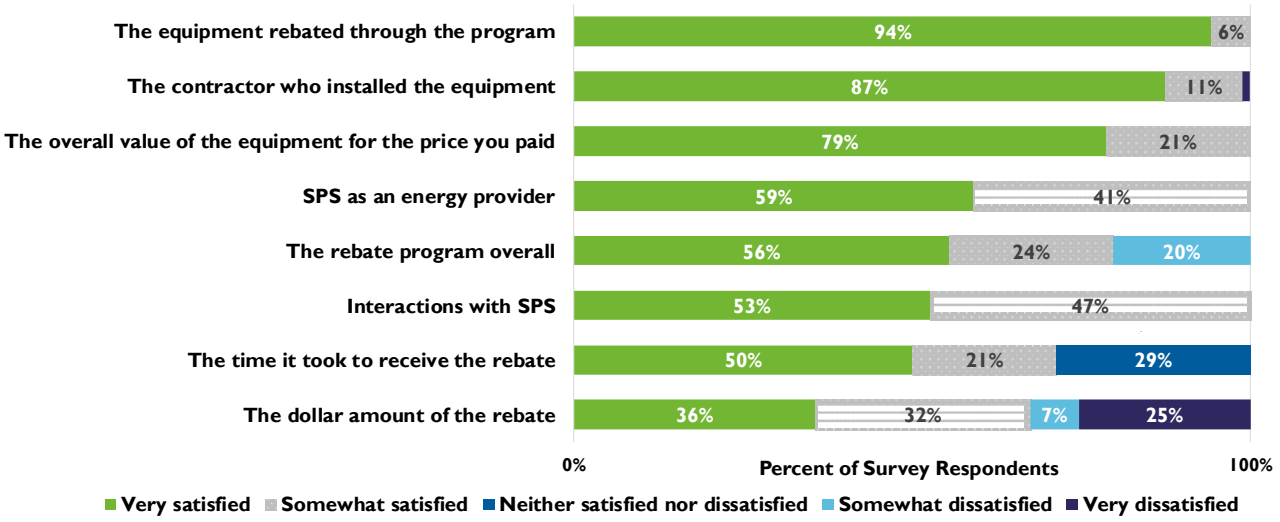
Figure 16: Influence of Program Factors on Decision to Participate in Program



The participants were asked to evaluate their satisfaction with various components of the Residential Cooling program on the following scale: very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. Overall, the

surveyed program participants expressed high levels of satisfaction with the Residential Cooling program components. The equipment that was rebated through the program received the highest satisfaction rating, with 94 percent being "very satisfied," followed by the contractor who installed the equipment with 87 percent "very satisfied", and the overall value of the equipment received for the price paid, with 79 percent reporting being "very satisfied." The dollar amount of the rebate received the lowest satisfaction rating (but respondents were still relatively satisfied), with 36 percent reporting they were "very satisfied" (Figure 17).

Figure 17: Satisfaction of Program Participants



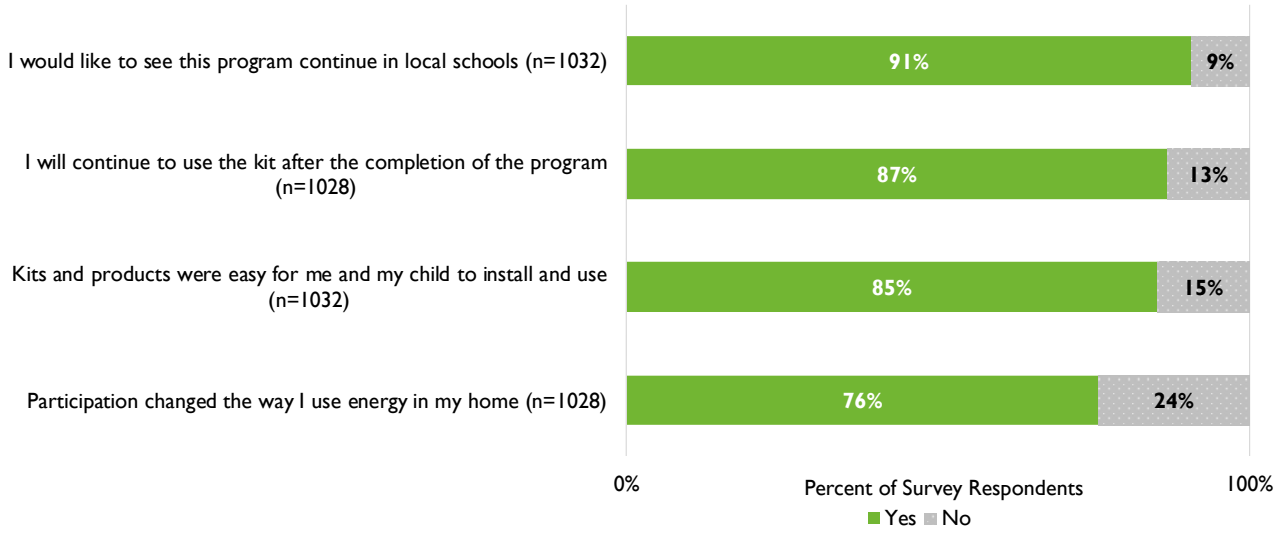
4.3 School Kits

Through the School Educations Kits program, SPS provides energy efficiency education and distributes kits containing LEDs, faucet aerators, and low flow showerheads to elementary and middle school students. SPS provided the evaluation team with data from the students, parent and teacher surveys that are distributed along with the kits as part of the School Education Kits program. The evaluation team conducted analysis on these data to assess satisfaction and feedback associated with the program.

Parents of students who took part in the program were asked program-related questions that aimed to improve the School Kits program for future classes. Overall, responses were positive. As shown in Figure 18, the majority of parents indicated that they would like to see the program continued in local schools (91%), will continue to use the kit after the program (87%), the products were easy to use and install (85%), and participation in the program changed the way the household uses energy (76%). When given the chance to leave comments, many participants mentioned that they appreciated that the program was

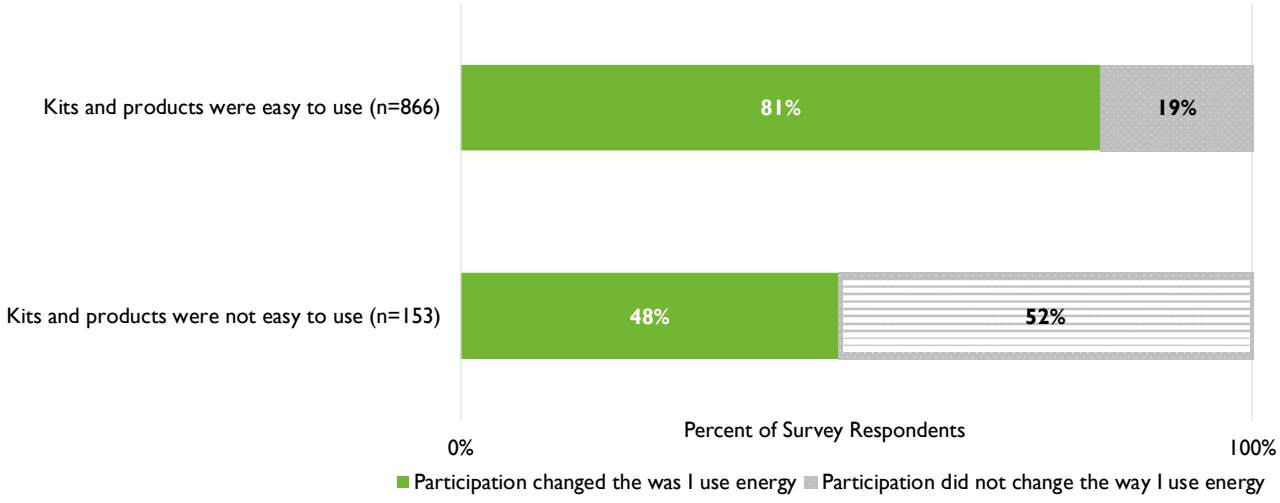
educating students on energy efficiency and believed that more schools should participate in this program.

Figure 18: Parent Opinions Regarding the School Education Kits Program



Interestingly, parents were more likely to report that their participation changed the way they use energy in the home if they thought the products were easy to use, shown in Figure 19.

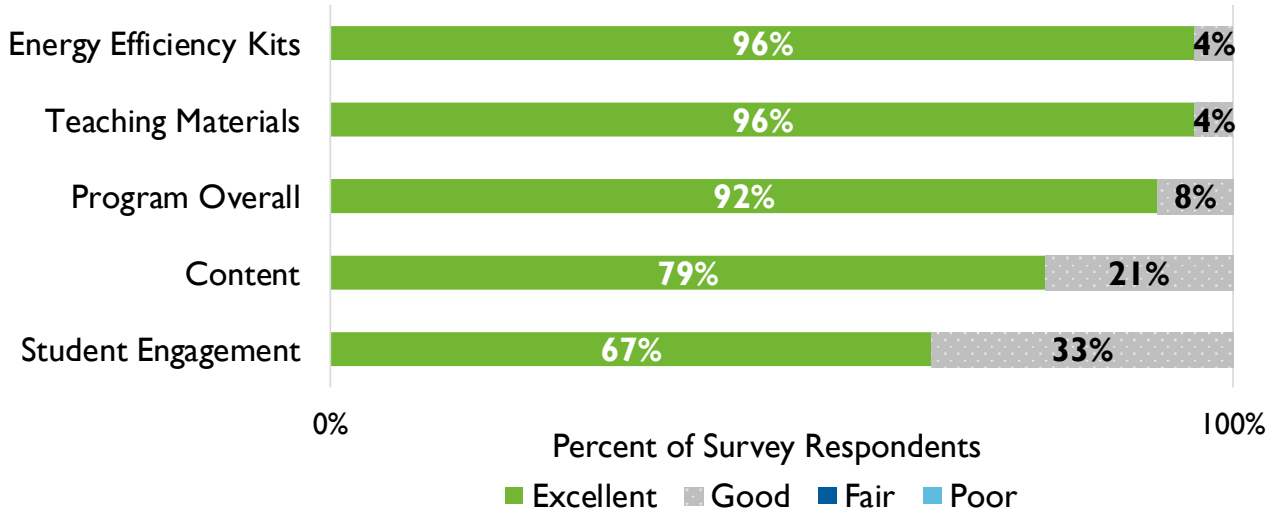
Figure 19: Change in Home Energy Usage Compared to Ease of Use of Kits



Teachers were also asked to give their opinion about the program; overall, 92 percent of teachers rated the program as excellent, as shown in Figure 20. The lowest rating received

was regarding student engagement, although 100 percent of teachers still reported that it was either good or excellent. All of the teachers believed the gift card that they received as a thank you for participating was a good incentive.

Figure 20: Teacher Opinions Regarding School Education Kits Program (n=24)



The majority of teachers who responded felt the School Education Kits was great the way it is; however, a small portion offered suggestions to help improve the program, including:

- Try and correlate the lessons with academic science standards if possible;
- Creating an online resource where students can pull videos and activities; and
- More direction on how to use kit materials (e.g., sink aerators were difficult for some students to use.

Participants were also asked to indicate whether or not they had installed the equipment from their kits (Figure 21 and Figure 22). In general, about 75 percent of participants were likely to indicate that they had either already installed the equipment or planned to install each piece of equipment. Participants were most likely to have already installed the night light (75%) and the first 9-watt lightbulb (53%), and they were least likely to have already installed the filter whistle (27%). To supplement the survey results, when given the opportunity to expand on their favorite aspects of the energy kit, participants were most likely to mention the night light or the LED lightbulbs.

Figure 21: Installation Rates of Kit Equipment (n = 1088)

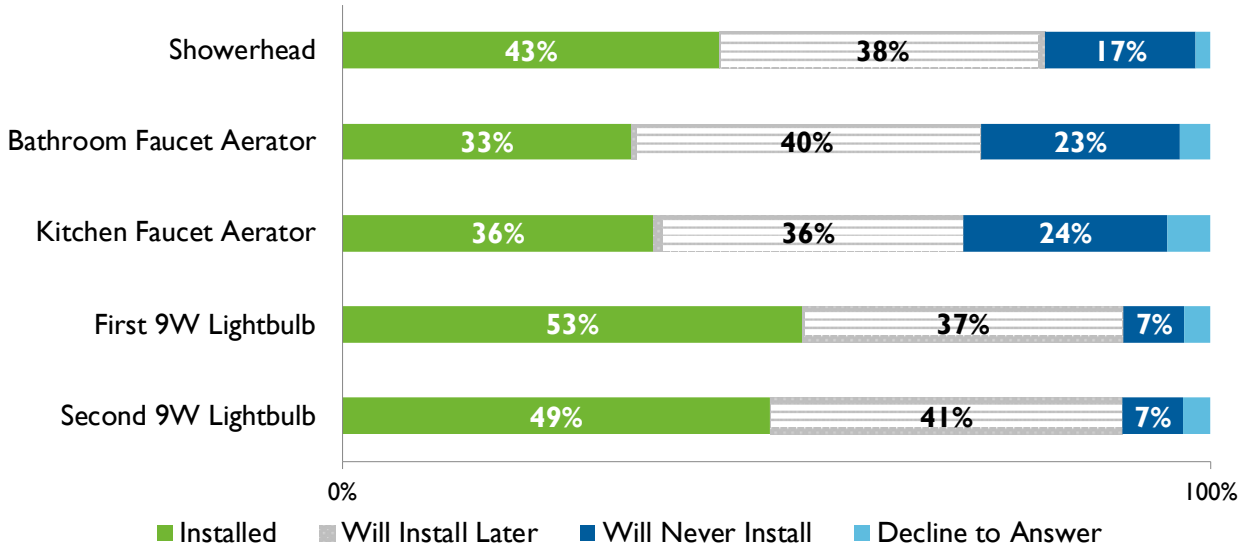
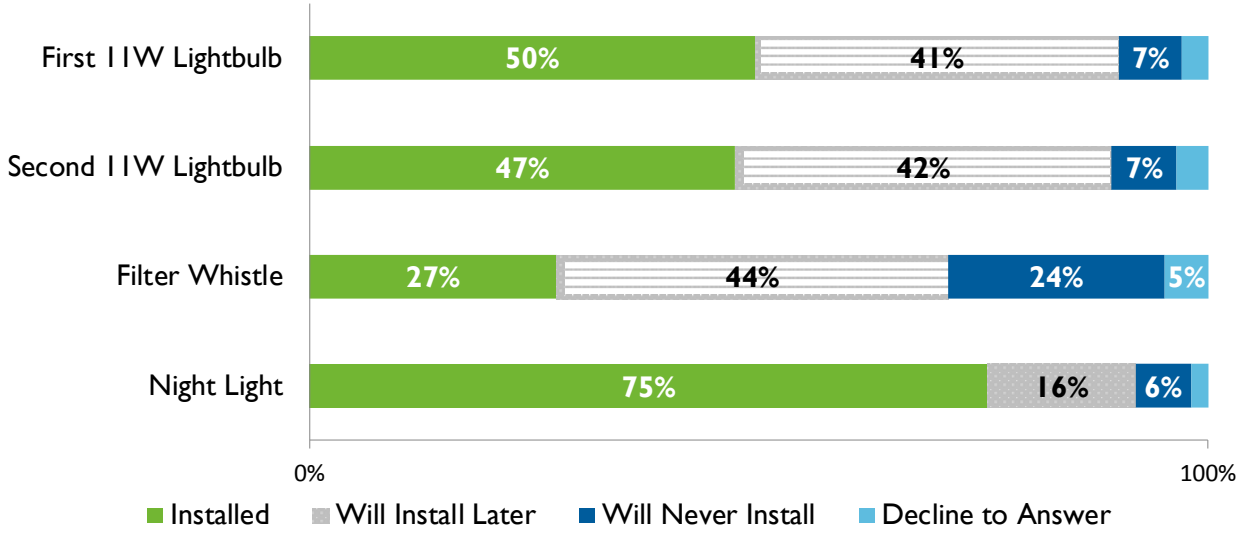


