El Paso Electric

300 Galisteo Street, Suite 206
Santa Fe, New Mexico 87501
(505) 982-7391

June 1, 2023

Ms. Melanie Sandoval
New Mexico Public Regulation Commission
P.O. Box 1269
Santa Fe, NM 87504-1269
prc.records@state.nm.us

Re: Compliance Filing, Efficient Use of Energy Rule 17.7.2.8 NMAC and Final Order in NMPRC Case No. 21-00114-UT; El Paso Electric Company's 2023 Annual Report for Energy Efficiency Programs, Program Year 2022

Dear Ms. Sandoval:

Enclosed for filing please find a pdf of *El Paso Electric Company's ("EPE") Annual Report on Energy Efficiency Programs for Program Year 2022.* This compliance filing is made pursuant to the Commission's Efficient Use of Energy Rule, 17.7.2.8 NMAC and Final Order in NMPRC Case No. 21-00114-UT.

Thank you for your assistance in this matter.

Very truly yours,

/s/Nancy B. Burns
Nancy B. Burns
Deputy-General Counsel
El Paso Electric Company

Enclosures
cc: Service List

2023 ANNUAL REPORT FOR ENERGY EFFICIENCY PROGRAMS
PROGRAM YEAR 2022

NMPRC EFFICIENT USE OF ENERGY RULE 17.7.2 NMAC

JUNE 1, 2023

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Section I. Executive Summary

Introduction

El Paso Electric Company ("EPE") submits its annual report on the performance of EPE's Energy Efficiency Programs for calendar year 2022 ("2022 Programs"). This Annual Report for Energy Efficiency Programs ("Annual Report") covers the program period from January 1, 2022, through December 31, 2022, and relies on the statewide independent evaluator's report, *Evaluation of the 2022 El Paso Electric Energy Efficiency Programs* ("M&V Report") prepared by Evergreen Economics ("Evergreen"). The M&V Report is included as Attachment A. The programs evaluated in this Annual Report were approved by the New Mexico Public Regulation Commission ("NMPRC" or "Commission") as part of EPE's 2022-2024 Energy Efficiency and Load Management Plan ("EE/LM Plan") in accordance with 17.7.2.8(A) NMAC. The Commission Final Order approving EPE's EE/LM Plan was issued November 30, 2022, in NMPRC Case No. 21-00114-UT. Because that final order was not issued until the end of 2022, EPE was unable to implement the plan's new programs until 2023, which resulted in zero participation in 2022 for those new programs, including the Smart Students Program, the Marketplace Program, and the Energy$mart (Low Income) Program. As more fully reported below, EPE's 2022 EE/LM Portfolio achieved cost effectiveness of 1.26 as measured by the Utility Cost Test ("UCT").

Summary of Results

The following 2022 Programs are included in this Annual Report:

- Smart Students Program
- Residential Comprehensive Program
- Residential Lighting Program
- ENERGY STAR® New Homes Program
- Residential Marketplace Program
- Residential Load Management Program
- EnergySaver (Low Income) Program
- Energy$mart (Low Income) Program
- Commercial Comprehensive Program
- SCORE Plus Program
- Commercial Load Management Program

Results are based upon the M&V Report by Evergreen.

The following is a short summary of the overall results[1]:

- EPE's 2022 EE/LM Portfolio achieved cost effectiveness of 1.26 as measured by the Utility Cost Test ("UCT").[2] The majority of the 2022 Programs were cost effective.
- The total annual net energy savings were 7,743,502 kilowatt-hours ("kWh") at the customer meter.
- The total 2022 Programs expenditures were $3,767,162.
- The total amount collected through Rate No. 17 – Efficient Use of Energy Recovery Factor ("EUERF") was $5,775,855.

[1] Totals in tables may not tie due to rounding.
[2] A UCT of greater than or equal to one indicates the cost effectiveness of the energy efficiency portfolio or program.

Table 1 shows the total number of participants or units, the verified annual demand and energy savings, the lifetime energy savings, and the total program costs for the 2022 Programs.

Table 1- Verified 2022 Results Summary

Program	Participants or Units	Annual Savings (kW)**	Annual Savings (kWh)**	Lifetime Savings (kWh)	Total Program Expenses*
Educational	**0**	**0**	**0**	**0**	**$ -**
Smart Students	0	0	0	0	$ -
Residential	**2,843**	**3,117**	**3,592,233**	**65,944,839**	**$ 1,605,090**
Residential Comprehensive	607	479	871,086	13,453,163	$ 572,813
Residential Lighting	25	338	2,002,866	40,057,311	$ 343,917
ENERGY STAR New Homes	11	202	432,520	9,576,756	$ 373,294
Residential Marketplace	0	0	0	0	$ -
Residential Load Management	2,200	2,098	285,761	2,857,609	$ 315,067
Low Income	**378**	**902**	**1,571,544**	**24,153,938**	**$ 1,011,564**
NM EnergySaver	378	902	1,571,544	24,153,938	$ 1,011,564
NM Energy$mart	0	0	0	0	$ -
Commercial	**107**	**1,121**	**2,579,726**	**36,682,746**	**$ 1,150,507**
Commercial Comprehensive	83	322	1,787,487	26,632,013	$ 448,871
SCORE Plus	17	93	780,318	10,038,813	$ 530,574
Commercial Load Management	7	706	11,920	11,920	$ 171,062
Total	**3,328**	**5,139**	**7,743,502**	**126,781,523**	**$ 3,767,162**

*Total Program Expenses included in EPE's Commission-Approved 2022-2024 Plan for internal administration costs is $211,956, which is recovered through base rates, therefore those costs are not recovered in Rate No. 17 - EUERF.

** Numbers may not tie to EMV Report or foot due to rounding.

Table 2 presents the 2022 Benefit-Cost Analysis by Program based on the net present value ("NPV") of the 2022 Programs' benefits, expenses, and the program and portfolio UCT ratios. In accordance with the New Mexico Efficient Use of Energy Act ("EUEA") NMSA 1978 Section 62-17-5, EPE's portfolio of programs meets the UCT cost-effectiveness standard.

Table 2 - 2022 Benefit-Cost Analysis by Program

Program	NPV of Benefits (a)	NPV of Expenses (b)	UCT (a ÷ b)
Educational			
Smart Students Program	$ 0	$ 0	0
Residential			
Residential Comprehensive Program	$ 721,247	$ 572,813	1.26
Residential Lighting Program	$ 834,079	$ 343,917	2.43
ENERGY STAR New Homes Program	$ 364,798	$ 373,293	0.98
Marketplace Program	$ 0	$ 0	0
Residential Load Management Program	$ 269,226	$ 315,067	0.85
Low Income			
EnergySaver Program	$ 1,614,166	$ 1,011,564	1.60
Energy$mart Program	$ 0	$ 0	0
Commercial			
Commercial Comprehensive Program	$ 649,654	$ 448,871	1.45
SCORE Plus Program	$ 211,361	$ 530,574	0.40
Commercial Load Management Program	$ 80,861	$ 171,062	0.47
PORTFOLIO UCT	**$ 4,745,392**	**$ 3,767,162**	**1.26**

*NPV is provided by Evergreen Economics in their independent evaluation results in Attachment A.

2022 Cumulative Program Goals

Table 3 provides the annual and cumulative energy savings achieved from 2008 through 2022. The EUEA required that EPE achieve cumulative savings of 65,815,596 kWh by 2014, which was equal to five percent (5%) of EPE's 2005 retail sales, and 105,304,953 kWh by 2020, which was equal to eight percent (8%) of EPE's 2005 retail sales. By the end of 2022, EPE had achieved a total cumulative savings of 183,780,748 kWh. This exceeds the 2020 statutory goal by about 75 percent. The 2019 amendment to the EUEA modified the EUEA reporting baseline requiring that EPE achieve energy savings of not less than 5 percent (5%) of 2020 retail sales from its EE and LM programs implemented in years 2021 through 2025. Based on actual 2020 retail sales, EPE programs will have to achieve 78,872,865 kWh or about 15,774,573 kWh of annual savings in the years 2021 through 2025.

The 2022 cumulative savings includes all annual savings for program years 2008 through 2022, less the expired 2008 and 2009 kWh savings. The 2009 kWh savings were removed once they expired in 2020.

Table 3 - 2022 Cumulative Energy Savings

Year	Portfolio EUL	Annual kWh Savings	Annual Expired Portfolio kWh	Cumulative kWh Savings	Goals
2008	7	**855,912**		855,912	
2009	11	4,667,928		5,523,840	
2010	13	5,169,908		10,693,748	
2011	13	14,728,590		25,422,338	
2012	13	13,537,655		38,959,993	
2013	11	12,832,995		51,792,988	
2014	13	20,692,228		72,485,216	65,815,596
2015	13	15,729,342		88,214,558	
2008 Expired			(855,912)	87,358,646	
2016	13	18,213,422		105,572,068	
2017	14	12,729,242		118,301,310	
2018	14	17,216,718		135,518,028	
2019	16	16,549,072		152,067,100	
2020	16	16,117,987		168,185,087	105,304,953
2009 Expired			(4,667,928)	163,517,159	
2021	17	12,520,086		176,037,245	78,872,865*
2022	16	7,743,502		183,780,747	

* The 2025 statutory goal requires that EPE achieve savings of not less than 78,872,865 kWh.

Section II. Program Descriptions

Educational Programs

Smart Students Program

The Smart Students Program consists of the LivingWise® educational kit and the new FutureWise® educational kit. The LivingWise® kit is an effective community outreach tool that teaches fifth grade students to use energy more efficiently in their homes. The FutureWise® kit serves as an effective outreach tool that helps high school students learn how to read utility bills, how to save money on energy usage and more. The LivingWise® and FutureWise® kits are available at no cost to the teacher, school district or to the students, and improves energy efficiency awareness. The Smart Students Program identifies and enrolls students and teachers; provides them with an educational kit that contains energy saving devices and educational materials. Students install the devices in their home and complete a home energy audit report. AM Conservation Group, Inc. implements and manages this program. The Order granting approval of EPE's Application of its 2022-2024 EE/LM Plan in NMPRC Case No. 21-00114-UT was issued November 30, 2022, consequently no educational kits were distributed in 2022 for the Smart Students Program.

Residential Programs

Residential Comprehensive Program

The Residential Comprehensive Program consists of Residential Rebates and Appliance Recycling Rebates. Residential Rebates are offered for building envelope and weatherization measures to include air infiltration, duct sealing, ceiling and floor insulation, solar screens, evaporative coolers, refrigerated air conditioners, heat pump water heaters, room air conditioners, as well as ENERGY STAR® cool roofs, windows, smart thermostats, and pool pumps. The rebates are paid directly to the customer, or upon customer approval, can be paid to the contractors that perform the installation. Frontier Energy, Inc. administers the rebate process. EPE promoted this program through various outreach methods including advertising, customer newsletters and targeted outreach to contractors that install these measures. In 2022, a total of 607 rebates were processed with a net savings of 871,086 kWh.

Appliance Recycling offers rebates for appliance recycling to remove older refrigerators, freezers and window air conditioners from the grid. The rebates are paid directly to the customer. ARCA Recycling, Inc. administers and implements the collection, recycling and rebate process. The Order granting approval of EPE's Application of its 2022-2024 EE/LM Plan in NMPRC Case No. 21-00114-UT was issued November 30, 2022, consequently no rebates were processed in 2022 for appliance recycling.