Figure 22: Installation Rates of Kit Equipment (n = 1088)



Participants were then asked about how they would adjust their thermostat settings in the winter and summer after the completion of the program. In the winter (Figure 23), 74 percent of participants stated that they would decrease their thermostat temperatures, with 32 percent of participants indicating that they would adjust their thermostats by three to four degrees.

Similarly, in the summer (Figure 24), 74 percent of participants stated that they would increase their thermostat temperature for cooling, with 33 percent of participants indicating that they would adjust their thermostats by three to four degrees.

Figure 23: Thermostat Changes in Winter for Heating

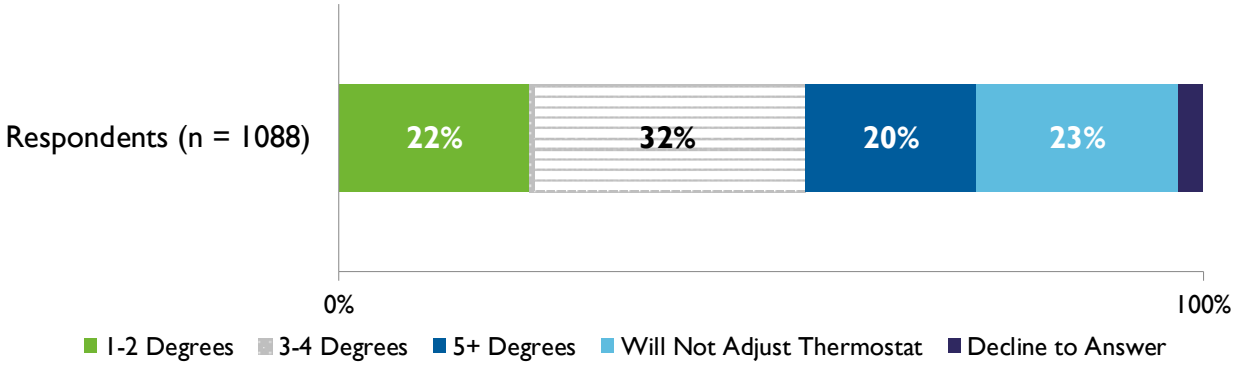
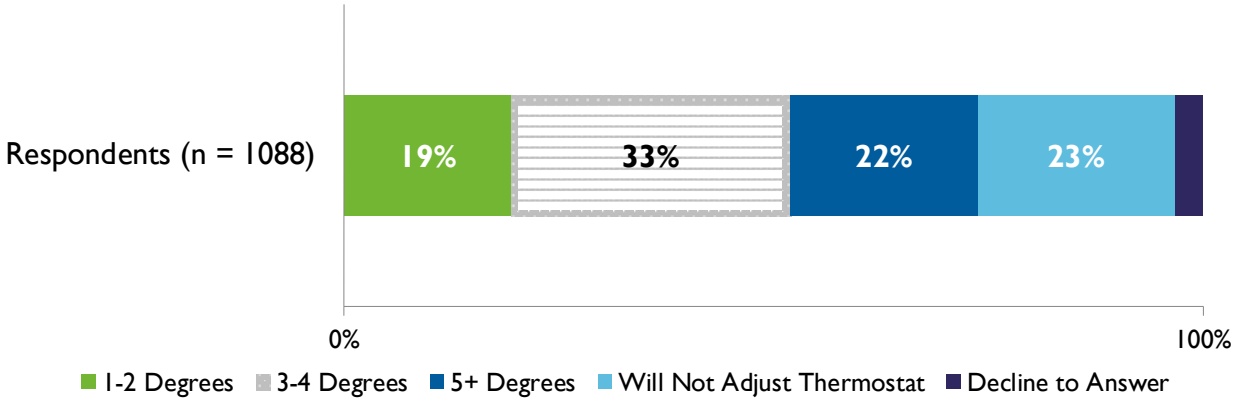
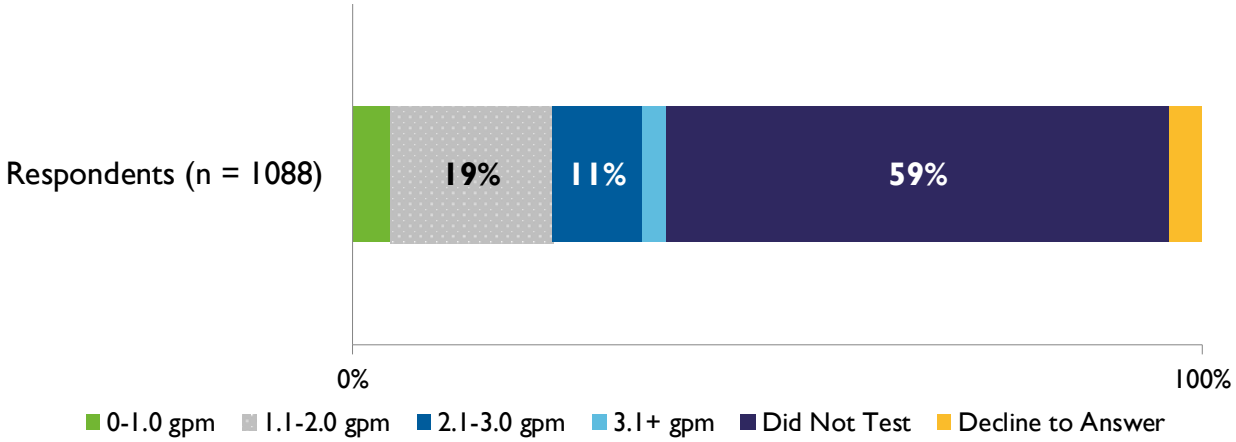


Figure 24: Thermostat Changes in Summer for Cooling



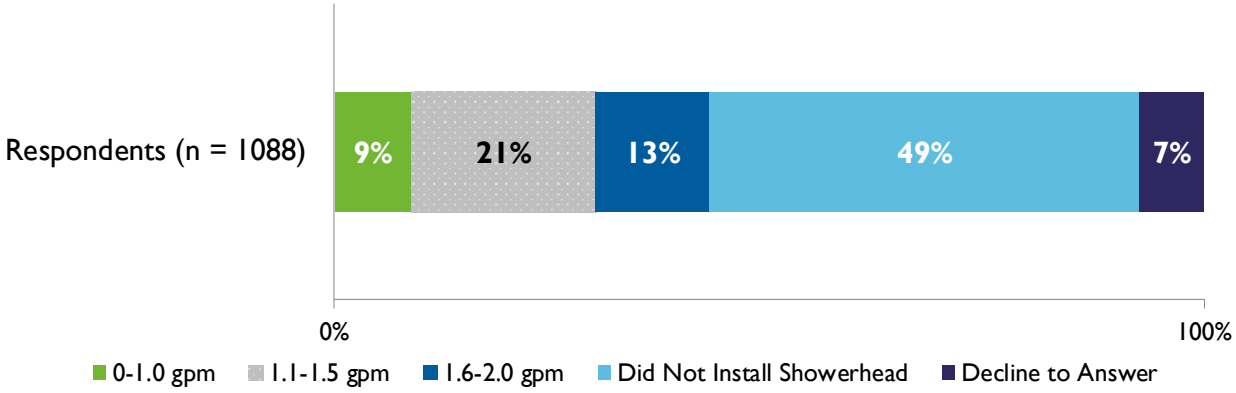
Participants were then asked about the flow rate of both their old showerhead and their new high-efficiency showerhead. While 60 percent of participants did not test the flow rate of their original showerhead (Figure 25), 19 percent of participants indicated that the original flow rate of their showerhead was between 1.1 and 2.0 gallons per minute (gpm).

Figure 25: Flow Rate of Old Showerhead



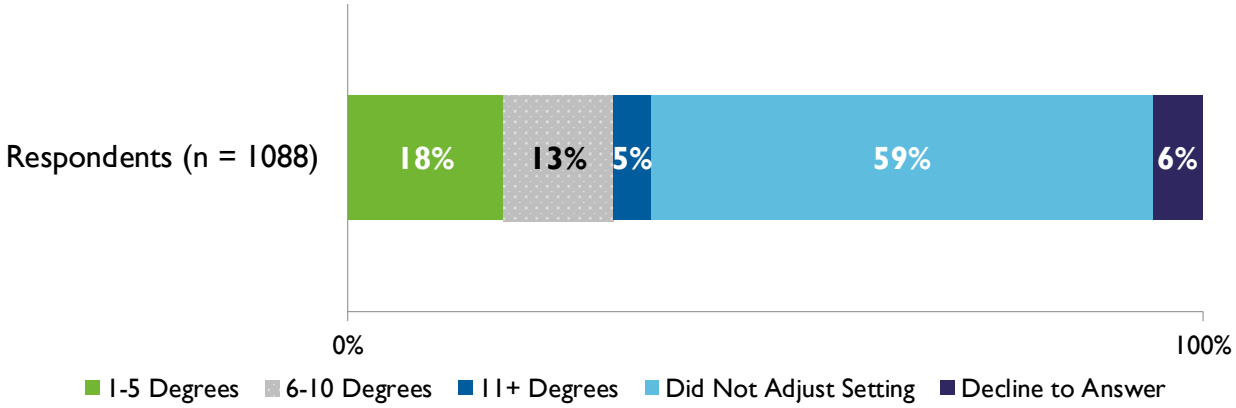
While 49 percent of participants did not install the new showerhead, those who did were most likely to indicate that their new showerhead flow rate was between 1.1 and 1.5 gpm (Figure 26).

Figure 26: Flow Rate of New Showerhead



Lastly, participants were then asked how much they had changed their water heater settings following program completion (Figure 27). Although 59 percent of participants did not adjust their water heater settings, 18 percent indicated that they had lowered their settings between one and five degrees, and 5 percent of participants indicated that they had lowered their water heater settings by over 11 degrees.

Figure 27: Changes in Water Heater Settings



Overall, it appears the School Education Kits program is well received by both parents and teachers, as a large majority reported positive opinions of the program, with only minor suggestions for improvements.

5 Conclusions and Recommendations

Based on the results from the data collection and analysis described in the previous chapters, the evaluation team has developed a number of conclusions and associated recommendations to improve SPS's programs.

5.1 Business Comprehensive Program

Impact evaluation activities for the Business Comprehensive program included engineering desk reviews for a sample of projects from each sub-program. A subset of sampled projects also received a site visit by an evaluation engineer. Based on these desk reviews and site visits, an overall engineering adjustment factor of 1.0319 was found for kWh savings and 0.9729 was found for kW savings. For individual projects with engineering adjustment factors that varied from 1.0, there were a number of reasons for those discrepancies:

- Specific *ex ante* calculation steps and adjustments for multiple prescriptive projects are only documented in the processing database and were not documented in the files available for the evaluation team's review.
    - In the files that were available for the evaluation team's review, specific steps taken for individual projects between application submission and final reported savings were not always clearly documented, as adjustments were presumably made in SPS's processing database.

- Using inputs from provided project documents and following algorithms from the SPS Technical Assumptions resulted in savings different (both higher and lower) than those reported by SPS for multiple projects.
- Without additional documentation of any adjustments made by SPS in the processing database, the reasons for differences between reported and verified savings were not always clear to the evaluation team.
- **Recommendation:** Provide documentation of calculation steps and adjustments made for each project, ensuring that submitted project documentation can be followed to reproduce the reported savings estimates.

- For lighting projects that were noted to operate 24 hours per day, seven days per week, the evaluation team used the HVAC interactive energy and demand factors for a 24-hour facility type as listed in SPS' Lighting Technical Assumptions.
  - **Recommendation:** If a facility is noted to operate 24 hours per day on the application, utilize the HVAC interactive energy and demand factors for a 24-hour facility building type that is noted in SPS' Lighting Technical Assumptions.
- For the projects included in the desk review sample which calculated savings using SPS's custom lighting calculator tool, an HVAC interactive energy factor of (1/3) x 0.33 and an HVAC interactive demand factor of 0.33 were applied for all projects, regardless of building type. However, the interactive effects that lighting upgrades have on HVAC systems vary based on the building type. Therefore, different HVAC interactive factors should be applied to different building types. The evaluation team adjusted the savings calculations for these projects to use building type-specific HVAC interactive factors from the New Mexico TRM.
  - **Recommendation:** Apply building-type specific HVAC interactive factors to lighting projects.
- The evaluation team used baseline fixture wattages listed in the Xcel Input Wattage Guide to calculate *ex post* savings for prescriptive lighting projects. Using the inputs from the project documentation, Xcel Input Wattage Guide, and algorithms from the SPS Technical Assumption documents resulted in different savings values (both higher and lower) than those reported by SPS for multiple prescriptive lighting projects. The tracking data provided to evaluation team includes a field for the existing fixture type, but it does not include a field for the existing fixture wattage. Therefore, the evaluation team was not able verify the baseline fixture wattage SPS used to calculate the *ex ante* savings.
  - **Recommendation:** Record baseline fixture wattage assumptions in the program tracking data provided to the evaluation team to support the calculation of claimed savings.

- It appears that replacing equipment that is near the end of its useful life is an important driver for many of the projects done through the program, as a majority of customers indicated that they had less than one year left with their equipment and that this was a very important factor in their decision. Reducing operating costs (which often increase with older equipment) and replacing as part of routine maintenance were also rated as very important non-program influences. If customers can be reached earlier in the equipment life cycle, this may reduce free ridership as the influence of the non-program factors might be lessened relative to the efficiency benefits promoted by the program.
    - **Recommendation**: Consider greater outreach to customers through contractors and other established channels to promote earlier replacements. This may increase the program influence and reduce free ridership overall for the program.

5.2 Residential Cooling Program

Impact evaluation for the Residential Cooling program also included engineering desk review of a sample of projects along with a participant phone survey. Based on these desk reviews and site visits, an overall engineering adjustment factor of 0.9635 was found for kWh savings and 1.3936 was found for kW savings. Discrepancies from the original *ex ante* savings values were primarily due to the following:

- The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a net improvement value used in the Minnesota and Illinois TRMs. The 10 percent improvement used in these states includes an estimate for the net effects of QI over standard practice.
    - The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from outdated studies that were published in 1999 and 2001, as well as referencing the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the *ex post* savings using a 10 percent Loss_No_QI as noted in the Illinois TRM[20] and Minnesota TRM[21]. .
    - **Recommendation:** Use 10 percent as the Loss_No_QI value when calculating the savings for the Residential Cooling program when a New Mexico specific value is not available.

[20] Illinois TRM, Version 7. https://s3.amazonaws.com/ilsag/IL-TRM_Effective_010119_v7.0_Vol_3_Res_092818_Final.pdf

[21] Minnesota TRM, version 3.1. https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup&documentId=%7bD0CDC86F-0000-C832-A29A-F7752BF4A0D9%7d&documentTitle=20201-159365-02

- For two cooling projects, the evaluation team was not able to reproduce the *ex ante* savings values using the SPS Technical Assumption or other information provide for these projects.
    - For these two projects, the evaluation team calculated the realized gross savings using the algorithms from the New Mexico TRM.
    - The recalculated savings for these projects resulted in a significant increase in demand savings, with an engineering adjustment of 1.39 (i.e., a 39 percent increase) for the desk review sample.
    - **Recommendation:** Provide documentation justifying changes if deemed savings calculations deviate from the SPS Technical Assumptions or New Mexico TRM recommended algorithms.
- Net impacts for this program may be improved if rebates were limited to higher efficiency air conditioners and heat pumps. This may reduce program participation, but would increase average savings per installation and likely reduce free ridership for the program given the higher incremental costs for these units.
    - **Recommendation:** Considering offering rebates for only the higher efficiency equipment options.

5.3 School Education Kits Program

In reviewing the tracking data, the evaluation team did find one minor issue relating to how the measure-level data were being tracked. With the 2019 tracking data, it was not entirely clear which measures were being included in the school kits, and this issue was resolved through follow-up discussions with the program staff. This resulted in a very minor adjustment to savings that was due to the shift from the old to the new TRM values.

- **Recommendation:** We recommend that the number of each measure within the kits be tracked along with the number of total kits distributed.

EVERGREEN ECONOMICS

Evaluation of the 2019 Southwestern Public Service Company's Energy Efficiency and Demand Response Programs

Final Report - Appendices

May 1, 2020

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

ECOMETRIC

RESEARCH & POLLING INC

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Appendix A – Business Comprehensive Participant Survey Instrument

Hello, my name is (*YOUR NAME*) from Research & Polling, Inc. I am calling on behalf of SPS. May I please speak with _____?

A. (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] 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?

1. Yes
2. No (Ask, Who would be the best person to talk to about the [MEASURE(S)] installed and energy use at your business? (REPEAT INTRO WHEN CORRECT PERSON COMES ON LINE; ARRANGE CALLBACK IF NECESSARY)
3. Never installed *(VOLUNTEERED SKIP TO Q.5)*

(IF NEEDED) SPS would like to better understand how businesses like yours think about and manage their energy use. The [REBATE_PROGRAM] program is designed to help firms with energy saving efforts. Your input is very important to help SPS improve its energy rebate programs.

SECTION A [MEASURE _1]

1. (A 1) Our records show in 2019 your business got a rebate through SPS for installing [MEASURE_1]. Are you familiar with this project?

1. Yes
2. No *(SKIP TO Q.2)*
3. Never installed *(VOLUNTEERED) (SKIP TO Q.5)*
4. Don't know *(SKIP TO Q.2)*

1a. Our records show it was installed at [SITE_ADDRESS] in [SITE_CITY]. Is that correct?

1. Yes *(SKIP TO Q. 3)*
2. No *(GO TO Q. 1b)*
3. Never installed *(VOLUNTEERED) (SKIP TO Q.5)*
4. Don't know *(SKIP TO Q.2)*

1b. Where was [MEASURE_1] installed? *(RECORD LOCATION)*

_____*(SKIP TO Q. 3)*

99. Never installed *(SKIP TO Q. 5)*

2. (A 1a) Is there someone else in your company who would know about buying the [MEASURE_1]?

1. Yes (Ask to be transferred to better contact and go back to intro)
2. Yes (Unable to be transferred, record contact's and number to call back)
3. No **(THANK AND TERMINATE)**
4. Don't know **(THANK AND TERMINATE)**

3. (A 2) Thinking about the [MEASURE_1] for which you received a rebate, is the [MEASURE_1] still installed in your facility?

1. Yes *(SKIP TO Q. 6)*
2. No *(CONTINUE TO Q. 4a)*
3. Prefer not to answer *(SKIP TO Q. 6)*
4. Don't know *(SKIP TO Q. 6)*

4a. (A 3) Was the [MEASURE_1] removed?

01. Yes, it was removed *(SKIP TO Q.5)*
02. No *(CONTINUE TO Q.4b)*
03. Prefer not to answer *(DO NOT READ) (SKIP TO Q.7)*
99. Don't know *(DO NOT READ) (SKIP TO Q.7)*

Other *(SPECIFY)* _____

4b. (A 3) Was the [MEASURE_1] never installed?

01. Yes, never installed
02. Prefer not to answer *(DO NOT READ) (SKIP TO Q.7)*
99. Don't know *(DO NOT READ) (SKIP TO Q.7)*

Other *(SPECIFY)* _____

5. (A3a) Why was the [MEASURE_1] removed/never installed? *(OPEN VERBATIM)*

_____

_____

_____

(SKIP TO SECTION A [MEASURE_2]

6. (A 4) Is the [MEASURE_1] still functioning as intended?

1. Yes
2. No
3. Prefer not to answer *(DO NOT READ)*
4. Don't know *(DO NOT READ)*

7. (A 5) Did your firm use a contractor to install the [MEASURE_1] or did internal staff do the work?

01. Contractor *(SKIP TO SECTION A [MEASURE_2])*
02. Internal Staff
03. Prefer not to answer *(SKIP TO SECTION A [MEASURE_2])*
99. Don't know *(SKIP TO SECTION A [MEASURE_2])*

Other *(SPECIFY)*_____
(SKIP TO SECTION A [MEASURE_2])

8. (A 6) Why did your firm choose to use internal staff instead of a contractor?

_____

_____

_____

98. Prefer not to answer
99. Don't know

SECTION A [MEASURE_2]

1. (A 1) Our records also show in 2019 your business got a rebate through SPS for installing a (MEASURE_2]. Do you remember this?

1. Yes
2. No *(SKIP TO INTRO BEFORE Q. 10)*
3. Never installed *(VOLUNTEERED) (SKIP TO Q.5)*
4. Don't know *(SKIP TO INTRO BEFORE Q. 10)*

1a. Our records show it was installed at [SITE_ADDRESS] in [SITE_CITY]. Is that correct?

1. Yes *(SKIP TO Q. 3)*
2. No *(GO TO Q. 1b)*
3. Never installed *(VOLUNTEERED) (SKIP TO Q.5)*
4. Don't know *(SKIP TO INTRO BEFORE Q. 10)*

1b. Where was [MEASURE_2] installed? *(RECORD LOCATION)*

_____*(SKIP TO Q. 3)*

99. Never installed *(SKIP TO Q. 5)*

3. (A 2) Thinking about the [MEASURE_2] for which you received a rebate, is the [MEASURE_2] still installed in your facility?

1. Yes *(SKIP TO Q. 6)*
2. No *(CONTINUE TO Q. 4a)*
3. Prefer not to answer *(SKIP TO Q. 6)*
4. Don't know *(SKIP TO Q. 6)*

4a. (A 3) Was the [MEASURE_2] removed?

01. Yes, it was removed *(SKIP TO Q.5)*
02 No *(CONTINUE TO Q.4b)*
03. Prefer not to answer *(DO NOT READ) (SKIP TO Q.7)*
99. Don't know *(DO NOT READ) (SKIP TO Q.7)*

Other *(SPECIFY)* _____

4b. (A 3) Was the [MEASURE_2] never installed?

01. Yes, never installed
02. Prefer not to answer *(DO NOT READ) (SKIP TO Q.7)*
99. Don't know *(DO NOT READ) (SKIP TO Q.7)*

Other *(SPECIFY)* _____

5. (A3a) Why was the [MEASURE_2] removed/never installed? *(OPEN VERBATIM)*

_____

_____

_____

(SKIP TO INTRO TO Q. 10)

6. (A 4) Is the [MEASURE_2] still functioning as intended?

1. Yes
2. No
3. Prefer not to answer *(DO NOT READ)*
4. Don't know *(DO NOT READ)*

7. (A 5) Did your firm use a contractor to install the [MEASURE_2] or did internal staff do the work?

01. Contractor *(SKIP TO Q. 9)*
02. Internal Staff
03. Prefer not to answer *(SKIP TO Q. 9)*

99. Don't know *(SKIP TO Q. 9)*

Other *(SPECIFY)*_____*(SKIP TO Q. 9)*

8. (A 6) Why did your firm choose to use internal staff instead of a contractor?

_____

_____

_____

98. Prefer not to answer

99. Don't know

9. (A 7) Was your [MEASURE_1] AND [MEASURE_2], installed/purchased together as a single project or were these done separately?

1. Together as one project
2 Separately
3. Prefer not to answer *(DO NOT READ)*
4. Don't know *(DO NOT READ)*

SECTION B

Now I have some questions about how your company became aware of the SPS rebate program.

10. (B 1) How did your company FIRST learn about the program?
(DO NOT READ CATEGORIES) (TAKE ONE RESPONSE)

01. Word of mouth (business associate, co-worker)
02. Utility program staff
03. Utility website
04. Utility bill insert
05. Utility representative
06. Utility advertising
07. Email from utility
08. Contractor/distributor
09. Building audit or assessment
10. Television Advertisement – Mass Media
11. Other mass media (sign, billboard, newspaper/magazine ad)
12. Event (conference, seminar workshop)
13. Online search, web links

14. Participated or received rebate before

98. No way in particular

99. Don't know

Other *(SPECIFY)* _____

11. (B 2) What other sources did your company use to gather information about the program….Were there any others? *(DO NOT READ CATEGORIES) (TAKE UP TO THREE RESPONSES)*

01. Word of mouth (business associate, co-worker)
02. Utility program staff
03. Utility website
04. Utility bill insert
05. Utility representative
06. Utility advertising
07. Email from utility
08. Contractor/distributor
09. Building audit or assessment
10. Television Advertisement – Mass Media
11. Other mass media (sign, billboard, newspaper/magazine ad)
12. Event (conference, seminar, workshop)
13. Online search, web links
14. Participated or received rebate before

98. None *(SKIP TO POLLER NOTE BEFORE Q. 13a)*
99. Don't know *(SKIP TO POLLER NOTE BEFORE Q. 13a)*

Other *(SPECIFY)* _____

12. (B 3) Of all the sources you mentioned, which did you find most useful in helping you decide to participate in the program?

_____

_____

_____

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

SECTION C

POLLER NOTE:

If Respondent's answer to Q. 9 was:
***Together as one project, prefer not to answer, or don't know* then READ:**

"For the remainder of this survey we will refer to your equipment upgrades collectively as a single project.

If Respondent's answer Q. 9 was:
***Separately*, READ:**

"For the remainder of this survey we will refer only to the project where you installed [MEASURE_1]

POLLER NOTE: WAS MEASURE INSTALLED?

1. **Yes (GO TO Q. 13a)**
2. **No (GO TO Q. 13b)**

13a. (C 1) Did the equipment that your firm installed replace existing equipment?