Residential Lighting Program

The Residential Lighting Program provides incentives in the form of markdowns at retail locations. The program encourages customers to replace their existing inefficient light bulbs with more energy efficient Light Emitting Diodes ("LED") lighting. CLEAResult Consulting, Inc. provides outreach and administration for this program. A total of 25 retail locations participated in this program. EPE promoted the Residential Lighting Program through social media, and point-of-purchase displays in stores. Free LED events were also held at area community centers.

Pursuant to the Commission's Final Order in Case No. 18-00116-UT, page 5, paragraph 13, CFLS and halogen lighting were phased out prior to 2019. 100% of the lighting products distributed through the Residential Lighting Program since 2019 were LEDs. EPE's Residential Lighting Program continues to encourage use of efficient LED lighting and remains cost effective. A total of 114,815 bulbs were sold and distributed through this program, with a net savings of 2,002,866 kWh.

ENERGY STAR® New Homes Program

The ENERGY STAR® New Homes Program provides incentives for homebuilders to construct energy efficient homes that exceed 2009 International Energy Conservation Code ("IECC") standards. EPE offered homebuilders two incentive paths depending on which best fits their needs. The Performance Path provides tiered incentive levels for new homes that exceed the current IECC building code goals by ten percent. The Prescriptive Path provides incentives for measures that exceed building code requirements. The installation of a combination of measures includes ENERGY STAR® lighting, refrigerators, radiant barriers, insulation, and refrigerated air conditioning. ICF, Inc. implements and manages this program. EPE promoted this program through virtual informational training sessions for homebuilders and real estate agents in the area. EPE provided yard signs for homes in the Performance Path, advertising that their homes were more energy efficient than other homes in the area. EPE targeted its marketing efforts through the Las Cruces Home Builders Association and its trade magazine. In 2022, 297 homes participated in this program and had a net savings of 432,520 kWh.

Marketplace Program

The Marketplace Program provides eligible residential customers instant rebates through an online marketplace for installing energy efficiency measures. The EPE Marketplace will offer customers a variety of energy-efficient products including smart thermostats, lighting products, window air conditioners, air purifiers, energy saving kits, and advanced power strips. Simple Energy implements and manages this program. The Order granting approval of EPE's Application of its 2022-2024 EE/LM Plan in NMPRC Case No. 21-00114-UT was issued November 30, 2022, consequently no instant rebates were processed in 2022.

Residential Load Management Program

The Residential Load Management Program provides incentives to participating residential customers that provide voluntary load curtailment during the peak demand season of June 1 through September 30. EPE has the capability of remotely adjusting participating customers' internet-enabled smart thermostats during load management events to relieve peak load. Customers receive a $25 incentive for the purchase and enrollment of a new internet enabled smart thermostat or for registering an existing qualifying unit. Customers may also receive an additional $50 rebate for the purchase and enrollment of a new internet enabled smart thermostat through EPE's online microsite. EPE and Uplight, Inc., the program implementer, targeted customers through online advertisements, email, direct mail, and social media. There were 2,200 units that participated in the load management season with a net savings of 285,761 kWh and 2,098 kW.

The times and durations of the residential load curtailment events are shown in Table 4.

Table 4 - Residential Load Management Events

Event Date	Start Time	End Time	Duration (Hr)
6/10/2022	4:00 PM	8:00 PM	4.0
6/13/2022	3:00 PM	5:00 PM	2.0
7/11/2022	3:00 PM	5:00 PM	2.0
7/18/2022	3:00 PM	5:00 PM	2.0
7/19/2022	3:00 PM	5:00 PM	2.0
7/20/2022	3:30 PM	5:30 PM	2.0
6	**Events in 2022**		**14.0**

Low Income Programs

EnergySaver Program

The EnergySaver Program offers income-qualified customers a variety of energy efficiency measures at no cost. Qualification for the Program is based on an annual household income at or below 200 percent of the federal poverty guidelines. Frontier Energy, Inc. administered and tracked the results of this program, and EnergyWorks identified customers and implemented the direct installs. Homes with refrigerated air conditioning qualified for LEDs, attic insulation, air infiltration, duct sealing, advanced power strips and smart thermostats. Homes with evaporative coolers qualified for LEDs, advanced power strips and installation of a high-efficiency evaporative cooler replacement. In 2022, EPE continued to expand our efforts to help low-income customers by installing 356 evaporative coolers. Of those homes eligible for an evaporative cooler upgrade that had natural gas heat, ceiling insulation was also added. Homes with electric water heaters also qualified for low flow kitchen and bathroom faucet aerators, low-flow showerheads, and water heater pipe and tank insulation. Advanced power strips, smart thermostats and evaporative cooler upgrades, water heater pipe and tank insulation were measures added in 2019. EnergyWorks collaborated with a variety of community organizations, church groups, and low-income service providers, and continued to combine energy efficiency services with New Mexico Gas Company and Zia Natural Gas Company, when possible, to provide customers a more comprehensive energy efficiency service approach. EPE promoted this program through outreach utilizing referrals, advertising, and customer newsletters. EPE and EnergyWorks also targeted customers with ability to pay issues through community educational events at EPE Payment Centers.

The Final Order in Case No. 18-00116-UT directed EPE and its Measurement & Verification ("M&V") Evaluator to:

- devise more comprehensive and meaningful measures of the program's effectiveness and to include such measures in EPE's next annual report and thereafter.

The results are shown in Table 5.

Table 5 - 2022 NM EnergySaver Program Summary

	Unique Home Count	Home Count*	Measure Count **	Expected Gross kW Savings***	Expected Gross kWh Savings***
Building Envelope (Evap. Coolers, Insulation, Air Infiltration, Duct Efficiency)		397	397	882	1,399,604
Water Heating (Low Flow Showerheads, Aerators, Pipe Wrap, Water Heater Jackets)		104	161	2	24,097
LED Lighting		415	5,054	18	144,309
Small Energy Devices (Advanced Power Strips, Smart Thermostats)		54	57	0	3,534
Total	**378**	**970**	**5,669**	**902**	**1,571,544**

* Home Count - Homes may have multiple measures installed and thus counted more than once in this sum.
** Measure Count - Number of units based on measure type, i.e., individual bulbs, aerators, showerheads, etc. Ceiling insulation count = sq. ft. insulated, pipe wrap count = total feet of pipe wrapped.
*** Reference the M&V Report in Attachment A.

This program had 378 participants and had a net savings of 1,571,544 kWh.

Energy$mart Program

The Energy$mart Program provides income-qualified customers energy efficiency measures for both single family homes and multi-family homes. NM Mortgage Finance Authority ("MFA"), a self-supporting quasi-governmental entity, implements and manages this program. MFA can access additional funding for our New Mexico community, leveraging federal incentives, tax credits and deductions, and energy financing to help pay for more expensive retrofits. The Order granting approval of EPE's Application of its 2022-2024 EE/LM Plan in NMPRC Case No. 21-00114-UT was issued November 30, 2022, consequently no services were provided in 2022.

Commercial Programs

Commercial Comprehensive Program

The Commercial Comprehensive Program provides energy efficiency incentives and rebates for commercial customers whose annual average of monthly peak demand is up to and including 100 kilowatts ("kW"). Incentives and rebates are offered for lighting, lighting controls, heating, ventilation, and air conditioning ("HVAC"), HVAC controls, and more, as well as custom projects. Frontier Energy, Inc. implements the program, administers the incentive and rebate process, and tracks the results of the program. EPE advertised the Commercial Comprehensive Program through television, print, digital, and business events. To further promote this program, EPE and Frontier Energy, Inc. reached out to electrical and HVAC contractors and distributors, and property managers. A program kick-off meeting was organized to provide interested participants with program information.

The Commission's Final Order in Case No. 18-00116-UT, page 6, paragraph 14, ordered EPE to undertake annual reviews including a comparison of LEDs versus CFL and halogen lighting. EPE had phased out CFLs and halogen lighting prior to 2020. 100% of the lighting products incentivized through the Commercial Comprehensive Program prior to 2020 were LEDs or controls for LED fixtures. EPE's Commercial Comprehensive Program continues to encourage the use of efficient LED lighting and remains cost effective.

Table 6 shows the participation rates for each type of light in the program below.

Table 6 - 2022 Commercial Comprehensive Lighting Participation Rates

Fixture Type	Expected Gross kWh Savings*	%
Halogen	0	0.0%
High Intensity Discharge (HID)	0	0.0%
Integrated-ballast CFL Lamps	0	0.0%
Integrated-ballast CCFL Lamps	0	0.0%
Modular CFL and CCFL Fixtures	0	0.0%
Integrated-ballast LED Lamps	232,438	7.2%
Light Emitting Diode (LED)	1,499,919	46.2%
Light Emitting Diode (LED) Fixtures	1,030,258	31.7%
Light Emitting Diode (LED) Tubes	469,661	14.5%
Linear Fluorescent	0	0.0%
Lighting Controls	14,646	0.5%
Total	**3,246,922**	**100.0%**

* Expected Gross kWh savings are only for the lighting and controls components of the Program.

The Commercial Comprehensive Program had 83 participants and had a net savings of 1,787,487 kWh.

SCORE Plus Program

The SCORE Plus Program offers customer incentives, technical support, and outreach services to commercial customers with an annual average of monthly peak demand greater than 100 kW, as well as schools and government facilities, regardless of their average demand. This program offers incentives for a range of energy efficiency measures including lighting, lighting controls, HVAC upgrades, HVAC controls, and more, as well as custom projects. CLEAResult Consulting, Inc. actively recruits eligible customers and identifies energy efficiency improvements that could be made to their facilities. CLEAResult also assisted customers in the program application process. EPE promoted this program through direct customer and contractor contact.

The downward trend in the number of SCORE Plus projects can be attributed to supply chain issues impacting both distribution equipment and customer materials and equipment required for project completion.

In 2022, a total of 17 participants and had net energy savings of 780,318 kWh through various energy efficiency measures.

Commercial Load Management Program

The Commercial Load Management Program provides incentives to participating commercial customers that provide voluntary load curtailment during the peak demand season of June 1 through September 30. Incentives are based on verified demand savings that customers achieve for participating in load management events called by EPE. Trane U.S. Inc. actively recruits eligible customers and provides a detailed evaluation of building operations to estimate optimal load shedding options, installation and integration of controls as needed, enabling real-time energy use monitoring. Trane calculates and verifies demand savings and dispenses incentive payments. An enrolled participant elected to opt out of the EPE load management season due to equipment failure for the second consecutive year. The 2022 load management season had two participants with seven sites that had net savings of 11,920 kWh and a total demand reduction of 706 kW.

The times and durations of the load curtailment events are shown in Table 7 below.

Table 7 - Commercial Load Management Events

Event Date	Start Time	End Time	Duration (Hr)
6/10/2022	3:00 PM	5:00 PM	2.0
6/13/2022	3:00 PM	5:00 PM	2.0
7/11/2022	3:00 PM	5:00 PM	2.0
7/18/2022	3:00 PM	5:00 PM	2.0
7/19/2022	3:00 PM	5:00 PM	2.0
7/20/2022	3:00 PM	5:00 PM	2.0
6	**Events in 2022**		**12.0**

Section III. Energy Efficiency Rule Reporting Requirements

Section III of the Annual Report provides program information to comply with the EUEA as required by the NMPRC Energy Efficiency Rule 17.7.2.14.