1. Yes (i.e. all equipment was replacing old equipment) *(SKIP TO Q. 14a)*
2. Some equipment was a replacement and some was a new addition *(SKIP TO Q. 14a)*
3. No (i.e. all equipment was an addition to existing equipment*) (SKIP TO INTRO TO Q. 17)*
4. Prefer not to answer *(SKIP TO INTRO TO Q. 17)*
5. Don't know *(SKIP TO INTRO TO Q. 17)*

13b. (C 1) Is the equipment that your firm purchased intended to replace existing equipment?

1. Yes (i.e. all equipment is replacing old equipment) *(SKIP TO Q. 14b)*
2. Some equipment is a replacement and some was a new addition *(SKIP TO Q. 14b)*
3. No (i.e. all equipment is an addition to existing equipment) *(SKIP TO INTRO TO Q. 17)*
4. Prefer not to answer *(SKIP TO INTRO TO Q. 17)*
5. Don't know *(SKIP TO INTRO TO Q. 17)*

14a. (C 2) Was the replaced equipment…*(READ CATEGORIES)*

1. Fully functional and not in need of repair? *(SKIP TO Q. 15a)*
2. Functional, but needed minor repairs? *(SKIP TO Q. 15a)*
3. Functional, but needed major repairs? *(SKIP TO Q. 15a)*
4. Not functional? *(SKIP TO INTRO TO Q. 17)*
5. Prefer not to answer *(DO NOT READ) (SKIP TO INTRO TO Q. 17)*
6. Don't know *(DO NOT READ) (SKIP TO INTRO TO Q. 17)*

14b. (C 2) Is the equipment you intend to replace*…(READ CATEGORIES)*

1. Fully functional and not in need of repair? *(SKIP TO Q. 15b)*
2. Functional, but needed minor repairs? *(SKIP TO Q. 15b)*
3. Functional, but needed major repairs? *(SKIP TO Q. 15b)*
4. Not functional? *(SKIP TO INTRO TO Q. 17)*
5. Prefer not to answer *(DO NOT READ) (SKIP TO INTRO TO Q. 17)*
6. Don't know *(DO NOT READ) (SKIP TO INTRO TO Q. 17)*

15a. (C 3) About how old, in years, was the equipment prior to replacement? (Probe if necessary: Best guess is fine.)

____ _____ _____ (Record Years)

499. Prefer not to answer

500. Don't know

ALL ANSWERS TO 15a GO TO Q. 16

15b. (C 3) About how old, in years, is the equipment you are replacing? (Probe if necessary: Best guess is fine.)

_____ _____ _____ (Record Years)

499. Prefer not to answer

500. Don't know

ALL ANSWERS TO 15b. GO TO Q.16

16. (C 4) How much longer (in years) do you think your old equipment would have lasted if you had not replaced it? (Probe if necessary: Best guess is fine.)

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

(C 5a-g) 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… on your decision to conduct your project?

(RANDOMIZE)	*Extremely Important*	*Very Important*	*Somewhat Important*	*A little Important*	*Not important At All*	*Don't Know/ Won't Say*
17. (C5a) Reducing environmental impact of the business	**5**	**4**	**3**	**2**	**1**	**6**
18. (C5b) Upgrading out-of-date equipment	**5**	**4**	**3**	**2**	**1**	**6**
19. (C5c) Improving comfort at the business	**5**	**4**	**3**	**2**	**1**	**6**

POLLER NOTE: Was HVAC Measure installed?

1. **Yes (CONTINUE TO Q. 20)**
2. **No (SKIP to Q. 21)**

20. (C5d) Improving air quality	**5**	**4**	**3**	**2**	**1**	**6**
21. (C5e) Receiving the rebate	**5**	**4**	**3**	**2**	**1**	**6**

(Q21 NOT ASKED IF DIRECT INSTALL)

22. (C5f) Reducing energy bill amounts	**5**	**4**	**3**	**2**	**1**	**6**

POLLER NOTE: Did respondent answer Contractor in Q.7?

1. **Yes (CONTINUE TO Q. 23)**
2. **No (SKIP TO INTRO Q. 24)**

23. (C5g) The contractor recommendation	**5**	**4**	**3**	**2**	**1**	**6**

SECTION D (INTRO TO Q.24)

Next, I'm going to ask a few questions about your decision to participate in the program, and choose equipment that was energy efficient

(D 1A-N). 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.

First I would like to read you some factors related to the rebate program itself.

POLLER NOTE: Did respondent answer Contractor in Q.7?

1. **Yes (CONTINUE TO Q. 24)**
2. **No (CIRCLE [12 N/A] ON Q. 24 AND SKIP TO Q. 25)**

How important was (read below)…in determining how energy efficient your project would be?

(RANDOMIZE) *N/A*	*Extremely Important*									*Not at all Important*	*DK/ WS*
Program Factors											
24. (D1A) The contractor who performed the work	10	09	08	07	06	05	04	03	02	01	00
11	12										
25. (D1B) The dollar amount of the rebate	10	09	08	07	06	05	04	03	02	01	00
11	12										
26. (D1C) Technical assistance received from SPS staff	10	09	08	07	06	05	04	03	02	01	00
11	12										
27. (D1D) Endorsement or recommendation by your SPS account manager or other SPS staff	10	09	08	07	06	05	04	03	02	01	00
11	12										
28. (D1E) Information from SPS marketing or informational materials	10	09	08	07	06	05	04	03	02	01	00
11	12										
29. (D1F) Previous participation in a SPS program	10	09	08	07	06	05	04	03	02	01	00
11	12										
30. (D1G) Endorsement or recommendation by a contractor	10	09	08	07	06	05	04	03	02	01	00
11	12										
31. (D1H) Endorsement or recommendation by a vendor or distributor	10	09	08	07	06	05	04	03	02	01	00
11	12										
32. (D1I) Endorsement or recommendation by CLEAR Result, the program implementer	10	09	08	07	06	05	04	03	02	01	00
11	12										

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 (read below)…..in determining your project's energy efficiency?

(RANDOMIZE)	*Extremely Important*	*Not at all Important*	*DK/ WS*	*N/A*

<u>Non-program Factors</u>

33. (D1J) The age or condition of the old equipment ..... 10 ..... 09 ..... 08 .... 07 ..... 06 ..... 05 .... 04 ..... 03 ..... 02 ... 01 ... 00
11 12

34. (D1K) Corporate policy or guidelines ..... 10 ..... 09 ..... 08 .... 07 ..... 06 ..... 05 .... 04 ..... 03 ..... 02 ... 01 ... 00
11 12

35. (D1L) Minimizing operating cost .... 10 ..... 09 ..... 08 .... 07 ..... 06 ..... 05 .... 04 ..... 03 ..... 02 ... 01 ... 00
11 12

36. (D1M) Scheduled time for routine maintenance ..... 10 ..... 09 ..... 08 .... 07 ..... 06 ..... 05 .... 04 ..... 03 ..... 02 ... 01 ... 00
11 12

37. (D2) 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? [IF NEEDED: Again, these are things like the rebate, marketing from SPS, recommendation by a contractor and technical assistance from SPS]

____ ____ _____ % = Program Factors

499. Prefer not to answer *(SKIP TO Q.39)*

500. Don't know *(SKIP TO Q. 39)*

38. D3. And what percent would you give to the importance of the non-program factors? (IF NEEDED: These include things like the age and condition of the old equipment, company policy, operating costs and routine maintenance.)

_____ _____ _____ %= Non Program Factors

499. Prefer not to answer *(SKIP TO Q.39)*

500. Don't know *(SKIP TO Q.39)*

POLLER NOTE: ENSURE ANSWERS TO Q. 37 AND Q. 38 EQUAL 100%

39. (D 5) Did you first learn about the [REBATE_PROGRAM] program BEFORE or AFTER you decided how energy efficient your equipment would be?

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

40. (D6) 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] program was not available.

Extremely Likely											*Not at all Likely*	*DK/ WS*
10	09	08	07	06	05	04	03	02	01	00		11
GO TO Q. 41			**SKIP TO Q. 43**					**GO TO Q. 42**				**SKIP TO Q. 43**

POLLER NOTE: IF ANSWER TO Q. 40 IS 8 OR HIGHER AND ANY RESPONSE TO Q. 24-Q.32 IS 8 OR HIGHER, THEN GO TO Q. 41. IF ANSWER TO Q. 40 IS 2 OR LESS AND ANY RESPONSE TO Q.24-Q.32 IS 2 OR LESS THEN GO TO Q. 42.

41. (D7) You just rated your likelihood to install the same equipment without any assistance from the program as a(n) [RATE RESPONSE FROM Q. 40] 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 FROM Q.24-Q.32] out of 10 for the importance of [RE-READ WORDING FOR HIGHEST RESPONSES Q.24-Q.32, PAGE 10].

Can you briefly explain why you were likely to install the equipment without the program but also rated the program factors as highly influential in your decision?
(RECORD VERBATIM)

_____

_____

_____

_____

(SKIP TO Q. 43)

42. (D8) You just rated your likelihood to install the same equipment without any assistance

from the program as a(n) [RATE RESPONSE FROM Q. 40] 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 [LOWEST RATING FROM Q.24-Q.32, Page 10] 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? ***(RECORD VERBATIM)***

_____

_____

_____

_____

43. (D 9) If the [REBATE_PROGRAM] program was not available, would you have delayed starting the project to a later date?

1. Yes
2. No *(SKIP TO INTRO TO Q. 46)*
3. Would not have done the project at all *(SKIP TO INTRO TO Q. 46)*
4. Prefer not to answer *(SKIP TO INTRO TO Q. 46)*
5. Don't know *(SKIP TO INTRO TO Q. 46)*

44. (D10) Approximately how much later would you have done the project if the [REBATE_PROGRAM] program was not available? Would it have been…
(READ CATEGORIES)

1. Within one year
2. Between 12 months and less than 2 years *(SKIP TO INTRO TO Q. 46)*
3. Between 2 years and 3 years *(SKIP TO INTRO TO Q. 46)*
4. Greater than 3 years *(SKIP TO INTRO TO Q. 46)*
5 Or would you not have installed the equipment at all *(SKIP TO INTRO TO Q. 46)*
6. Prefer not to answer *(SKIP TO INTRO TO Q. 46)*
7. Don't know *(SKIP TO INTRO TO Q. 46)*

45. (D11) 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] program was not available.

Extremely Likely *Not at all Likely* *DK/ WS*

10 .....09 ..... 08 ..... 07 ..... 06..... 05.....04 ..... 03 ..... 02 ..... 01 ..... 00 11

46. (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?

SECTION E

Now I have some questions about your satisfaction with various aspects of SPS and the [REBATE_PROGRAM] program.

(E 1A-K). For each of the following, please tell me if you were *very dissatisfied, somewhat dissatisfied, neither satisfied nor dissatisfied, somewhat satisfied or very satisfied.*

47. (E1A) SPS as an energy provider

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q. 48)*
5. Very Satisfied *(SKIP TO Q. 48)*
6. Not applicable *(SKIP TO Q. 48)*
7. Prefer not to answer *(SKIP TO Q. 48)*
8. Don't know *(SKIP TO Q. 48)*

48. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

49. (E1B) The rebate program overall

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.50)*
5. Very Satisfied *(SKIP TO Q.50)*
6. Not applicable *(SKIP TO Q.50)*
7. Prefer not to answer *(SKIP TO Q.50)*
8. Don't know *(SKIP TO Q.50)*

50. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

51. (E1C) The equipment installed through the program

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.52)*
5. Very Satisfied *(SKIP TO Q.52)*
6. Not applicable *(SKIP TO Q.52)*
7. Prefer not to answer *(SKIP TO Q.52)*
8. Don't know *(SKIP TO Q. 52)*

52. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

POLLER NOTE: WAS INSTALLATION DONE BY A CONTRACTOR (Q.7)?

1. **Yes (CONTINUE TO Q. 52)**
2. **No (SKIP TO Q. 56)**

53. (E1D) The contractor who installed the equipment

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.54)*
5. Very Satisfied *(SKIP TO Q.54)*
6. Not applicable *(SKIP TO Q.54)*
7. Prefer not to answer *(SKIP TO Q.54)*
8. Don't know *(SKIP TO Q.54)*

54. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

55. (E1E) The overall quality of the equipment installation

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.56)*
5. Very Satisfied *(SKIP TO Q.56)*
6. Not applicable *(SKIP TO Q.56)*
7. Prefer not to answer *(SKIP TO Q.56)*
8. Don't know *(SKIP TO Q.56)*

56. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

(Q56-59 NOT ASKED IF DIRECT INSTALL)

57. (E1F) The amount of time it took to receive your rebate for your equipment

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.58)*
5. Very Satisfied *(SKIP TO Q.58)*
6. Not applicable *(SKIP TO Q.58)*
7. Prefer not to answer *(SKIP TO Q.58)*
8. Don't know *(SKIP TO Q.58)*

58. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

59. (E1G). The dollar amount of the rebate for the equipment

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.60)*
5. Very Satisfied *(SKIP TO Q.60)*
6. Not applicable *(SKIP TO Q.60)*
7. Prefer not to answer *(SKIP TO Q.60)*
8. Don't know *(SKIP TO Q.60)*

60. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

61. (E1H) Interactions with SPS

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.62)*
5. Very Satisfied *(SKIP TO Q.62)*
6. Not applicable *(SKIP TO Q.62)*
7. Prefer not to answer *(SKIP TO Q.62)*
8. Don't know *(SKIP TO Q.62)*

62. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

63. (E1I) The overall value of the equipment your company received for the price you paid

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.64)*

5. Very Satisfied *(SKIP TO Q.64)*
6. Not applicable *(SKIP TO Q.64)*
7. Prefer not to answer *(SKIP TO Q.64)*
8. Don't know (SKIP TO Q.64)

64. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

65. (E1J) The amount of time and effort required to participate in the program

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.66)*
5. Very Satisfied *(SKIP TO Q.66)*
6. Not applicable *(SKIP TO Q.66)*
7. Prefer not to answer *(SKIP TO Q.66)*
8. Don't know *(SKIP TO Q.66)*

66. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

(Q66 and Q67 NOT ASKED IF DIRECT INSTALL)

67. (E1K) The project application process

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied *(SKIP TO Q.68)*
4. Somewhat Satisfied *(SKIP TO Q.68)*
5. Very Satisfied *(SKIP TO Q.68)*
6. Not applicable *(SKIP TO Q.68)*
7. Prefer not to answer *(SKIP TO Q.68)*
8. Don't know *(SKIP TO Q.68)*

68. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

69. (E2) Do you have any recommendations for improving the [REBATE_PROGRAM] program?

01. Yes *(RECORD VERBATIM)*

_____

_____

_____

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

70. (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?

Extremely Likely										*Not at all Likely*	*DK/ WS*
10 SKIP TO Q. 71	09	08	07	06	05	04	03	02	01	00	11

97. Have already recommended the program *(SKIP TO Q. 71)*
98. Prefer not to answer *(SKIP TO Q. 71)*
99. Don't know *(SKIP TO Q. 71)*

71. (E 3a). Can you tell me why you gave that rating? (RECORD VERBATIM)

_____

_____

_____

98 Prefer not to answer
99. Don't know

SECTION: CHARACTERISTICS AND DEMOGRAPIHCS

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

01. Own
02. Lease / Rent
03. Prefer not to answer *(SKIP TO Q. 73)*
99. Don't know *(SKIP TO Q. 73)*

Other *(SPECIFY)* _____

73. (Gen1a) Does your firm pay your SPS bill, or does someone else (e.g., a landlord)?

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

74. (Gen2) Approximately what is the total square footage of the building where the project was completed? (READ CATEGORIES IF NEEDED)

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

75. (Gen3) Approximately what year was your firm's building built? (READ CATEGORIES IF NEEDED)

1. 1939 or earlier
2. 1940 to 1949
3. 1950 to 1959
4. 1960 to 1969
5. 1970 to 1979
6. 1980 to 1989

7. 1990 to 1999
8. 2000 to 2009
9. 2010 and later
10. Prefer not to answer *(DO NOT READ)*
11. Don't know *(DO NOT READ)*

76. (Gen4) Approximately, How many full-time equivalent (FTE) employees does your company currently have in the state of New Mexico?

1. Less than 5
2. 5-9
3. 10-19
4. 20 - 49
5. 50 - 99
6. 100 - 249
7. 250 - 499
8. 500 - 999
9. 1,000 - 2,500
10. More than 2,500
11. Prefer not to answer
12. Don't know

77. (Gen5) And this is my last question. How long has your company been in business?
(Poller : Please be specific, by writing in months and years.)

_____

98. Prefer not to answer
99. Don't know

THIS CONCLUDES OUR SURVEY. THANK YOU FOR YOUR TIME. HAVE A GOOD DAY.

NOTE TO INTERVIEWER, WAS RESPONDENT:

1. Male
2. Female

Unique ID #:_____ _____ _____

Respondent's Phone Number:_____

Interviewer's Name:_____

Interviewer's Code:_____

Appendix B – Residential Cooling Participant Survey Instrument

Hello, my name is (*YOUR NAME*) from Research & Polling, Inc. I am calling on behalf of Southwestern Public Service Company (SPS). May I please speak with _____?

A. (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 installed an energy efficient [MEASURE_TYPE1] at your home located at [SITE_ADDRESS] and received a rebate from SPS. 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?

1. Yes
2. No (Ask, Who would be the best person to talk to about the energy efficiency upgrades and energy use in your home? (REPEAT INTRO WHEN CORRECT PERSON COMES ON LINE; ARRANGE CALLBACK IF NECESSARY)
3. Never installed *(VOLUNTEERED SKIP TO Q.4)*

(IF NEEDED) SPS would like to better understand how residential customers like you think about and manage their energy use. The SPS rebate program is designed to help customers with saving energy and money. Your input is very important to help SPS improve its energy rebate programs.

SECTION A: Measure Verification

1. (A 1) Just to confirm, our records show that you received a rebate from SPS when you installed a [MEASURE_TYPE1] at your home at [SITE_ADDRESS]. And this was done in approximately [MONTH, YEAR]. Is this correct?

1. Yes
2. No *(THANK AND TERMINATE)*
3. Don't know *(THANK AND TERMINATE)*

2. (A 2) Is the [MEASURE_TYPE1] still installed?

1. Yes *(SKIP TO Q. 5)*
2. No *(CONTINUE TO Q. 3)*
3. Prefer not to answer *(SKIP TO Q. 5)*
4. Don't know *(SKIP TO Q. 5)*

3. (A 3) Was the [MEASURE_TYPE1] removed or never installed?

01. Removed
02 Never Installed
03. Prefer not to answer *(SKIP TO INTRO TO Q.6)*

99. Don't know *(SKIP TO INTRO TO Q.6)*

Other *(SPECIFY)* _____*(SKIP TO INTRO TO Q.6)*

4. **(A3a) Why was the [MEASURE_TYPE1] removed/never installed?** *(OPEN VERBATIM)*

_____

_____

_____

(SKIP TO INTRO TO Q.6)

POLER NOTE: Was measure ever installed?

1. **Yes (CONTINUE TO Q.6)**
2. **No (THANK AND TERMINATE)**

5. **(A 4) Is the [MEASURE_TYPE1] still functioning properly?**
   1. Yes
   2. No
   3. Prefer not to answer *(DO NOT READ)*
   4. Don't know *(DO NOT READ)*

Section C: Awareness and Motivations for Participation

6. **(C 1) How did you first hear about SPS's rebates for energy efficient equipment?** *(DO NOT READ CATEGORIES)*

   1. Bill insert
   2. SPS website
   3. Digital/web advertisement
   4. Television advertisement
   5. Radio advertisement
   6. Contractor
   7. Friend or family
   8. Social media
   9. SPS representative
   98. Prefer not to answer
   99. Don't know

Other *(SPECIFY)* _____

(C 2) Next I will read a list of reasons you may have considered when you decided to Make the energy efficiency upgrade. 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…on your decision to make the upgrade?

(RANDOMIZE)	*Extremely Important*	*Very Important*	*Somewhat Important*	*A little Important*	*Not imp At All*	*Don;t Know*	*Prefer not to answer*	*N/A*
7. (C2a) Reducing environmental impact of your home	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
8. (C2b) Upgrading out-of-date equipment	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
9. (C2c) Replacing faulty or failed equipment	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
10. [If MEASURE_CATEGORY=Cooling, ASK] (C2d) Improving comfort of your home	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
11. [If MEASURE_CATEGORY=Cooling, ASK] (C2e) Improving air quality	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
12. (C2f) Receiving financial incentive	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
13. (C2g) Reducing energy bill amounts	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**
14. (C2h) The contractor recommendation	**5**	**4**	**3**	**2**	**1**	**6**	**7**	**8**

15. (C 3) Were there any other reasons that you installed the equipment that were more important than the ones we have mentioned?

Yes. (Ask what those reasons were and record response)

_____

_____

_____

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

SECTION D CUSTOMER DECISION MAKING PROCESS, FREE-RIDERSHIP

Next, I'm going to ask a few questions about your decision to participate in the SPS rebate program, and to install a variable speed motor.

16. (D 1) Before participating in the SPS rebate program, do you recall receiving any other rebates from SPS for making energy efficiency upgrades at your home?

1. Yes

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

(D 2) Next I will read a list of program aspects that may have been influential in your decision to make the efficiency upgrade. For each one, please tell me how influential it was on a scale of 0 to 10 where 0 means *not at all influential* and 10 means *extremely influential*.

How influential was…on your decision to make the upgrade?

(RANDOMIZE)	*Extremely Influential*	*Not at all Influential*	*Don;t Know*	*Prefer not to answer*	*N/A*
17. (D2a) The dollar amount of the rebate	**10…9…8…7…6…5…4...3…2…1...0**	**97**	**98**		**99**
18. (D2b) The contractor recommendation	**10…9…8…7…6…5…4...3…2…1...0**	**97**	**98**		**99**
19. (D2d) Information from SPS marketing or promotional materials	**10…9…8…7…6…5…4...3…2…1...0**	**97**	**98**		**99**
20. (D2e) Previous participation in a SPS program	**10…9…8…7…6…5…4...3…2…1...0**	**97**	**98**		**99**

21. (D 3) Did you first learn about the SPS rebate program BEFORE or AFTER you decided how energy efficient your equipment would be?

1. Before
2. After
3. Prefer not to answer *(DO NOT READ)*
4. Don't know *(DO NOT READ)*

22. (D 4) Now I would like you to think about the efficiency level of the equipment upgrade. 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 selected the exact same efficiency level of equipment if the SPS rebate program was NOT available. In other words, if your contractor provided you with multiple options, would you have purchased the same equipment if the option that you chose had not been eligible for a rebate?

Extremely Likely											*Not at all Likely*	*DK/ WS*
10	09	08	07	06	05	04	03	02	01	00		11

23. **(D 5) Now I would like you to think about the timing of the equipment purchase. 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 equipment of any efficiency level within 12 months of when you actually did if the SPS rebate program was NOT available.**

Extremely Likely											*Not at all Likely*	*DK/ WS*
10	09	08	07	06	05	04	03	02	01	00		11

24. **(D 6) In your own words, how would you describe the influence the SPS rebate program had on your decision to install the new equipment?**
(RECORD VERBATIM)

SECTION E Program Implementation and Delivery

Now I have some questions about the program processes.

25. **(E 1) About how long did it take to receive your rebate after the project was completed?** (DO NOT READ CATEGORIES)
    1. 1 week or less
    2. More than a week, but less than 1 month
    3. 1 or 2 months
    4. More than 2 months
    5. HAVE NOT RECEIVED REBATE YET
    6. Prefer not to answer
    7. Don't know

SECTION F Program Satisfaction

Now I have some questions about your satisfaction with various aspects of the program.

(F 1a-h). For each of the following, please tell me if you were *very dissatisfied, somewhat dissatisfied, neither satisfied nor dissatisfied, somewhat satisfied or very satisfied*.

26. **(F1a) SPS as an energy provider**
    1. Very Dissatisfied

2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q. 29)*
5. Very Satisfied *(SKIP TO Q. 29)*
6. Not applicable *(SKIP TO Q. 29)*
7. Prefer not to answer *(SKIP TO Q. 29)*
8. Don't know *(SKIP TO Q. 29)*

27. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

28. (F1b) The rebate program overall

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.31)*
5. Very Satisfied *(SKIP TO Q.31)*
6. Not applicable *(SKIP TO Q.31)*
7. Prefer not to answer *(SKIP TO Q.31)*
8. Don't know *(SKIP TO Q.31)*

29. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

30. (F1c) The variable speed motor installed through the program

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.33)*
5. Very Satisfied *(SKIP TO Q.33)*
6. Not applicable *(SKIP TO Q.33)*

7. Prefer not to answer *(SKIP TO Q.33)*
8. Don't know *(SKIP TO Q.33)*

31. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

32. (F1d) The contractor who installed the variable speed motor

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.35)*
5. Very Satisfied *(SKIP TO Q.35)*
6. Not applicable *(SKIP TO Q.35)*
7. Prefer not to answer *(SKIP TO Q.35)*
8. Don't know *(SKIP TO Q.35)*

33. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

34. (F1e) The amount of time it took to receive your rebate for your variable speed motor

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.37)*
5. Very Satisfied *(SKIP TO Q.37)*
6. Not applicable *(SKIP TO Q.37)*
7. Prefer not to answer *(SKIP TO Q.37)*
8. Don't know *(SKIP TO Q.37)*

35. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

36. (F1f). The dollar amount of the rebate for the variable speed motor

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.39)*
5. Very Satisfied *(SKIP TO Q.39)*
6. Not applicable *(SKIP TO Q.39)*
7. Prefer not to answer *(SKIP TO Q.39)*
8. Don't know *(SKIP TO Q.39)*

37. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

38. (F1g) Interactions with SPS regarding this project

1. Very Dissatisfied
2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.41)*
5. Very Satisfied *(SKIP TO Q.41)*
6. Not applicable *(SKIP TO Q.41)*
7. Prefer not to answer *(SKIP TO Q.41*
8. Don't know *(SKIP TO Q.41)*

39. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

40. (F1h) The overall value of the variable speed motor you received for the price you paid

1. Very Dissatisfied

2. Somewhat Dissatisfied
3. Neither Satisfied Nor Dissatisfied
4. Somewhat Satisfied *(SKIP TO Q.43)*
5. Very Satisfied *(SKIP TO Q.43)*
6. Not applicable *(SKIP TO Q.43)*
7. Prefer not to answer *(SKIP TO Q.43)*
8. Don't know (SKIP TO Q.43)

41. Can you tell me why you gave that rating? *(RECORD VERBATIM)*

_____

_____

_____

42. (F2) Do you have any recommendations for improving the SPS program?

01. Yes *(RECORD VERBATIM)*

_____

_____

_____

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

SECTION GEN: CHARACTERISTICS AND DEMOGRAPIHCS

43. (Gen 1) Finally, I have a few questions about your household for classification purposes only. Do you own or lease your building where the equipment was installed?

01. Own (SKIP TO Q. 46)
02. Lease / Rent
03. Prefer not to answer
99. Don't know

Other *(SPECIFY)* _____

44. (Gen1a) Do you pay your SPS bill, or does someone else (e.g., a landlord)?

1. Pay own

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

45. (Gen2) Is your home a single-family home or part of a multifamily building with more than one unit?