Documentation of Program Expenditures

Table 8 shows the 2022 expenses by program. The Commission approved EPE's 2022 Program budget in accordance with 17.7.2.8(A) NMAC. All 2022 Program expenses were tracked through a unique work order number. Likewise, all revenue collected through EPE's EUERF was booked to a separate work order number. The total 2022 program expenses were $3,767,162 of the approved $6,226,211 budget or about 61% percent of the budget.

Table 8-2022 Program Expenditures

Program	Administration*	Marketing	M&V	Customer Incentives	Total Program Expenses
Educational	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Smart Students	$ -	$ -	$ -	$ -	$ -
Residential	**$ 747,103**	**$ 30,751**	**$ 45,771**	**$ 781,466**	**$ 1,605,090**
Residential Comprehensive	$ 248,014	$ 14,705	$ 27,356	$ 282,739	$ 572,813
Residential Lighting	$ 147,956	$ 605	$ 209	$ 195,147	$ 343,917
ENERGY STAR New Homes	$ 165,803	$ 268	$ 92	$ 207,130	$ 373,294
Residential Marketplace	$ -	$ -	$ -	$ -	$ -
Residential Load Management	$ 185,330	$ 15,172	$ 18,115	$ 96,450	$ 315,067
Low Income	**$ 208,272**	**$ 14,365**	**$ 3,156**	**$ 785,771**	**$ 1,011,564**
NM EnergySaver	$ 208,272	$ 14,365	$ 3,156	$ 785,771	$ 1,011,564
NM Energy$mart	$ -	$ -	$ -	$ -	$ -
Commercial	**$ 645,713**	**$ 2,962**	**$ 94,852**	**$ 406,980**	**$ 1,150,507**
Commercial Comprehensive	$ 166,490	$ 2,502	$ 38,693	$ 241,187	$ 448,871
SCORE Plus	$ 354,925	$ 413	$ 36,142	$ 139,094	$ 530,574
Commercial Load Management	$ 124,299	$ 47	$ 20,017	$ 26,700	$ 171,062
Total	**$ 1,601,088**	**$ 48,078**	**$ 143,779**	**$ 1,974,217**	**$ 3,767,162**

* Administration includes EPE's internal administration costs of $211,956 recovered through base rates, therefore those costs are not recovered in Rate No. 17 - EUERF.

Table 9 shows the breakdown of customer incentives by rate class.

Table 9 - Customer Incentives by Rate Class

Program	Residential NMRT01	Small Commercial NMRT03	General Service NMRT04	City & County NMRT07	Total Participant Incentives
Educational	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Smart Students	$ -	$ -	$ -	$ -	$ -
Residential	**$ 781,466**	**$ -**	**$ -**	**$ -**	**$ 781,466**
Residential Comprehensive	$ 282,739	$ -	$ -	$ -	$ 282,739
Residential Lighting	$ 195,147	$ -	$ -	$ -	$ 195,147
ENERGY STAR New Homes	$ 207,130	$ -	$ -	$ -	$ 207,130
Residential Marketplace					
Residential Load Management	$ 96,450	$ -	$ -	$ -	$ 96,450
Low Income	**$ 785,771**	$ -	$ -	$ -	**$ 785,771**
NM EnergySaver	$ 785,771	$ -	$ -	$ -	$ 785,771
NM Energy$mart					
Commercial	**$ -**	**$ 211,402**	**$ 132,260**	**$ 63,319**	**$ 406,980**
Commercial Comprehensive	$ -	$ 180,508	$ 60,679	$ -	$ 241,187
SCORE Plus Program	$ -	$ 30,894	$ 71,581	$ 36,619	$ 139,094
Commercial Load Management	$ -	$ -	$ -	$ 26,700	$ 26,700
Total	**$ 1,567,237**	**$ 211,402**	**$ 132,260**	**$ 63,319**	**$ 1,974,217**

Note: Customers on Rate Class NMRT05, NMRT09, NMRT16, NMRT25, NMRT25, NMRT29 did not participate during the 2022 program year.

EPE did not make any adjustments to expenditures in plan year 2022. Table 10 shows the budgeted amounts, the program expenditures, and the variances for each program during 2022. The variances in individual program costs from the budgeted amounts were primarily due to customer participation being lower or higher than projected. The downward trend in the number of SCORE Plus projects can be attributed to supply chain issues impacting both distribution equipment and customer materials and equipment required for project completion. A Commercial Load Management Program participant elected to opt out of the EPE load management season due to equipment failure for the second consecutive year. Because the final order was not issued until the end of 2022, EPE was unable to implement the plan's new programs until 2023, which resulted in zero participation in 2022 for those new programs, including the Smart Students Program, the Marketplace Program, and the Energy$mart (Low Income) Program.

Table 10-Budget Variences

Program	2022 Approved Budget	2022 Actual Expenses	Variance %
Educational	**$ 134,991.00**	**$ -**	**-100%**
Smart Students	$ 134,991.00	$ -	-100%
Residential	**$ 2,506,637.00**	**$ 1,605,090.28**	**-36%**
Residential Comprehensive	$ 1,093,830.00	$ 572,813.17	-48%
Residential Lighting	$ 409,844.00	$ 343,916.89	-16%
ENERGY STAR New Homes	$ 404,329.00	$ 373,293.50	-8%
Residential Marketplace	$ 277,028.00	$ -	-100%
Residential Load Management	$ 321,606.00	$ 315,066.72	-2%
Low Income	**$ 1,114,467.00**	**$ 1,011,564.28**	**-9%**
NM EnergySaver	$ 888,694.00	$ 1,011,564.28	14%
NM Energy$mart	$ 225,773.00	$ -	-100%
Commercial	**$ 2,470,116.00**	**$ 1,150,507.01**	**-53%**
Commercial Comprehensive	$ 501,990.00	$ 448,871.21	-11%
SCORE Plus	$ 1,600,007.00	$ 530,573.85	-67%
Commercial Load Management	$ 368,119.00	$ 171,061.95	-54%
Total	**$ 6,226,211.00**	**$ 3,767,161.57**	**-39%**

Estimated and Actual Customer Participation and Savings Levels

Table 11 presents the estimated and actual customer participation levels, annual energy savings, and annual peak demand savings for each program.

Table 11-Estimated vs. Actual

Program	Estimated Participants or Units	Actual Participants or Units	Estimated Savings (kWh)	Actual Savings (kWh)	Estimated Savings (kW)	Actual Savings (kW)
Educational**	**5,000**	**0**	**1,787,089**	**0**	**306**	**0**
Smart Students	5,000	0	1,787,089	0	306	0
Residential**	**163,432**	**2,843**	**8,493,912**	**3,592,233**	**6,275**	**3,117**
Residential Comprehensive	2,046	607	2,845,595	871,086	1,582	479
Residential Lighting	145,189	25	3,746,692	2,002,866	636	338
ENERGY STAR New Homes	490	11	510,271	432,520	238	202
Residential Marketplace	10,910	0	947,495	0	143	0
Residential Load Management	4,797	2,200	443,859	285,761	3,676	2,098
Low Income**	**1,772**	**378**	**2,256,288**	**1,571,544**	**1,024**	**902**
NM EnergySaver*	1,712	378	1,823,689	1,571,544	806	902
Energy$mart	60	0	432,599	0	218	
Commercial***	**337**	**107**	**9,009,368**	**2,579,726**	**5,420**	**1,121**
Commercial Comprehensive	225	83	2,298,176	1,787,487	325	322
SCORE Plus	102	17	6,630,633	780,318	1,039	93
Commercial Load Management	10	7	80,559	11,920	4,056	706
Total	**170,541**	**3,328**	**21,546,657**	**7,743,502**	**13,025**	**5,139**

* EnergySaver Program Estimated Participants or Units = Projected sum of project counts and measure installations (does not represent number of homes). Homes may have multiple measures installed and thus counted more than once in this sum. EPE's 2022-2024 EE/LM Plan, Case No. 21-00114-UT, included an estimated participation count of 1,712 which represented the number of units based on measure type, i.e., individual bulbs, aerators, showerheads, etc.

** New Mexico Technical Resource Manual for Calculation of Energy Efficiency Savings, Section 4.4 Residential Lighting addresses the EISA legislation stating, "DOE reversed course in May 2022 and issued a final rule broadening the definition of General Service Lamps and implementing the 45 lumens/watt requirement. "The DOE also specified a sell through period of six months, ending in July 2023, by which noncompliant lamps should not be available. The New Mexico TRM has not historically implemented code shifts midway through program years to avoid introducing marketing confusion, as well as allowing for additional sell through. Therefore, the TRM assumes the 45 lumens/watt baselines are effective January 1, 2024.""Income-eligible programs should use the existing EISA Tier 1 baselines for lamps incented through programs until January 1, 2026."

*** New Mexico Technical Resource Manual for Calculation of Energy Efficiency Savings, Section 3.4 Lighting-New Construction, stating "Screw-in baseline lamps must meet EISA efficacy requirements."

Estimated and Actual Costs (Expenses) and Avoided Costs (Benefits)

Table 12 presents the net present value of estimated and actual monetary expenses and benefits for each program.

Table 12 - Estimated and Actual Costs (Expenses) and Avoided Costs (Benefits)

	Estimated NPV of Monetary Costs	Actual NPV of Monetary Costs	Estimated NPV of Monetary Benefits	Actual NPV of Monetary Benefits
Smart Students Educational				
Smart Students Program	$ 134,991	$ 0	$ 146,730	$ 0
Residential				
Residential Comprehensive Program	$ 1,093,830	$ 572,813	$ 2,078,952	$ 721,247
Residential Lighting Program	$ 409,844	$ 343,917	$ 1,452,623	$ 834,079
ENERGY STAR New Homes Program	$ 404,329	$ 373,293	$ 413,372	$ 364,798
Marketplace Program	$ 277,028	$ 0	$ 309,195	$ 0
Residential Load Management	$ 321,606	$ 315,067	$ 443,814	$ 269,226
Low Income				
EnergySaver Program	$ 888,694	$ 1,011,564	$ 1,205,006	$ 1,614,166
Energy$mart Program	$ 225,773	$ 0	$ 389,566	$ 0
Commercial				
Commercial Comprehensive Program	$ 501,990	$ 448,871	$ 693,593	$ 649,654
SCORE Plus Program	$ 1,600,007	$ 530,574	$ 1,749,842	$ 211,361
Commercial Load Management	$ 368,119	$ 171,062	$ 428,708	$ 80,861
TOTAL	**$ 6,226,213**	**$ 3,767,162**	**$ 9,311,403**	**$ 4,745,392**

Cost Effectiveness Evaluation

Table 13 presents the UCT for each program for 2022. The UCT of the total portfolio of programs was 1.28. A UCT of greater than one indicates the cost effectiveness of the energy efficiency portfolio or program. UCTs are based on the weighted average cost of capital and avoided costs authorized by the Commission's Final Order in Case No. 21-00114-UT. EPE's 2022 total portfolio of programs passed cost effectiveness.