1. Single-family home (SKIP TO Q. 48)
2. More than one residence in building
88. Prefer not to answer (SKIP TO Q. 48)
99. Don't know (SKIP TO Q.48)

46. (Gen2a) How many units are in the structure? (Record number)

_____ _____ _____

499. Prefer not to answer
500. Don't know

47. (Gen3) Approximately what is the total square footage of your home? (READ CATEGORIES IF NEEDED)

1. Less than 500 square feet
2. 500 to 749 square feet
3. 750 to 999 square feet
4. 1,000 to 1,499 square feet
5. 1,500 to 1,999 square feet
6. 2,000 to 2,499 square feet
7. 2,500 to 2,999 square feet
8. 3,000 to 3,999 square feet
9. 4,000 or more square feet
10. Prefer not to answer *(DO NOT READ)*
11. Don't know *(DO NOT READ)*

48. (Gen4) Approximately what year was your home built? (READ CATEGORIES IF NEEDED)

1. 1939 or earlier
2. 1940 to 1949
3. 1950 to 1959
4. 1960 to 1969
5. 1970 to 1979

6. 1980 to 1989
7. 1990 to 1999
8. 2000 to 2009
9. 2010 and later
10. Prefer not to answer *(DO NOT READ)*
11. Don't know *(DO NOT READ)*

49. (Gen5) How many people live in your household? (Record number)

_____ _____

499. Prefer not to answer
500. Don't know

50. (Gen6) How long have you lived in this home?

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

THIS CONCLUDES OUR SURVEY. THANK YOU FOR YOUR TIME. HAVE A GOOD DAY.

NOTE TO INTERVIEWER, WAS RESPONDENT:

1. Male
2. Female

Unique ID #:_____ _____ _____

OPPORTUNITY ID#_____

Respondent's Phone Number:_____

Interviewer's Name:_____

Interviewer's Code:_____

Appendix C – Business Comprehensive Contractor Interview Guide

Introduction

Talking points for recruitment

- Evergreen Economics is conducting an evaluation of [UTILITY's] [PROGRAM] for the New Mexico Public Regulation Commission and the state's utilities.
- We have identified selected contractors that installed equipment that received rebates from the efficiency programs in 2019 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 the state's utilities 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
    - Interviewee role

Program Awareness and Engagement

B1. Do you recall how you first learned about and got involved with the [residential/commercial] rebate programs through [UTILITY]?

- Listen (and probe as needed) for:

- Any reservations about participating
- Any barriers to participating
- Whether or not they work with any other New Mexico [UTILITY] rebate programs, or other utilities programs in New Mexico

B2. Could you describe what involvement with New Mexico [UTILITY] rebate programs as a contractor involves?

Probe as needed:

- In what ways do you interact with New Mexico [UTILITY] or their implementers about this program?
- What information or services do you receive from New Mexico [UTILITY] (beyond the ability to offer rebates to your customers)?

B3. In what ways is the [UTILITY] 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:]
    - Rebate
        - Increases customer satisfaction with us
        - Increases business
        - Helps us up-sale to higher efficiency levels
    - Ability to mention the connection with the [UTILITY] program
    - [UTILITY] messaging to customers on benefits of [MEASURE(S)]

B4. What share of your [residential/commercial] projects within [UTILITY] territory would you estimate currently end up qualifying for and receiving a [UTILITY] rebate?

- What could [UTILITY] do to involve you more in the program?

B5. Do you find that customers outside of [UTILITY] territory are more likely, less likely, or just as likely to install efficiency measures as those within [UTILITY] territory?

B6. Does [UTILITY] make it clear which of your products or services are eligible for [UTILITY] rebates?

Probe as needed:

- Is there anything [UTILITY] should do to more clearly communicate that?

B7. Have the programs influenced what 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 [UTILITY] contractor services and support – either overall or for the [PROGRAM] specifically?

Program Processes

C1. In what ways are you involved with the rebate portion of the program and the paperwork and process required to participate?

- Probe to understand:
    - Whether contractor completes the rebate application
    - Time required for paperwork and whether that is a burden
    - Whether the rebate goes directly to the customer or contractor (with a markdown on the charge to customer)
    - Recommended improvements

C2. When and how do you bring up either [UTILITY] rebates or the equipment they rebate when talking with customers?

- Listen for (and probe as needed):
    - What share of customers do you talk about rebates with
    - What share of customers are already aware of rebates before the contractor brings it up
    - What it is the most effective sales tool or message to get customers to upgrade to high efficiency
    - What role the [UTILITY] rebates play in motivating upgrades
    - What particular equipment is easier or harder to get customers to upgrade to high efficiency and why

C3. 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 equipment?

Probe to understand:

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

D2. Are there markets* that you feel [UTILITY] [residential/commercial] energy efficiency programs are reaching well? Not well? [*Note to interviewer: if needed, examples of markets could be small businesses, or certain business sectors such as retail, office, grocery—just as a few examples]

- 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, availability of efficient equipment, and program incentive levels].

Program Satisfaction

E1. Finally, I'd like to ask about your and your customers' satisfaction with the [UTILITY] [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, only if they do not offer an unaided response:

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

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 customer 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 [UTILITY] [PROGRAM]?

[THANK AND END]

Appendix D – Residential Cooling Contractor Interview Guide

Background Information to Retrieve during Interview Prep

Contact Person	Project Information
Name	Utility
Title / Role	Program
Company	Number of Projects Completed
Contact Info	Calendar Year

Introduction

Talking points for recruitment

- Evergreen Economics is conducting an evaluation of utility energy efficiency programs for the New Mexico Public Regulation Commission and Xcel Energy
- We are contacting HVAC contractors who conducted HVAC system installations that included an EC motor and were rebated by Xcel Energy's rebate program in 2019 for brief telephone interviews; our records show that your company conducted some of these projects in 2019.
- You were listed as the contact for your company. Are you the best person to discuss these HVAC installations and EC motors that were rebated by Xcel Energy and your organization's experiences with the rebate program? Or is there someone else involved in these installations who would better be able to answer questions?
- We would need about 15-20 minutes for the interview.
- Your responses will be anonymous, but will be very helpful in helping the state's utilities ensure their energy efficiency programs best serve their customers and the contractors that make these projects possible.
- When would be a good time to talk?

Talking points for starting the interview

- Identify self.
- Thank you for taking the time to talk your experience with the Xcel Energy rebate program.

- This should take about 15-20 minutes.
- Your responses will be anonymous, so please feel free to speak candidly.
- What we hear from you and other HVAC contractors will be helpful to the state's utilities to ensure their programs are achieving their goals.
- Do you have any questions before we begin?
- Would you feel comfortable if I record this call only 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.

Interview Guide

Section A: Company Overview

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

Probe, as needed:

- What kinds of services do you provide?
- What region do you serve?
- How long have you been in business?
- What is your role?

A2. What share of your work is HVAC installations in existing homes?

Probe, as needed:

- Has this changed over time?
- In what way?

Section B: Awareness

B1. How did you become aware of the EC Motor rebate?

Section C: Motivations/Barriers

C1. In what ways is the availability of the EC Motor rebate helpful to you in your business?

Probe, as needed:

- dollar amount of rebate
- ability to mention the connection with the Xcel Energy program
- Xcel Energy messaging to customers on benefits of heating/cooling upgrades

C2. Have there been any challenges in submitting applications for EC Motor rebates?

Probe:

- If so, what?
- What suggestions do you have to address those issues?

Section D: Program Role in Customer Interaction and Equipment Choices

D1. Next, I would be interested in hearing a little more about how your typical residential HVAC installations work beginning with that initial customer contact. How do you tend to find your residential HVAC customers?

[Listen for sales techniques: brochures, cold calls, ads, door to door, etc.]

Probe on:

- What are your customers usually trying to accomplish?
- Do they already know what type of system that they want?
- Are they aware of the Xcel Energy rebates?

D2. What are the main things you discuss with customers when they are considering a new HVAC system?

Listen for / probe on:

- one equipment spec or discuss various options?
- discuss efficiency ratings or not that technical?
- bottom line costs only or feature Xcel Energy rebate specifically?

Now I have some questions about the replacement of blower motors that may be done as part of the installation of a new HVAC system.

D3. Do you typically discuss replacement of the blower motor with your customers when doing an HVAC installation?

- If yes, what do you typically suggest for the replacement of the motor?

  Probe on:

  - Single speed or EC motor?
    - Why is that?

D4. Do customers typically know about the options available for their blower motor?

D5. How often do you mention the rebate for an EC motor to a customer installing a new HVAC system?

D6. [If the answer to D5 is more often than "never"] Are customers aware of the rebate available to them for installing an EC motor prior to you mentioning it?

D7. What role, if any, does the Xcel Energy rebate play in spurring the customer to install an EC motor?

D8. How likely do you think your customers would be to install an EC motor without the rebate? Please tell me on a scale from 0 to 10 where 0 is not at all likely and 10 is extremely likely.

D9. What else, if anything, could Xcel Energy do to help prep or prompt customers to install EC motors as part of a larger HVAC upgrade?

D10. Are there ever instances when you don't mention rebates during sales discussions with customers?

Probe on:

- In what situations?
- Why?

D11. Do you sell any eligible equipment without applying rebates? If so, why?

D12. Has participating in the Xcel Energy rebate program changed your approach to projects that are not rebated by the program?

D13. How likely would you be to promote EC motors if the Xcel Energy rebate program didn't exist? Please tell me on a scale from 0 to 10 where 0 is not at all likely and 10 is extremely likely.

D14. Do you think your sales of EC motors would be different if Xcel Energy didn't offer the rebate program?

- How so? (i.e. Would sales be higher or lower?)
- Can you estimate how much higher/lower you think sales would be, in terms of a percentage?

D15. Let's talk about the rebate application process itself. Do you fill out the application for the EC motor on behalf of the customer?

- Do you just complete the application for the customer or do you use the alternative rebate section so the payment goes to you to offset project costs?
- How does the rebate process work for you? Are there any changes you would like to see?

Section E: Satisfaction

E1. Finally, I'd like to ask about your and your customers' satisfaction with the Xcel Energy rebate program. Please rate your overall satisfaction with the program on a 1 to 5 scale where 1 is not satisfied and 5 is extremely satisfied.

[IF E1<5] What could Xcel Energy do to increase your satisfaction with the rebate program?

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

Section F: Closing

F1. Is there anything we didn't cover that you'd like to mention or discuss about your experiences with the Xcel Energy rebate program?

Thank you. Those are all the questions I have.

Appendix E – Business Comprehensive and Residential Cooling Desk Review Detailed Results

Project ID	OID2786525	OID2996443	OID3421902	OID3468121	OID3508078
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Measure Type	Custom Efficiency - NM	Custom Efficiency - NM	Cooling - NM	Custom Efficiency - NM	Motors Efficiency - NM
Project Description	Lighting Efficiency	VFD installation on water pump	HVAC RTR	Lighting Upgrade	Installation of VFD on well pump
Building Type	Other:	Other:	Assembly	Other:	Manufacturing - Light Industrial
Other Building Type	Food Manufacturing	Well pumping station		Exterior	
Site Visit Being Conducted	No	No	No	Yes	No
Other General Project Info Comments					
Gross Reported kWh	65,354	654,478	214,553	182,102	9,953
Gross Reported kW	0.00	96.92	103.42	0.00	1.94
Gross Verified kWh	65,354	654,478	151,193	65,870	9,953
Gross Verified kW	0.00	108.17	65.35	0.00	1.94
kWh Realization Rate	1.00	1.00	0.70	0.36	1.00
kW Realization Rate		1.12	0.63		1.00
Calculation Assessment	Straightforward calculation for an exterior lighting retrofit. Used customer reported HOU and 0.0 CF.	The savings for this project were custom calculated using metered data from the water pump at the site and historical water level data. The metered power and pumping data were used to develop an operating profile which was compared to a theoretical baseline. The theoretical was developed using pump curves and site-specific information.	The ex ante calculations were not provided for this project	Straightforward calculation for an exterior lighting retrofit. Used customer reported HOU and 0.0 CF.	Prescriptive VFD measure using the methodology from the SPS Technical Assumption documents
TRM/Workpaper Assessment			NM TRM (2018) was used to estimate baselines and corresponding HVAC savings for this project. Assembly EFLH values (separate for chillers) was used.		
Reasons for RR(s) <> 1	These are exterior lights and do not operate during the peak demand period, so there are no peak demand savings.	The evaluator did not make adjustments to the custom analysis.	The discrepancy is known known as the evaluation team did not receive the ex ante calculations for this project.	The ex post savings were calculated using the pre- (1500W) and post-case (250W & 300W) fixture wattages noted in the project documentation along with the reported annual hours (758) and fixture quantities. There are no interactive effects as this project is for exterior lights. The supplied ex ante calculation calculates the same energy (kWh) savings however, this project was grouped with four other projects. When grouping the projects, the energy savings for all five projects were summed, then ratioed out based on the Mktg kW. The ratioed savings for this project increased the calculated savings (65,870 kWh) to the claimed savings (182,102 kWh). There should not be any peak demand savings for this project as the lights do not operate during the peak demand period.	
Include any other important observations here					

Project ID	OID3508722	OID3523932	OID3565216	OID3573703	OID3636574
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Measure Type	Lighting - NM	Lighting - NM	Custom Efficiency - NM	Lighting - NM	Motors Efficiency - NM
Project Description	Lighting Retrofit	Lighting Retrofit	Lighting Retrofit	Lighting retrofit	Installation of VFD on Ag. Well pump
Building Type	Assembly	Retail - Single-Story Large	Other:	Manufacturing - Light Industrial	Manufacturing - Light Industrial
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	63,671	71,772	120,919	52,820	10,630
Gross Reported kW	14.51	0.00	16.54	13.19	2.07
Gross Verified kWh	81,116	74,933	133,338	59,804	10,630
Gross Verified kW	18.85	0.00	15.51	16.84	2.07
kWh Realization Rate	1.27	1.04	1.10	1.13	1.00
kW Realization Rate	1.30		0.94	1.28	1.00
Calculation Assessment	Straightforward lighting calculation		Straightforward calculation for a lighting retrofit. Used customer reported HOU and 1.0 CF.	Prescriptive lighting calculation	The ex ante savings appear to be calculated using the methodology listed in the SPS Technical Assumption documents
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a Other/Misc. type in the SPS workpapers. The evaluation team adjusted the baseline fixture from a 1,000W metal halide to 400W metal halide to align with the lumen output range of the installed fixtures. If it is assumed that the existing fixtures were 1,000W metal halide, the verified savings would have increased to 264,312 kWh and 61.43 kWh based on the HOU for a Other/Misc. building type.	Not known. Evaluator used methodology from 2018 NM TRM	The difference in energy and demand savings may be due to the evaluation team using the WHFe and WHFd values for a 24-hour facility that are listed in the SPS workpapers, although the discrepancy is not clear.	The discrepancy between the ex ante and ex post savings is not known; however, the ex post saving used a baseline fixture wattage of 210W for the 175 HID lamps. The 210W fixture wattage includes the lamp and ballast power and is a typical default wattage for 175W HID fixtures.	
Include any other important observations here					