Table 13 - Cost Effectiveness by Program

Program	UCT
Educational	
Smart Students Program	-
Residential	
Residential Comprehensive Program	1.26
Residential Lighting Program	2.43
ENERGY STAR New Homes Program	0.98
Marketplace Program	-
Residential Load Management	0.85
Low Income	
EnergySaver Program	1.60
Energy$mart Program	-
Commercial	
Commercial Comprehensive Program	1.45
SCORE Plus Program	0.40
Commercial Load Management	0.47
PORTFOLIO UCT	**1.26**

Self-Directed Program Participation

EPE did not receive any applications for customer self-directed programs in 2022.

Independent Measurement and Verification Report

The statewide independent evaluator, Evergreen, was selected by the NMPRC. EPE contracted with Evergreen to conduct the independent evaluation of its 2022 Programs. The M&V Report is included as Attachment A to this report and includes:

- Documentation of expenses at both the individual and total portfolio program levels;
- Measured and verified energy and demand savings;
- Cost-effectiveness of all 2022 Programs;
- Deemed savings and other assumptions used by Evergreen; and,
- Description of the M&V process used by Evergreen.

Program Expenditures Not Covered in the Independent M&V Report

All program-related expenditures are included in the M&V Report.

Annual Economic Benefits by Program

Table 14 presents the annual and lifetime energy savings, estimated useful life ("EUL"), and annual economic benefits for the 2022 Programs. The average EUL is calculated by dividing the total lifetime energy savings by the annual energy savings, resulting in an average estimate of how long measures will continue to provide savings.

Table 14-Annual Economic Benefits

Program	Actual Savings (kWh)	Lifetime Savings (kWh)	Esimated Useful Life	Annual Benefits
Educational	**0**	**0**		**$ -**
SmartStudents	0	0	0	$ -
Residential	**3,592,233**	**65,944,839**		**$ 131,802**
Residential Comprehensive	871,086	13,453,163	15	$ 46,700
Residential Lighting	2,002,866	40,057,311	20	$ 41,704
ENERGY STAR New Homes	432,520	9,576,756	22	$ 16,476
Residential Marketplace			0	$ -
Residential Load Management	285,761	2,857,609	10	$ 26,923
Low Income	**1,571,544**	**24,153,938**		**$ 105,024**
NM EnergySaver	1,571,544	24,153,938	15	$ 105,024
NM Energy$mart			0	$ -
Commercial	**2,579,726**	**36,682,746**		**$ 140,894**
Commercial Comprehensive	1,787,487	26,632,013	15	$ 43,604
SCORE Plus	780,318	10,038,813	13	$ 16,429
Commercial Load Management	11,920	11,920	1	$ 80,861
Total	**7,743,502**	**126,781,523**		**$ 377,720**

Non-Energy Benefits

Table 15 shows the estimated emissions savings, and Table 16 shows the estimated water savings associated with the 2022 Programs. The annual and lifetime avoided emissions are determined by multiplying the emission rates times the annual and lifetime megawatt-hours ("MWh") saved. The water savings are determined by multiplying EPE's average portfolio water consumption per MWh times the annual and lifetime energy savings.

Table 15 - Emissions Savings

Emission Type	Avoided Electric Emmision Rate (lbs/MWh)	Annual Avoided Emissions (tons)	Lifetime Avoided Emissions (tons)
SO_2	0.0052	0.02	0.33
NO_X	1.01	3.90	63.87
CO_2	1,163	4,502	73,709
Particles	0.0854	0.33	5.42

Table 16 - Water Savings

Water Impact	EPE Portfolio Water Consumption (gal/MWh)	Annual Water Saved (gal)	Lifetime Water Saved (gal)
Water Saved	498.2	3,858,098	63,167,219

Tariff Reconciliation

Table 17 presents the calculation for EPE's 2022 tariff reconciliation based on the 2022 program expenditures plus the approved 2022 utility incentive, less EPE's internal administration costs, and less the cost recovery through EPE's EUERF from January through December 2022. The costs recovered through the EUERF are therefore not recovered through EPE's base rates.

EPE's 2022 utility incentive is based on its program costs and satisfactory program performance. Utilizing the sliding scale utility incentive approved by the Final Order (with modification to use the 7.18 percent WACC approved in EPE's last general rate case and to accept Staff's suggested sliding scale Utility Incentive Mechanism with a baseline incentive of 6.6 percent of program costs for verified annual savings of at least 16 gigawatt-hours ("GWh") with an adder incentive of 0.075 percent for each 1.0 GWh of additional energy savings, up to a maximum of 7.18 percent). EPE did not earn a profit incentive for its verified annual energy savings of 7.74 GWh.

Table 17 - Energy Efficiency Historical (Underage)/Overage Recovery

Description	Total Program Expenses	Utility Incentive	Internal Admin Costs Recovered Through Base Rates	EUERF Recovery	(Underage)/ Overage
Beg. Bal. (PY2019-2021)					$ 49,619
2022 Energy Efficiency Activity	$ 3,767,162	$ 0	$ 211,956	$ 5,775,855	$ (2,171,030)
Ending Balance					**$ (2,171,030)**

EPE's beginning balance originated from an overage of $49,619 due to activities from Program Years 2019 to 2021, with carrying charges for Program Years 2020 and 2021. The total program expenses ($3,767,162 + $0 utility incentive = $3,767,162) did not exceed the revenues collected ($211,956 + $5,775,855 = $5,987,811) in 2022, resulting in a cumulative underage amount of $2,171,030.

Table 18 presents the month-by-month reconciliation of EPE's tariff reconciliation.

Table 18 - EPE Tariff Reconciliation

Month	Total Program Expenses	Utility Incentive	Internal Admin Costs Recovered Through Base Rates	EUERF Recovery	(Underage)/ Overage of Expenses
Beg. Bal. (PY2019-2021)					49,619
Jan 2022	$ 27,246	$ 0	$ 17,663	$ 374,956	$ (315,754)
Feb 2022	$ 69,961	$ 0	$ 17,663	$ 332,146	$ (595,602)
Mar 2022	$ 142,257	$ 0	$ 17,663	$ 335,170	$ (806,178)
Apr 2022	$ 181,770	$ 0	$ 17,663	$ 309,647	$ (951,718)
May 2022	$ 106,482	$ 0	$ 17,663	$ 332,410	$ (1,195,309)
Jun 2022	$ 335,903	$ 0	$ 17,663	$ 644,123	$ (1,521,192)
Jul 2022	$ 177,354	$ 0	$ 17,663	$ 799,485	$ (2,160,986)
Aug 2022	$ 233,985	$ 0	$ 17,663	$ 901,413	$ (2,846,077)
Sep 2022	$ 285,705	$ 0	$ 17,663	$ 697,249	$ (3,275,284)
Oct 2022	$ 195,977	$ 0	$ 17,663	$ 446,242	$ (3,543,212)
Nov 2022	$ 249,593	$ 0	$ 17,663	$ 277,625	$ (3,588,907)
Dec 2022	$ 1,760,929	$ 0	$ 17,663	$ 325,389	$ (2,171,030)
Total	**$ 3,767,162**	**$ 0**	**$ 211,956**	**$ 5,775,855**	

Concurrent with the filing of this report, EPE will be filing an Advice notice to reconcile the 2022 cumulative underage with its EUERF. EPE's revised EUERF is shown below:

EUERF Components	
2022-2024 EE/LM Annual Budget	3.9463%
Utility Incentive %	0.2605%
Costs Not Recovered in EUERF %	-0.1343%
2022 Cumulative Underage %	-0.6880%
Proposed Efficient Use of Energy Recovery Factor	3.3844%

Estimated Program Expenditures Expected in 2023

Table 19 shows estimated program expenditures for 2023. EPE's Program Year 2023 budget of $6,357,367 was approved in NMPRC Case No. 21-00114-UT.

Table 19 - Estimated Program Expenditures Expected in 2023

2023 Program	Budget
Educational	
Smart Students Program	$ 143,935
Residential	
Residential Comprehensive Program	$ 1,100,897
Residential Lighting Program	$ 409,802
ENERGY STAR New Homes Program	$ 404,313
Marketplace Program	$ 241,569
Residential Load Management	$ 367,913
Low Income	
EnergySaver Program	$ 860,499
Energy$mart Program	$ 339,003
Commercial	
Commercial Comprehensive Program	$ 513,314
SCORE Plus Program	$ 1,608,016
Commercial Load Management	$ 368,105
TOTAL	**$ 6,357,367**

Evaluation of the 2022 El Paso Electric Energy Efficiency Programs

Final Report

May 19, 2023

Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

ECOMETRIC

RESEARCH & POLLING INC

Table of Contents

Executive Summary

This report presents the independent evaluation results for the El Paso Electric (EPE) energy efficiency programs for program year 2022 (PY2022).

The EPE 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, EPE 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. 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 EPE's savings estimates;
- **Demand Side Analytics** conducted the impact evaluation of the Commercial and Residential Load Management programs; and
- **Research & Polling** fielded all the phone surveys.

For PY2022, the following EPE programs were evaluated:

- Residential Comprehensive
- Small Business Comprehensive
- SCORE Plus

[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

- Residential Load Management
- Commercial Load Management

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. Brief process evaluations were also conducted for the Small Business Comprehensive, Residential Comprehensive and SCORE Plus programs.

A summary of the analysis methods for each of the PY2022 programs that were evaluated is included below.

Residential Comprehensive. This is a prescriptive program serving EPE's residential customers and offers the following measures: insulation, duct sealing, air infiltration, solar screens, evaporative coolers, refrigerated air conditioning, variable speed pool pumps, cool roofs, Energy Star windows, Energy Star smart thermostats, heat pump water heaters, and high efficient room air conditioners. The impact evaluation for the Residential Comprehensive program centered on a deemed savings review and participant survey. For the process evaluation, the participant survey was used to assess how well the program is operating.

Small Business Comprehensive. The measures eligible for the Small Business Comprehensive program are prescriptive in nature, and as such the evaluation included a deemed savings review, phone survey verification, and project desk reviews. The deemed savings review focused on verifying that the appropriate savings values were applied based on the equipment installed and per the referenced source of savings, whether that was the New Mexico Technical Reference Manual (TRM) or another source. The phone survey was used to verify that program-rebated measures were still installed and functional as well as to gather information to calculate a free ridership rate. Finally, desk reviews were used to examine the savings assumptions and calculations specific to each project that was included in the review sample.

SCORE Plus. The SCORE Plus program evaluation approach was similar to the Small Business Comprehensive program. The approach included a deemed savings review, phone survey verification, and project desk reviews. Engineers also conducted follow-up calls during the desk review phase to confirm any project details, as necessary.

Residential Load Management. This program provides incentives to residential customers that allow EPE the ability to remotely adjust participating customers' internet-enabled smart thermostats during load management events. The impacts from this program were calculated by comparing the actual energy and demand use with estimated baseline usage during the load control events, along with annual energy savings from the installation of an internet-enabled smart thermostat.

Commercial Load Management. The Commercial Load Management program allows participating customers to provide on-call, voluntary curtailment of electric consumption during peak demand periods in return for incentives. The impacts from this program were calculated by comparing the actual energy use with estimated baseline usage during the load control events.

Table 1 summarizes the PY2022 evaluation methods.

Table 1: Summary of PY2022 Evaluation Methods by Program

Program	Deemed Savings Review	Phone Survey / Interviews	Engineering Desk Reviews	Onsite	Billing Regression
Residential Comprehensive	◆	◆			
Small Business Comprehensive	◆	◆	◆	◆	
SCORE Plus	◆	◆	◆		
Residential Load Management					◆
Commercial Load Management					◆

The results of the PY2022 impact evaluation are shown in Table 2 (kWh) and Table 3 (kW), with the programs evaluated in 2022 highlighted in blue.

Table 2: PY2022 Savings Summary – kWh*

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Residential Comprehensive	607	1,367,911	1.0000	1,367,911	0.6368	871,086
Residential Lighting	25	3,338,109	1.0000	3,338,109	0.6000	2,002,866
ENERGY STAR New Homes	11	589,827	1.0000	589,827	0.7333	432,521
Residential Load Management	2,200	285,761	1.0000	285,761	1.0000	285,761
NM EnergySaver	378	1,571,544	1.0000	1,571,544	1.0000	1,571,544
Small Business Comprehensive	83	2,069,753	0.9683	2,004,134	0.8919	1,787,487

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
SCORE Plus	17	1,291,442	0.9925	1,281,732	0.6088	780,318
Commercial Load Management	7	11,920	1.0000	11,920	1.0000	11,920
Total	**3,328**	**10,526,268**		**10,450,939**		**7,743,503**

*Savings values may not be reproducible as shown due to rounding.

Table 3: PY2022 Savings Summary – kW*

Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Residential Comprehensive	607	752	1.0000	752	0.6368	479
Residential Lighting	25	563	1.0000	563	0.6000	338
ENERGY STAR New Homes	11	276	1.0000	276	0.7333	202
Residential Load Management	2,200	2,098	1.0000	2,098	1.0000	2,098
NM EnergySaver	378	902	1.0000	902	1.0000	902
Small Business Comprehensive	83	373	0.9677	361	0.8919	322
SCORE Plus	17	153	1.0002	153	0.6088	93
Commercial Load Management	7	667	1.0577	706	1.0000	706
Total	**3,328**	**5,784**		**5,811**		**5,140**

*Savings values may not be reproducible as shown due to rounding.

Beginning in 2021, the impact evaluation moved to applying new net-to-gross (NTG) ratios prospectively in future years, rather than retrospectively as had been done in prior years. The PY2021 NTG ratios are being applied to the PY2022 results. The NTG ratios calculated in PY2022 will then be applied to the PY2023 results.

Table 4 summarizes the updates to the NTG ratios for PY2023, with the updated values shaded in green.

Table 4: Net-to-Gross Ratio Updates for PY2023

Program	PY2022 NTG Ratio	PY2023 NTG Ratio
Residential Lighting	0.6000	0.6000
ENERGY STAR New Homes	0.7333	0.7333
NM EnergySaver	1.0000	1.0000
Residential Comprehensive	0.6368	0.5514
Small Business Comprehensive	0.8919	0.8156
SCORE Plus	0.6088	0.6093
Residential Load Management	1.0000	1.0000
Commercial Load Management	1.0000	1.0000

Using net realized savings from this evaluation and cost information provided by EPE, the evaluation team calculated the ratio of benefits to costs for each of EPE'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.[2] The evaluation team conducted this test in a manner consistent with the California Energy Efficiency Policy Manual.[3] The results of the UCT are shown below in Table 5. The portfolio overall was found to be cost effective with a UCT ratio of 1.26.

[2] The Utility Cost Test is sometimes referred to as the Program Administrator Cost Test, or PACT.
[3] California Public Utilities Commission. 2020. *California Energy Efficiency Policy Manual – Version 6*. https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/e/6442465683-eepolicymanualrevised-march-20-2020-b.pdf

Table 5: PY2022 Cost Effectiveness

Program	Utility Cost Test (UCT)
Residential Comprehensive	1.26
Residential Lighting	2.43
ENERGY STAR New Homes	0.98
Residential Load Management	0.85
NM EnergySaver	1.60
Small Business Comprehensive	1.45
SCORE Plus	0.40
Commercial Load Management	0.47
Overall Portfolio	**1.26**

The impact evaluation—which included engineering desk reviews for a sample of Small Business Comprehensive and SCORE Plus projects, site visits for a sample of Small Business Comprehensive projects, and a review of deemed savings values for the other programs —resulted in engineering adjustment factor rates less than 1.000 for realized gross savings. Adjustments to savings based on the Small Business Comprehensive and SCORE Plus desk reviews were primarily due to several factors.

Factors affecting savings for Small Business Comprehensive projects were related to the use of DLC reported or tested[4] wattages. Additionally, the evaluation team adjusted the baseline input wattage for T12 fixtures to be consistent with default wattage tables.

Factors affecting savings for SCORE Plus Program projects were related to the use of DLC reported wattage, lighting annual hours of use, and utilization of manufacturer specifications for efficient equipment. The evaluation team adjusted the annual hours of use for one project to use only the Building Weighted Average hours instead of a mix of building and area specific hours. Lastly, there was a minor impact on savings when manufacturer specifications were utilized for horsepower ratings.

The process evaluation activities included phone surveys with Residential Comprehensive, Small Business Comprehensive and SCORE Plus participants and interviews with Residential and Small Business Comprehensive participating contractors. Based on the data collection and analysis

[4] The use of DLC tested wattages specifically applies to horticultural lighting fixtures.

conducted for this evaluation, the evaluation team found that overall, EPE is operating programs that are resulting in energy and demand savings and satisfied participants.

1 Evaluation Methods

The analysis methods used for the evaluated PY2022 programs are summarized as follows:

Residential Comprehensive. This is a prescriptive program serving EPE's residential customers and offers the following measures: insulation, duct sealing, air infiltration, solar screens, evaporative coolers, refrigerated air conditioning, variable speed pool pumps, cool roofs, Energy Star windows, Energy Star smart thermostats, heat pump water heaters, and high efficient room air conditioners. The impact evaluation for the Residential Comprehensive program centered on a deemed savings review and participant survey. For the process evaluation, the participant survey was used to assess how well the program is operating.

Small Business Comprehensive. The measures eligible for the Small Business Comprehensive program are prescriptive in nature, and as such the evaluation included a deemed savings review, phone survey verification, and project desk reviews. The deemed savings review focused on verifying that the appropriate savings values were applied based on the equipment installed and per the referenced source of savings, whether that was the New Mexico Technical Reference Manual (TRM) or another source. The phone survey was used to verify that program-rebated measures were still installed and functional as well as to gather information to calculate a free ridership rate. Finally, desk reviews were used to examine the savings assumptions and calculations specific to each project that was included in the review sample.

SCORE Plus. The SCORE Plus program evaluation approach was similar to the Small Business Comprehensive program. The approach included a deemed savings review, phone survey verification, and project desk reviews. Engineers also conducted follow-up calls during the desk review phase to confirm any project details, as necessary.

Residential Load Management. This program provides incentives to residential customers that allow EPE the ability to remotely adjust participating customers' internet-enabled smart thermostats during load management events. The impacts from this program were calculated by comparing the actual energy and demand use with estimated baseline usage during the load control events, along with annual energy savings from the installation of an internet-enabled smart thermostat.

Commercial Load Management. The Commercial Load Management program allows participating customers to provide on-call, voluntary curtailment of electric consumption during peak demand periods in return for incentives. The impacts from this program were calculated by comparing the actual energy use with estimated baseline usage during the load control events.

Additional detail on each of these evaluation methods is included in the remainder of this section.

1.1 Phone Surveys

Phone surveys were fielded in March 2023 for participants in the Residential Comprehensive, Small Business Comprehensive and SCORE Plus programs. The phone surveys ranged from 15 to 20 minutes in length and covered the following topics:

- Verification of measures included in EPE'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.

Secondary 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 both the Small Business Comprehensive and SCORE Plus programs, the original goal was to complete as many surveys as possible, and a census of participants was contacted for these programs. Ultimately, 19 surveys were completed with Small Business Comprehensive participants and five surveys were completed with SCORE Plus participants. The evaluation team was successful in completing the target of 100 surveys for the Residential Comprehensive program. Table 6 shows the distribution of completed surveys.

Table 6: EPE Phone Survey Summary

Program	Customers with Valid Contact Info	Target # of Completes	Completed Surveys
Residential Comprehensive	537	100	100
Small Business Comprehensive	42	35	19
SCORE Plus	10	5	5
Total	**589**	**140**	**124**

The final survey instruments for the Residential Comprehensive, Small Business Comprehensive and SCORE Plus programs are included in Appendix A, Appendix B, and Appendix C.

1.2 Engineering Desk Reviews and Deemed Savings Reviews

To verify gross savings estimates, the evaluation team conducted engineering desk reviews for a sample of the projects in the Small Business Comprehensive and SCORE Plus programs. The goal of the desk reviews was to verify equipment installation, operational parameters, and estimated

savings. Reviews of the deemed savings values were also completed for those program measures that used prescriptive savings values. For PY2022, deemed savings reviews were completed for the Residential Comprehensive, Small Business Comprehensive and SCORE Plus programs.

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 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 those programs and projects that used deemed savings values, the review process included the following:

- Review of measures available in the New Mexico TRM to determine the most appropriate algorithms that apply to the installed measures;
- Recreation of savings calculations using TRM algorithms and inputs as documented by submitted specifications, invoices, and post-installation inspection reports; and
- Review of New Mexico TRM algorithms to identify candidates for future updates and improvements.

1.3 Onsite Inspections

In support of the engineering desk reviews, the evaluation team completed onsite inspections for six of the Small Business Comprehensive projects in the evaluation sample. The evaluation team contacted selected participants by phone and email to schedule the onsite inspections. The evaluation team visited sites to verify equipment installation and operational parameters.

1.4 Load Management Impact Estimation

For the Commercial Load Management program, as part of the PY2022 evaluation, the evaluation team worked closely with EPE and Trane to reach an agreement on the mechanics of the demand response performance calculation mechanism. This calculation centers on the baseline or estimate of what load would have been in the participating facilities on event days if demand response had not been called. The settlement calculations called for a “high 8-of-10” baseline with a capped, symmetric day-of adjustment. Only non-event, non-holiday weekdays were eligible to be baseline days. For each event window, the method for the settlement calculations was as follows:

1. Select the last ten non-event, non-holiday weekdays.
2. Select the eight days (out of ten) with the highest average load during the event window, using the 15-minute interval load data.

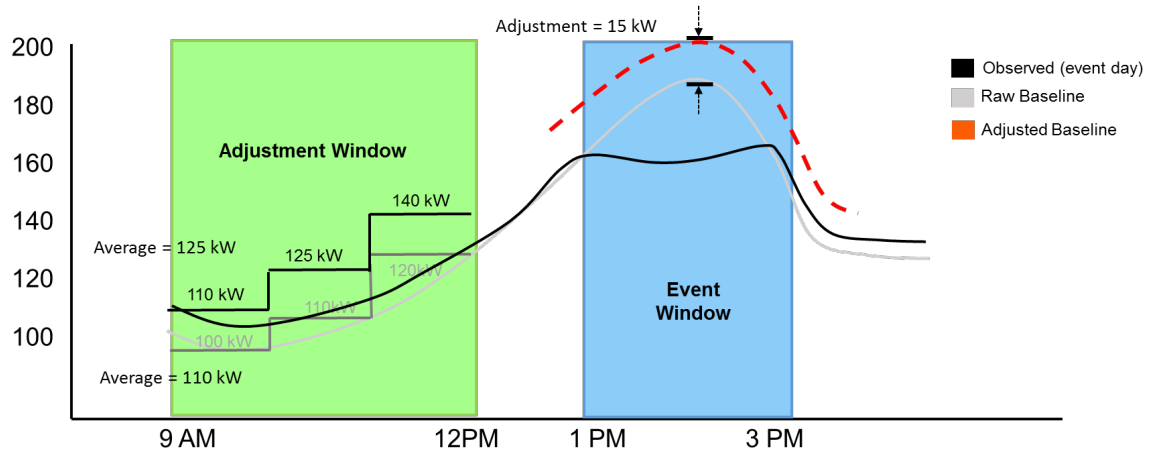
3. For each 15-minute interval, calculate the average load of the eight selected baseline days. This is known as the "raw baseline."