Project ID	OID3639263	OID3682033	OID3694259	OID3694275	OID3694863
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Measure Type	Motors Efficiency - NM	Lighting - NM	Cooling - NM	Custom Efficiency - NM	Custom Efficiency - NM
Project Description	Installation of VFDs on non-HVAC pumps	Lighting retrofit	HVAC RTR	Lighting retrofit	Lighting retrofit
Building Type	Manufacturing - Light Industrial	Retail - Single-Story Large	Retail - Single-Story Large	Retail - Single-Story Large	Retail - Single-Story Large
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	39,375	157,584	395,944	561,600	393,403
Gross Reported kW	6.28	27.15	89.36	76.82	53.81
Gross Verified kWh	39,375	181,635	432,932	615,236	433,807
Gross Verified kW	6.28	21.12	60.77	71.55	50.45
kWh Realization Rate	1.00	1.15	1.09	1.10	1.10
kW Realization Rate	1.00	0.78	0.68	0.93	0.94
Calculation Assessment	Prescriptive VFD measure calculation using the methodology in SPS Technical Assumption documents	Straightforward Lighting Calculation	Calculations were not provided	Straightforward lighting calculation	Straightforward calculation for a lighting retrofit. Used customer reported HOU and 1.0 CF.
TRM/Workpaper Assessment			NM TRM (2018) was used to estimate baselines and calculate savings. Zero energy door measure from the TRM was used to calculate Enclosed reach-in savings based on information provided on Xcel website.		
Reasons for RR(s) <> 1		The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a 24-hour facility in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 1 lamp 4'T8 fixtures.	The ex ante savings calculations were not included in the project files.	The ex ante calculations do not appear to use a coincidence factor or a Cooling_kW_Saving_Facotr to calculate peak demand savings. Additionally, it's not clear how the ex ante savings utilize the Cooling_kWh_Savings_Factor as it does not follow the methodology in the SPS workpapers. The ex post savings were calculated using the pre- and post-case fixture quantities and wattages that were noted in the project documentation along with the applicable algorithm inputs for a "24-hour" building type.	The difference in energy and demand savings may be due to the evaluation team using the WHFe and WHFd values for a 24-hour facility that are listed in the SPS workpapers, although the discrepancy is not clear.
Include any other important observations here		The facility operates 24 Hours lighting, 8760 Hrs operation considered.			

Project ID	OID3695092	OID3701071	OID3701749	OID3703386	OID3705296
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Measure Type	Motors Efficiency - NM	Lighting - NM	Lighting - NM	Motors Efficiency - NM	Lighting - NM
Project Description	Installation of VFDs on pump motors	Lighting retrofit	Lighting retrofit	Installation of VFDs on non-HVAC pumps	Lighting Retrofit
Building Type	Manufacturing - Light Industrial	Retail - Single-Story Large	Retail - Single-Story Large	Manufacturing - Light Industrial	Storage - Conditioned
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					Heating only
Gross Reported kWh	896,626	9,225	9,225	39,375	8,713
Gross Reported kW	136.44	0.00	0.00	6.28	1.77
Gross Verified kWh	901,370	9,435	9,435	39,375	36,979
Gross Verified kW	137.16	0.00	0.00	6.28	7.75
kWh Realization Rate	1.01	1.02	1.02	1.00	4.24
kW Realization Rate	1.01			1.00	4.37
Calculation Assessment	Prescriptive VFD using methodology from SPS Technical Assumption documents			Prescriptive VFD measure calculation using the methodology from the SPS Technical Assumption documents	Straightforward lighting replacement.
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post savings may be a result of rounding.	Savings match when using 45W for proposed fixture and 4,100 hours a year based on 2017 NMx Tech Assumptions Summary except for demand savings. Not known. Evaluator used methodology from 2018 NM TRM.	Not known. Evaluator used methodology from 2018 NM TRM.		Based on a review of the project documentation, the customer confirmed that the existing fixtures were 1,000W metal halides and not 175W metal halides. While the project documentation notes this change, the associated energy and demand savings do not appear to have been updated to reflect the adjustment to the existing fixture wattage. The ex post savings utilized the algorithm inputs for a warehouse building type and the pre- and post-case fixture wattages noted in the project documentation.
Include any other important observations here					

Project ID	OID3705963	OID3705965	OID3705986	OID3706165	OID3710063
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Measure Type	Motors Efficiency - NM	Motors Efficiency - NM	Motors Efficiency - NM	Lighting - NM	Custom Efficiency - NM
Project Description	Installation of VFDs on pump motors	Installation of VFDs on non-HVAC pumps	Installation of VFDs on existing motors	Lighting Retrofit	Replace Billboard Lighting
Building Type	Manufacturing - Light Industrial	Manufacturing - Light Industrial	Manufacturing - Light Industrial	Retail - Single-Story Large	Other:
Other Building Type					Billboard
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	925,633	804,144	1,320,601	20,921	2,025
Gross Reported kW	129.59	112.01	200.56	5.40	0.00
Gross Verified kWh	921,513	806,607	1,326,554	20,163	2,025
Gross Verified kW	129.54	112.35	202.19	4.68	0.00
kWh Realization Rate	1.00	1.00	1.00	0.96	1.00
kW Realization Rate	1.00	1.00	1.01	0.87	
Calculation Assessment	Prescriptive VFD measure using methodology from SPS Technical Assumption documents	Prescriptive VFD measure calculation using the methodology in the SPS Technical Assumption documents	Prescriptive calculation using methodology in the SPS Technical Assumption documents	Straightforward lighting calculation	Straightforward lighting calculation with customer specific operating hours (dawn to dusk).
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	Discrepancy between ex ante and ex post savings appear to be a result of rounding.	The discrepancy between the ex ante and ex post savings appears to be due to rounding.	Discrepancy in peak demand savings may be due to rounding.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a retail facility type in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 1 lamp 4'T8 fixtures.	These are exterior lights and do not operate during the coincident peak period. Ex post calculations use a CF=0 so there are not peak coincident savings for this project.
Include any other important observations here					

Project ID	OID3710397	OID3713127	OID3713135	OID3742373	OID3713139
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive
Measure Type	Custom Efficiency - NM	Lighting - NM	Lighting - NM	Lighting - NM	Lighting - NM
Project Description	Billboard Lighting	Lighting Retrofit	Lighting Retrofit	Installation of linear LED lighting	Lighting Retrofit
Building Type	Other:	Education - University	Education - University	Retail - Single-Story Large	Education - University
Other Building Type	Billboard Lighting				
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	2,025	20,336	153,343	38,085	55,765
Gross Reported kW	0.00	7.34	55.34	6.56	20.12
Gross Verified kWh	2,025	19,789	151,034	76,610	55,071
Gross Verified kW	0.00	6.97	53.23	7.40	19.41
kWh Realization Rate	1.00	0.97	0.98	2.01	0.99
kW Realization Rate		0.95	0.96	1.13	0.96
Calculation Assessment	Straightforward lighting calculation with customer specific operating hours (dawn to dusk).	Straightforward lighting calculation	Straightforward lighting calculation.	Straightforward lighting calculation.	Straightforward lighting calculation
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	These are exterior lights and do not operate during the coincident peak period. Ex post calculations use a CF=0 so there are not peak coincident savings for this project.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a College in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 4'T8 fixtures.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a College in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 3 lamp 4'T8 fixtures. Assumed a normal ballast factor as there was nothing in the documentation to confirm the ballast factor.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a 24-hour facility type in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the two and four lamp T8 fixtures. The application included the wattage for the installed LED lamps.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a College in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 4 lamp 4'T8 and 3 lamp 4'T8 fixtures.
Include any other important observations here					

Project ID	OID3713150	OID3713156	OID3713269	OID3710004	OID3725886
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business comprehensive	Business Comprehensive	Business comprehensive
Measure Type	Lighting - NM	Lighting - NM	Lighting - NM	Custom Efficiency - NM	Lighting - NM
Project Description	Lighting retrofit	Lighting retrofit	Lighting retrofit	Replace Billboard Lighting	Lighting Retrofit
Building Type	Education - University	Education - University	Education - University	Other:	Retail - Single-Story Large
Other Building Type				Billboard Lighting	
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	112,831	41,381	32,669	2,025	527,859
Gross Reported kW	40.72	14.93	11.79	0.00	72.20
Gross Verified kWh	100,321	37,598	48,282	2,025	582,072
Gross Verified kW	35.35	13.25	17.02	0.00	67.70
kWh Realization Rate	0.89	0.91	1.48	1.00	1.10
kW Realization Rate	0.87	0.89	1.44		0.94
Calculation Assessment	Straightforward lighting calculation	Straightforward prescriptive lighting calculation.	Straightforward lighting calculation	Straightforward lighting calculation with customer specific operating hours (dawn to dusk).	Straightforward calculation for a lighting retrofit. Used customer reported HOU and 1.0 CF.
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a College in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 4 lamp 4'T8 fixtures with a standard, normal ballast factor as there was not documentation in the project files to confirm the existing fixtures input power. Additionally, (504) 4-lamp 4'T8 fixtures were retrofit with 12W LED lamps. The application notes (2,216) 12W lamps were installed but that quantity does not align with the number of lamps in the 504 4-lamp T8 fixtures, which is 2,016 lamps. The ex post savings were calculated assuming 2,016 lamps were replaced.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a College in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 4 lamp 4'T8 and 3 lamp 4'T8 fixtures.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a College in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the linear fluorescent and HID fixtures. The project documentation did not include any references to verify the type of ballast in the existing fluorescent fixtures.	These are exterior lights and do not operate during the coincident peak period. Ex post calculations use a CF=0 so there are not peak coincident savings for this project.	The difference in energy and demand savings may be due to the evaluation team using the WHFe and WHFd values for a 24-hour facility that are listed in the SPS workpapers, although the discrepancy is not clear.
Include any other important observations here					Retail (Greater than 50,000 sqft) building category used. Demand Savings: Unknown factors used by implementor.

Project ID	OID3730422	OID3731069	OID3733545	OID3739154	OID3741518
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business comprehensive	Business Comprehensive	Business Comprehensive	Business Comprehensive	Business comprehensive
Measure Type	Lighting - NM	Motors Efficiency - NM	Motors Efficiency - NM	Lighting - NM	Custom Efficiency - NM
Project Description	Lighting Retrofit	Installation of VFDs on non-HVAC pumps	Installation of VFDs on non-HVAC pumps	Lighting replacement	Admin Building Custom lighting
Building Type	Retail - Small	Manufacturing - Light Industrial	Manufacturing - Light Industrial	Other:	Education - University
Other Building Type				Misc.	
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	7,263	199,250	687,232	16,166	77,092
Gross Reported kW	1.88	30.32	103.51	3.29	22.29
Gross Verified kWh	7,012	199,250	687,233	14,827	80,410
Gross Verified kW	1.63	30.32	103.51	3.38	16.32
kWh Realization Rate	0.97	1.00	1.00	0.92	1.04
kW Realization Rate	0.87	1.00	1.00	1.03	0.73
Calculation Assessment	Straightforward lighting calculation	Prescriptive VFD measure calculation using the methodology in the SPS Technical Assumption documents	Prescriptive VFD measure calculation using methodology from SPS Technical Assumption documents	Straightforward lighting calculation	
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a Retail (<50,000 sf) in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 2 lamp 4'T8 (25W lamp) and 3 lamp 4'T8 (25W lamp) fixtures.			The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for an Other/Misc. in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 400W metal halide fixtures. The application included the wattage for the installed LED fixtures.	The ex ante calculations do not use a coincidence factor to calculate peak demand savings. Additionally, the ex ante savings use a WHFe of 1.33 (33%), which is not specific to a building type and is not noted in the SPS workpapers, to calculate the "secondary savings." The ex post savings were calculated using the pre- and post-case fixture quantities and wattages that were noted in the project documentation along with the applicable algorithm inputs for a college building type.
Include any other important observations here					The peak CP kW is not calculated using a CF. The equation in the ex ante calculations is (Fix. Qty.) x (Fix. Wattage) / 1,000

Project ID	OID3744949	OID3762751	OID3767798	OID3770266	OID3785740
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business comprehensive	Residential Cooling	Residential Cooling	Residential Cooling	Business comprehensive
Measure Type	Custom Efficiency - NM	Cooling - NM	Cooling - NM	Cooling - NM	Lighting - NM
Project Description	Lighting	Heat pump	Heat Pump	Split AC	Lighting Retrofit
Building Type	Education - University	Residential - Single Family	Residential - Single Family	Residential - Single Family	Office - Small
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	126	6,481	2,848	1,436	3,313
Gross Reported kW	0.04	0.62	1.37	0.62	0.97
Gross Verified kWh	134	4,239	3,646	869	3,366
Gross Verified kW	0.03	0.53	0.97	0.54	0.97
kWh Realization Rate	1.06	0.65	1.28	0.61	1.02
kW Realization Rate	0.74	0.86	0.71	0.88	1.00
Calculation Assessment					
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	Not known. Evaluator used methodology from 2018 NM TRM.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for an Office in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the 4 lamp 4'T8.
Include any other important observations here					