After the raw baseline was calculated, a day-of "Adjustment Factor" was calculated and applied to the raw baseline to create the "Adjusted Baseline," as follows:

- Designate the three hours prior to the event, excluding the hour immediately prior to the event, as the "Adjustment Window."
- Calculate the average observed load on the event day during the Adjustment Window (single value).
- Calculate the average load of the three baseline days during the Adjustment Window (single value).
- For each interval in the event window, add/subtract an Adjustment Factor to/from the raw baseline to calculate the Adjusted Baseline. The Adjustment Factor (single value) is defined as the difference of the average observed load and the average load of baseline days, capped at +/- 20 percent of the corresponding baseline average load.

A hypothetical sample calculation is illustrated in Figure 1. In this example, the adjusted baseline is 15 kW higher than the raw baseline during the event window, because the actual average observed load during the adjustment window was 15 kW higher on the event day (125 kW) compared to the baseline days (110 kW).

Figure 1: Illustration of Adjusted Baseline Calculation



For the Residential Load Management program, the impact analysis utilized a within-subjects regression analysis. The analysis uses hourly smart thermostat runtime data provided by the three participating device manufacturers—Nest, Emerson, and Ecobee. In the analysis, average baseline runtime was estimated for each hour of the five event days.

The baseline was estimated using within-subjects regression. For each event day and hour, the non-event day data for each of the devices used to predict the average runtime without demand response. The average predicted runtime across all experimental devices on each event day was used as the baseline. Only non-event, non-holiday weekdays were used in the regression model.

The raw runtime impacts were then estimated by subtracting the actual runtime from the baseline runtime estimate in each event hour, where runtime is expressed as the number of minutes that the HVAC system is running that hour. The cooling runtime impacts were then converted to cooling load impacts (in KW), using the connected load assumptions in the New Mexico TRM (Equation 1).

Equation 1: New Mexico TRM Smart Thermostat Connected Load

$$HVAC\ Capacity\ (kW) = \frac{Capacity_{cool}}{1000\frac{W}{kW}} x \frac{1}{EER} = \frac{36{,}000\frac{Btu}{h}}{1000\frac{W}{kW}} x \frac{1}{11.18\frac{Btu}{Wh}} = 3.22\ kW$$

$$where\ EER = -0.02 * SEER^2 + 1.12 * SEER = -0.02 * 13^2 + 1.12 * 13 = 11.18$$

For each event hour, the reduction in cooling runtime per hour was multiplied by the estimated HVAC system capacity. This represents the demand impact per treatment device per hour, which was averaged across the event hours to provide the impact per demand response device for each event. This number was then used to provide a picture of the overall program impact delivered, as well as load reduction capability.

Additional details on the impact methods and results for the Commercial Load Management and the Residential Load Management programs are provided in Appendix D and Appendix E.

1.5 Net Impact Analysis

1.5.1 Self-Report Approach

The evaluation team estimated net impacts for most 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 the 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 (i.e., 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 (e.g., would less efficient equipment have been installed, would the project have been delayed)?
- Were there other program or utility interactions that affected the decision to choose high efficiency equipment (e.g., was 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 NTG ratio) using the self-report approach is based on the 2017 Illinois Statewide TRM.[5] For the EPE 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.

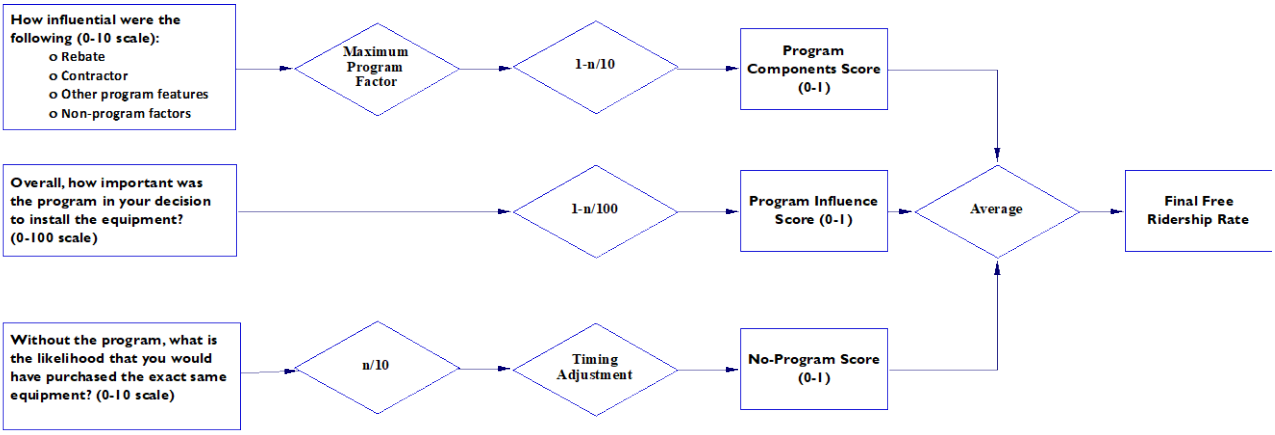
Each component was assessed using survey responses that rated the influence of various factors on the respondent's equipment choice. Since opposing biases potentially affect the main components, the No-Program Component typically indicates higher free ridership than the Program Component/Influence questions. 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 2 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

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

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.

Figure 2: Self-Report Free Ridership Scoring Algorithm



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

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

Program Component Questions

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

The type of questions 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 2, the question with the highest value response (i.e., the program factor that had the greatest influence on the decision to install a high efficiency measure) was the one that was used in the scoring algorithm as the Program Component score.

Program Influence Question

A separate ***Program Influence*** question asked the respondent directly to rate the combined influence of the various program activities on their decision to install energy efficient equipment. This question allowed the respondent to consider the program as a whole and incorporated other forms of assistance (if applicable) in addition to the rebate. Respondents were also asked about potential non-program factors (condition of existing equipment, corporate policies, maintenance schedule, etc.) to put the program in context with other potential influences.

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

No-Program Component Questions

A separate battery of ***No-Program Component*** questions was designed to understand what the customer might have done if the EPE 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 EPE.

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 Component questions were analyzed and combined with a timing adjustment to calculate the No-Program score, as shown in Figure 2. The timing adjustment was made based on whether or not the respondent would have delayed their equipment purchase if the rebate had not been available. If the purchase would have been delayed by one year or

more, then the No-Program score was set to zero, thereby minimizing the level of free ridership for this algorithm component only.

Free Ridership and NTG Calculation

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

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

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

Beginning in 2021, any updates to program NTG ratios will be applied prospectively. As a result, the NTG ratios for Small Business Comprehensive, SCORE Plus, and Residential Lighting developed in the PY2021 evaluation are being applied to the PY2022 results. The NTG ratios calculated using the PY2022 data will then be applied to the PY2023 results.

1.6 Gross and Net Realized Savings Calculations

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

$$\text{Gross Realized Savings} =$$
$$(\textit{Ex Ante}\ \text{Savings})*(\text{Installation Adjustment})*(\text{Engineering Adjustment Factor})$$

Net Realized Savings are then determined by multiplying the **Gross Realized Savings** by the net-to-gross ratio:

$$\text{Net Realized Savings} = (\text{Net-to-Gross Ratio})*(\text{Gross Realized Savings})$$

1.7 Cost Effectiveness

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

costs are the present value of the program's administrative costs plus incentives paid to customers. To perform the cost effectiveness analysis, the evaluation team requested the following from EPE:

- 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);
- Discount rate;
- Line loss factor;
- Any assumed non-energy benefits; and
- Administrative costs (all non-incentive expenditures associated with program delivery).

In response to this data request, EPE provided its annual average avoided costs, discount rate, line loss factors, and program costs. EPE does not explicitly quantify separate avoided costs of CO2 emissions or transmission and distribution, instead including these factors in the avoided costs of energy and capacity.

For all programs, the evaluation team took the energy savings and effective useful life values from the final PY2022 tracking data submitted by EPE. 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 EPE were reasonable. The final cost effectiveness analysis uses net verified impacts, which take into account NTG ratios and engineering adjustment 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. The evaluation team applied this 20 percent benefit adder to the benefits calculated for EPE's NM EnergySaver program.

2 Impact Evaluation Results

The results of the PY2022 impact evaluation are shown in Table 7 (kWh) and Table 8 (kW), with the programs evaluated in 2022 highlighted in blue.

As noted previously, each program is required to be evaluated a minimum of once every three years. For PY2022, the evaluated programs covered 48 percent of the total *ex ante* kWh savings and 70 percent of the total *ex ante* kW savings.

Table 7: PY2022 Savings Summary – kWh*

Program	# of Projects	Expected Gross kWh Savings (*ex ante*)	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Residential Comprehensive	607	1,367,911	1.0000	1,367,911	0.6368	871,086
Residential Lighting	25	3,338,109	1.0000	3,338,109	0.6000	2,002,866
ENERGY STAR New Homes	11	589,827	1.0000	589,827	0.7333	432,521
Residential Load Management	2,200	285,761	1.0000	285,761	1.0000	285,761
NM EnergySaver	378	1,571,544	1.0000	1,571,544	1.0000	1,571,544
Small Business Comprehensive	83	2,069,753	0.9683	2,004,134	0.8919	1,787,487
SCORE Plus	17	1,291,442	0.9925	1,281,732	0.6088	780,318
Commercial Load Management	7	11,920	1.0000	11,920	1.0000	11,920
Total	**3,328**	**10,526,268**		**10,450,939**		**7,743,503**

*Savings values may not be reproducible as shown due to rounding.

Table 8: PY2022 Savings Summary - kW

Program	# of Projects	Expected Gross kW Savings (*ex ante*)	Engineering Adjustment Factor	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Residential Comprehensive	607	752	1.0000	752	0.6368	479
Residential Lighting	25	563	1.0000	563	0.6000	338
ENERGY STAR New Homes	11	276	1.0000	276	0.7333	202
Residential Load Management	2,200	2,098	1.0000	2,098	1.0000	2,098
NM EnergySaver	378	902	1.0000	902	1.0000	902
Small Business Comprehensive	83	373	0.9677	361	0.8919	322
SCORE Plus	17	153	1.0002	153	0.6088	93
Commercial Load Management	7	667	1.0577	706	1.0000	706
Total	**3,328**	**5,784**		**5,811**		**5,140**

*Savings values may not be reproducible as shown due to rounding.

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.

3 Small Business Comprehensive Program

3.1 Small Business Comprehensive Gross Impacts

The *ex ante* PY2022 impacts for the Small Business Comprehensive program are summarized in Table 9. In total, the Small Business Comprehensive program accounted for 20 percent of the *ex ante* energy impacts in EPE's overall portfolio.

Table 9: PY2022 Small Business Comprehensive Savings Summary

Program	# of Projects	Expected Gross kWh Savings (*ex ante*)	Expected Gross kW Savings (*ex ante*)
Small Business Comprehensive	83	2,069,753	373

The majority of the gross impact evaluation activities were devoted to engineering desk reviews of a sample of projects. 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 measure group. 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 10. The resulting sample achieved a relative precision of 90/4.8 overall.

Table 10: Small Business Comprehensive Desk Review Sample

Measure Group	Stratum	Count	Average kWh	Total kWh Savings	% of Savings	Final Sample
Lighting	0	2	210,371	420,742	20%	5
Lighting	1	14	43,043	602,600	29%	2
Lighting	2	21	20,921	439,337	21%	2
Lighting	3	50	5,686	284,324	14%	2
Other	0	2	135,508	271,017	13%	4
Other	1	8	6,467	51,733	2%	2

Total	**97**	**70,333**	**2,069,753**	**100%**	**17**

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

EPE has developed Excel-based calculators to estimate savings for lighting and HVAC projects. The factors and assumptions used in these calculators were reviewed by the evaluation team and compared to the New Mexico TRM. The EPE Excel-based calculators appear to be in alignment with the New Mexico TRM.

For the projects that received engineering desk reviews, the evaluation team made updates to four projects which impact the realization rates.

- The evaluation team used the input fixture wattage listed in the DLC certifications to calculate the *ex post* savings for two projects. The *ex ante* calculations appeared to use the nominal fixture wattage. This adjustment reduced the energy and peak demand savings for these two projects.
- The evaluation used a different baseline fixture wattage for two projects where T12 fixtures were replaced with linear LEDs. The *ex ante* calculations appeared to use a conversative value for the input fixture wattage for the T12 fixtures. Instead of using wattage values associated with T12 bulbs, the *ex ante* calculations used fixture power for T8 bulbs. As noted above, this appears to be an intended assumption to be conversative. The evaluation team revised the baseline fixture power to align with T12 fixtures using a default wattage table. Using the default wattages increased the energy and peak demand savings, but not as significantly as the reductions mentioned above.

Table 11 shows the results of the desk reviews and how the resulting engineering adjustments were used to calculate realized savings. For the Small Business Comprehensive program overall, these adjustments resulted in average engineering adjustment factors of 0.9683 for kWh and 0.9677 for kW.

Table 11: PY2022 Small Business Comprehensive Gross Impact Summary

Small Business Comprehensive	# of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	83	2,069,753	0.9683	2,004,134
kW Savings	83	373	0.9677	361

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

3.2 Small Business Comprehensive Net Impacts

Net impacts for the Small Business Comprehensive program were developed using the self-report method described in the *Evaluation Methods* section and based on participant phone survey data. The resulting program-level NTG ratio calculated in PY2021 that is being applied to the PY2022 results is 0.8919. The NTG ratio of 0.8156 calculated with the PY2022 survey results will be applied to the PY2023 net impacts.

Table 12 summarizes the PY2022 net impact calculations for the Small Business Comprehensive program using the NTG ratio described above. Net realized savings for the program overall are 1,787,487 kWh, and net realized demand savings are 322 kW.

Table 12: PY2022 Small Business Comprehensive Net Impact Summary

Small Business Comprehensive	# of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	83	2,004,134	0.8919	1,787,487
kW Savings	83	361	0.8919	322

3.3 Small Business Comprehensive Participant Surveys

As part of the evaluation, the evaluation team conducted 19 phone surveys with participants that received rebates through the EPE Small Business Comprehensive program. These surveys were completed in March 2023 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 the program experience;
- Survey responses for use in the free ridership calculations;
- Baseline data on energy use and/or equipment holdings;
- Participant drivers and barriers; and
- Additional process evaluation topics.

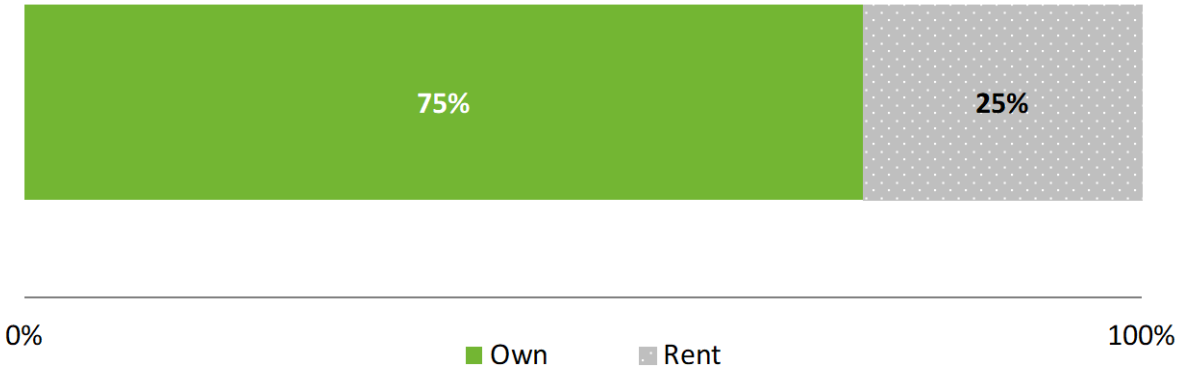
EPE provided program data on the Small Business Comprehensive participant projects, which allowed the evaluation team to select a sample for surveys. The evaluation team randomly

selected and recruited program participants from the entire population of Small Business Comprehensive participants that had valid contact information.

3.3.1 Company Demographics

The evaluation team asked participants whether their company owns or leases the building where the project was completed. Figure 3 shows that three-quarters of participants own their building compared to 25 percent of participants who lease or rent.

Figure 3: Participant Own or Rent (n=19)



The following two figures summarize the survey participants' building size and number of employees.

Figure 4 shows that 59 percent of participating firms reported occupying buildings between 2,000 and 4,999 square feet. Thirty-three percent occupy buildings 10,000 square feet or larger. However, Figure 5 shows that the majority of participants report less than five full-time employees (67%).

Figure 4: Participant Building Size (n=15)

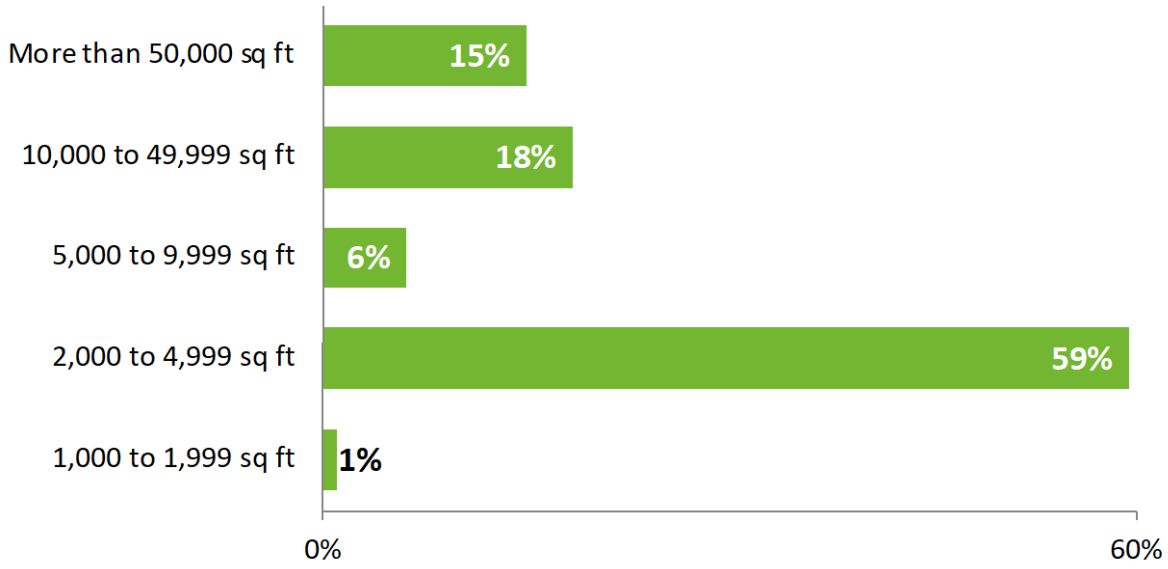
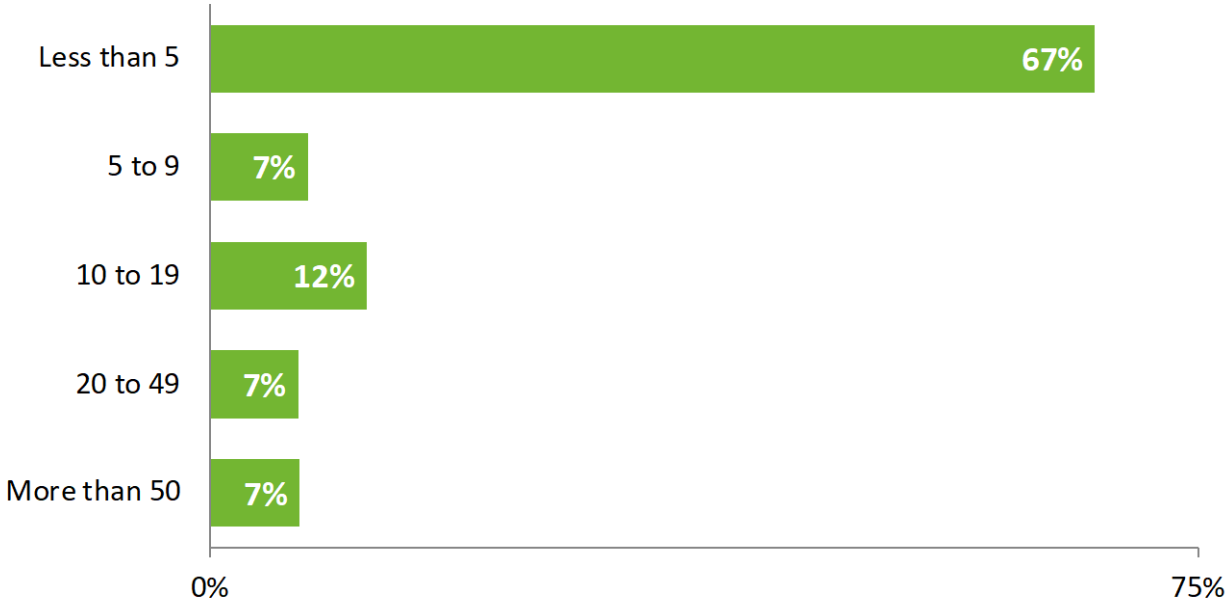
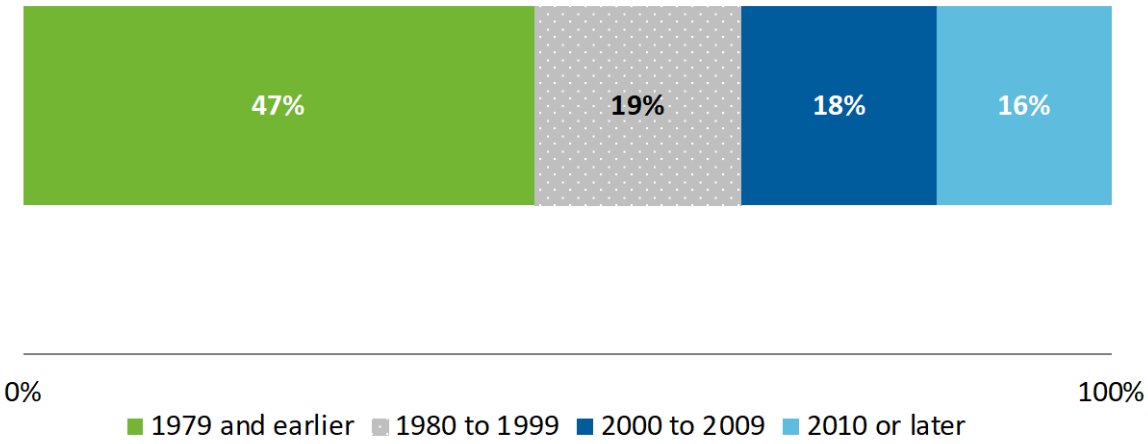


Figure 5: Participant Number of Employees (n=19)



In addition, Figure 6 shows that there were PY2022 participants with a range of building ages. The majority of participants' buildings (66%) were built before 2000, with the largest portion (47%) built in 1979 or earlier. This suggests that the program is doing an adequate job at targeting older buildings, where the potential for significant energy savings is the greatest, as well as newer buildings.