Project ID	OID3800211	OID3800213	OID3811812	OID3815076	OID3821346
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Business comprehensive	Business Comprehensive	Residential Cooling
Measure Type	Motors Efficiency - NM	Motors Efficiency - NM	Lighting - NM	Motors Efficiency - NM	Cooling - NM
Project Description	Installation of VFDs on non-HVAC pumps	Installation of VFD on non-HVAC pumps	Lighting retrofit	Installation of VFDs on existing motors	Heat pump
Building Type	Manufacturing - Light Industrial	Manufacturing - Light Industrial	Retail - Single-Story Large	Education - University	Residential - Single Family
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	398,501	48,531	30,440	100,295	1,813
Gross Reported kW	60.64	7.74	7.86	9.60	1.26
Gross Verified kWh	395,173	48,531	15,755	100,295	4,337
Gross Verified kW	60.13	7.74	3.66	9.70	-0.07
kWh Realization Rate	0.99	1.00	0.52	1.00	2.39
kW Realization Rate	0.99	1.00	0.47	1.01	-0.06
Calculation Assessment	Prescriptive VFD measure calculation using methodology from SPS Technical Assumption documentation.	Prescriptive VFD measure calculation using the methodology from the SPS Technical Assumption documents	Straightforward lighting calculation	Prescriptive VFD measure using SPS Technical Assumption documents	
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post savings may be due to rounding.		The discrepancy between the ex ante and ex post energy and demand savings is not known. The ex post savings were calculated using the algorithm inputs for a retail building type in the SPS workpapers. The evaluation team referenced SPS' default fixture wattage table to determine the baseline wattage for the fluorescent fixtures. Based on the project documentation, it's not clear how many lamps were actually installed. The existing fixtures include 464 lamps from (2) 1-lamp T8, (110) 4-lamp T8s, and (11) 2-lamp T12s. The project application notes that only 225 18W lamps were install. Due to this discrepancy and lack of verifiable documentation, the evaluation team assumed a one-for-one replacement to calculate the ex post savings.	Peak demand discrepancy may be due to rounding.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.
Include any other important observations here					

Project ID	OID3825878	OID3831454	OID3842029	OID3856454	OID3858315
Utility	SPS	SPS	SPS	SPS	SPS
Program	Business Comprehensive	Business Comprehensive	Residential Cooling	Residential Cooling	Residential Cooling
Measure Type	Motors Efficiency - NM	Motors Efficiency - NM	Cooling - NM	Cooling - NM	Cooling - NM
Project Description	Installation of VFDs on non-HVAC pumps	Installation of VFDs on non-HVAC pumps	Heat pump	Heat pump	Split AC
Building Type	Manufacturing - Light Industrial	Manufacturing - Light Industrial	Residential - Single Family	Residential - Single Family	Residential - Single Family
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	535,657	510,288	4,775	3,290	2,091
Gross Reported kW	85.46	76.02	0.86	0.54	1.03
Gross Verified kWh	588,841	508,617	3,646	2,634	1,317
Gross Verified kW	93.94	75.77	0.97	0.61	0.93
kWh Realization Rate	1.10	1.00	0.76	0.80	0.63
kW Realization Rate	1.10	1.00	1.13	1.12	0.91
Calculation Assessment	Prescriptive VFD measure calculation using the methodology from the SPS Technical Assumptions	Prescriptive VFD measure calculation using the methodology from SPS Technical Assumption documents			
TRM/Workpaper Assessment					
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post savings is not clear.	The discrepancy in ex ante and ex post savings may be due to rounding.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.
Include any other important observations here					

Project ID	OID3862743	OID3866438	OID3866893	OID3873497	OID3875053
Utility	SPS	SPS	SPS	SPS	SPS
Program	Residential Cooling	Residential Cooling	Business Comprehensive	Residential Cooling	Residential Cooling
Measure Type	Cooling - NM	Cooling - NM	Cooling - NM	Cooling - NM	Cooling - NM
Project Description	Heat pump	Split AC	HVAC	Heat pump	Split AC
Building Type	Residential - Single Family	Residential - Single Family	Education - Primary School	Residential - Single Family	Residential - Single Family
Other Building Type					
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	3,082	1,831	7,928	1,348	1,348
Gross Reported kW	1.30	0.76	9.96	0.13	0.13
Gross Verified kWh	5,127	1,089	13,985	1,348	1,348
Gross Verified kW	1.07	0.66	5.76	0.13	0.13
kWh Realization Rate	1.66	0.59	1.76	1.00	1.00
kW Realization Rate	0.82	0.87	0.58	1.00	1.00
Calculation Assessment			The ex ante calculations were not provided		
TRM/Workpaper Assessment			Used NM TRM (2018) to calculate savings		
Reasons for RR(s) <> 1	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The discrepancy between the ex ante and ex post savings is not known because the calculations were not provided.		
Include any other important observations here					

Project ID	OID3882183	OID3885554	OID3910059	OID2045717	OID3867155
Utility	SPS	SPS	SPS	SPS	SPS
Program	Residential Cooling	Business Comprehensive	Residential Cooling	Business Comprehensive	Business Comprehensive
Measure Type	Cooling - NM	Custom Efficiency - NM	Cooling - NM	Custom Efficiency - NM	Cooling - NM
Project Description	Split AC	Lighting retrofit	Split AC	Variable Frequency Drive, Compressor	Installation of new ductless mini-split heat pumps
Building Type	Residential - Single Family	Retail - Single-Story Large	Residential - Single Family	Other:	Education - Primary School
Other Building Type				Gas Plant	
Site Visit Being Conducted	No	No	No	No	No
Other General Project Info Comments					
Gross Reported kWh	1,664	523,174	3,039	1,379,473	11,069
Gross Reported kW	0.71	71.54	0.55	144.01	16.45
Gross Verified kWh	884	579,323	1,345	1,379,473	19,153
Gross Verified kW	0.62	67.38	0.84	144.01	6.96
kWh Realization Rate	0.53	1.11	0.44	1.00	1.73
kW Realization Rate	0.87	0.94	1.53	1.00	0.42
Calculation Assessment		Straightforward lighting calculation		Custom analysis that utilizes metered data from the site to calculate the energy savings.	Ex ante calculations were not provided for this project
TRM/Workpaper Assessment					Followed the Public Service Company of New Mexico Commercial & Industrial Incentive Program - Work Papers
Reasons for RR(s) <> 1	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The ex ante calculations do not appear to use a coincidence factor or a Cooling_kW_Saving_Facotr to calculate peak demand savings. Additionally, it's not clear how the ex ante savings utilize the Cooling_kWh_Savings_Factor as it does not follow the methodology in the SPS workpapers. The ex post savings were calculated using the pre- and post-case fixture quantities and wattages that were noted in the project documentation along with the applicable algorithm inputs for a "24-hour" building type. The project documentation also included multiple version of the savings calculation which had different fixture quantities and existing fixture wattages. Updated T5 LED wattage from 28 W per lamp to 24 W per lamp, making it 48W per fixture.	The evaluation team adjusted the derating factor (Loss_No_QI) associated with additional savings for Quality Installations (QI) based on a more recent value noted in the Illinois TRM. The references for the Loss_No_QI value (22%) used in the SPS savings calculations appear to be from studies that were published in 1999 and 2001 as well as a reference to the ENERGY STAR Verified HVAC Installation (ESVI) Program. The evaluation team calculated the ex post savings using a 10% Loss_No_QI as noted in the Illinois TRM. The 10% Loss_No-QI value is on the conservative end of the range of values listed in the ENERGY STAR ESVI Program reference.	The evaluation team did not make any adjustments to the savings calculation after a detailed engineering review.	The discrepancy between the ex ante and ex post savings is not known since the ex ante calculations were not provided.
Include any other important observations here					

Project ID	OID3867356	OID3899617
Utility	SPS	SPS
Program	Business Comprehensive	Business Comprehensive
Measure Type	Cooling - NM	Cooling - NM
Project Description	Installation of new new high-efficiency rooftop units	Installation of new high-efficiency rooftop units & split air conditioner
Building Type	Retail - Small	Office - Small
Other Building Type		
Site Visit Being Conducted	No	No
Other General Project Info Comments		
Gross Reported kWh	6,707	3,278
Gross Reported kW	2.37	2.14
Gross Verified kWh	2,113	3,001
Gross Verified kW	1.11	1.48
kWh Realization Rate	0.32	0.92
kW Realization Rate	0.47	0.69
Calculation Assessment	Ex ante calculations were not provided for this project	Ex ante calculations were not provided for this project
TRM/Workpaper Assessment		
Reasons for RR(s) <> 1	The discrepancy between the ex ante and ex post savings is not clear since the ex ante calculations were not provided.	The discrepancy between the ex ante and ex post savings is not known since the ex ante calculations were not provided.
Include any other important observations here		

Appendix F – Additional Tables for SPS Annual Report

Table 1: PY2019 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 – Cooling Efficiency	13	510,684	137	8,550,127	$570,063
Business Comprehensive – Custom Efficiency	84	3,871,718	639	58,075,775	$1,211,856
Business Comprehensive – Lighting Efficiency	99	3,071,021	924	42,788,982	$959,500
Business Comprehensive – Motors Efficiency	45	6,761,542	1,301	101,423,130	$1,655,159
Energy Feedback	30,760	3,340,050	954	3,340,050	$139,711
Home Energy Services	765	3,650,136	422	65,911,665	$1,019,613
Home Energy Services – LI	2,416	6,086,417	1,531	100,578,382	$2,002,428
Home Lighting	351,086	11,204,986	1,904	90,219,590	$1,277,708
Residential Cooling	76	74,785	20	1,346,124	$82,537
Saver's Switch	4,272	0	668	0	$216,684
School Education Kits	2,515	571,588	186	6,473,936	$152,729
Smart Thermostat	703	277,838	730	277,838	$165,209
Total	**392,834**	**39,420,766**	**9,416**	**478,985,600**	**9,453,196**

Table 2: PY2019 Net-to-Gross Ratios by Program

Program	NTG Ratio
Business Comprehensive – Cooling Efficiency	0.7030
Business Comprehensive – Custom Efficiency	0.7030
Business Comprehensive – Lighting Efficiency	0.7030
Business Comprehensive – Motors Efficiency	0.7030
Energy Feedback	0.8366
Home Energy Services	0.9708
Home Energy Services – LI	1.0000
Home Lighting & Recycling	0.7100
Residential Cooling	0.5721
Saver's Switch	1.0000
School Education Kits	1.0000
Smart Thermostat	1.0000

Table 3: PY2019 Economic Benefits by Program/Category

Program/Category	Participants or Units	Cost per kWh Saved (Lifetime)	2019 Economic Benefits	Total Economic Benefits
Business Comprehensive – Cooling Efficiency	13	$0.07	$25,219	$422,229
Business Comprehensive – Custom Efficiency	84	$0.02	$150,010	$2,250,150
Business Comprehensive – Lighting Efficiency	99	$0.02	$225,739	$3,145,247
Business Comprehensive – Motors Efficiency	45	$0.02	$293,938	$4,409,077
Energy Feedback	30,760	$0.04	$228,635	$228,635
Home Energy Services	765	$0.02	$141,113	$2,548,114
Home Energy Services – LI	2416	$0.02	$343,591	$5,677,872
Home Lighting	351,086	$0.01	$894,310	$7,200,752
Residential Cooling	76	$0.06	$3,911	$70,401
Saver's Switch	4,272	N/A	$138,762	$138,762
School Education Kits	2,515	$0.02	$19,172	$217,144
Smart Thermostat	703	$0.59	$61,174	$61,174
Total	**392,834**	**$0.02**	**$2,525,575**	**$26,369,558**

Table 4: PY2019 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 – Cooling Efficiency	$243,917	$178,312	$0	$434,431	$135,632
Business Comprehensive – Custom Efficiency	$1,659,502	$590,648	$0	$842,491	$369,366
Business Comprehensive – Lighting Efficiency	$2,382,153	$763,095	$0	$397,912	$561,588
Business Comprehensive – Motors Efficiency	$2,972,326	$1,436,751	$0	$916,098	$739,061
Energy Feedback	$102,282	$126,353	$0	$139,711	$0
Home Energy Services	$1,921,651	$626,463	$0	$266,781	$752,831
Home Energy Services – LI	$2,985,322	$1,746,239	$946,312	$273,341	$1,729,087
Home Lighting	$5,464,651	$1,736,101	$0	$730,686	$547,021
Residential Cooling	$40,499	$29,902	$0	$49,206	$33,331
Saver's Switch	$0	$138,762	$0	$56,219	$160,465
School Education Kits	$182,268	$34,877	$0	$99,412	$53,317
Smart Thermostat	$9,540	$51,634	$0	$165,084	$125
Total	**$17,964,109**	**$7,459,137**	**$946,312**	**$4,371,373**	**$5,081,824**

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF SOUTHWESTERN PUBLIC SERVICE COMPANY'S TRIENNIAL ENERGY EFFICIENCY PLAN APPLICATION REQUESTING APPROVAL OF: (1) SPS'S 2020-2022 ENERGY EFFICIENCY PLAN AND ASSOCIATED PROGRAMS; (2) A FINANCIAL INCENTIVE FOR PLAN YEAR 2020; (3) RECOVERY OF THE COSTS ASSOCIATED WITH A POTENTIAL ENERGY EFFICIENCY STUDY OVER A TWO-YEAR TIME PERIOD; AND (4) CONTINUATION OF SPS'S ENERGY EFFICIENCY TARIFF RIDER TO RECOVER ITS ANNUAL PROGRAM COSTS AND INCENTIVES	)	**Case No. 19-00140-UT**

CERTIFICATE OF SERVICE

I certify that a true and correct copy of *Southwestern Public Service Company's 2019 Energy Efficiency and Load Management Annual Report* was electronically, as indicated below, on this 15th day of May, 2020:

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Respectfully submitted,

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