Figure 6: Participant Building Age (n=17)



3.3.2 Sources of Awareness

Participants became aware of the program rebates and assistance through a variety of channels including contractors or distributors, word of mouth, EPE marketing and outreach, events (conferences, seminars, or workshops), and previous participation in an EPE rebate program. Figure 7 shows that 39 percent of participants learned about the program offerings through contractors or distributors, and 37 percent heard about the program through word of mouth.

Figure 7: Initial Source of Awareness (n=18)

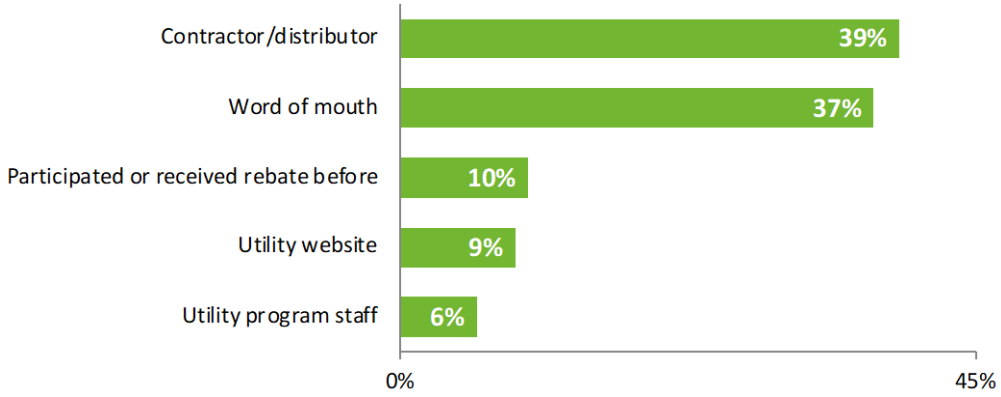


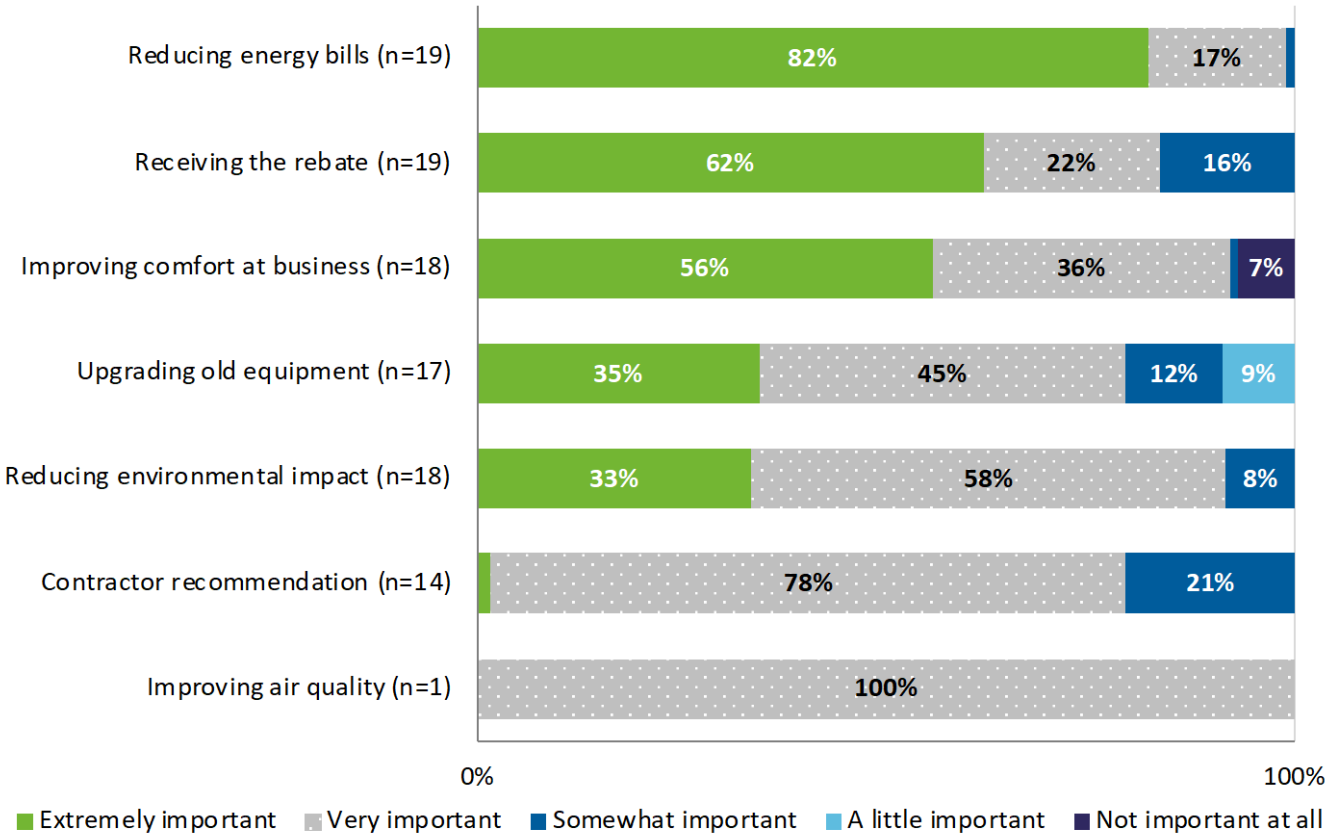
Figure 8 shows the level of importance participants placed on a variety of factors that may have influenced their participation in the program.

Eighty-two percent of participants reported that reducing energy bills was extremely important in their decision to participate. Other factors that participants reported as being important included

receiving the rebate, improving the comfort of their business, and upgrading old equipment. Given that the reduction of energy bills and receiving the rebate were the two greatest deciding factors, this may indicate that marketing efforts focused on the monetary value of the program could be most effective.

Improving air quality was the least important factor in the decision by participants to participate in the program, with only one participant sharing that it was "very important."

Figure 8: Motivations for Participation



In order to gain further context on sources of awareness, participants were given a list of potential program and non-program factors that may have influenced their decision about how energy efficient their equipment would be and were then asked to rate their importance on a 0-to-10-point scale.[6] Figure 9 displays that the majority of participants rated the contractor who performed the work and EPE recommendation as the most important factors in their decision to determine how energy efficient their equipment would be (100% and 99%, respectively). Previous

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

participation in an EPE program was the least important (but still important) factor in the participants' decision to determine how energy efficient their project would be, with less than half (46%) reporting that it was extremely important to their decision.

Figure 9: Importance of Program Factors

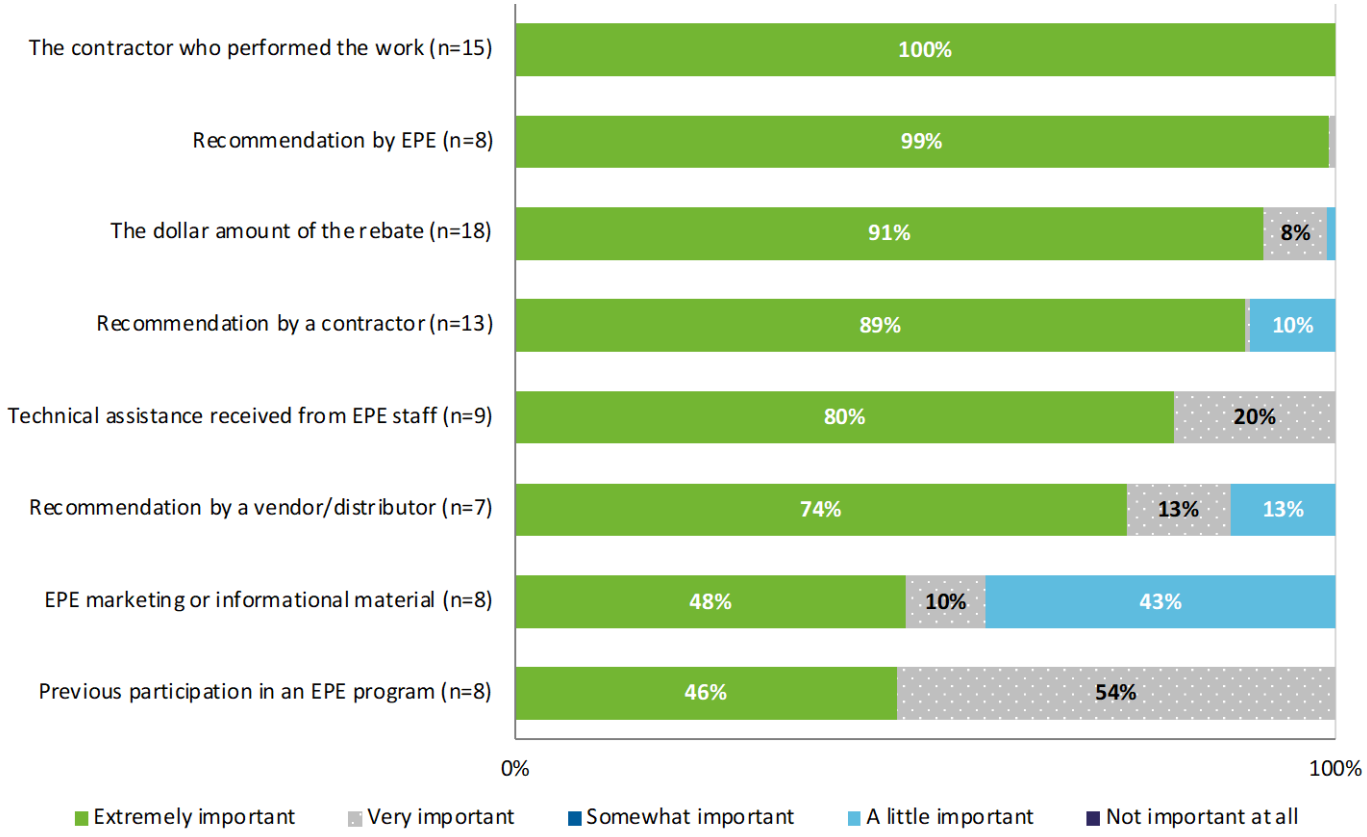
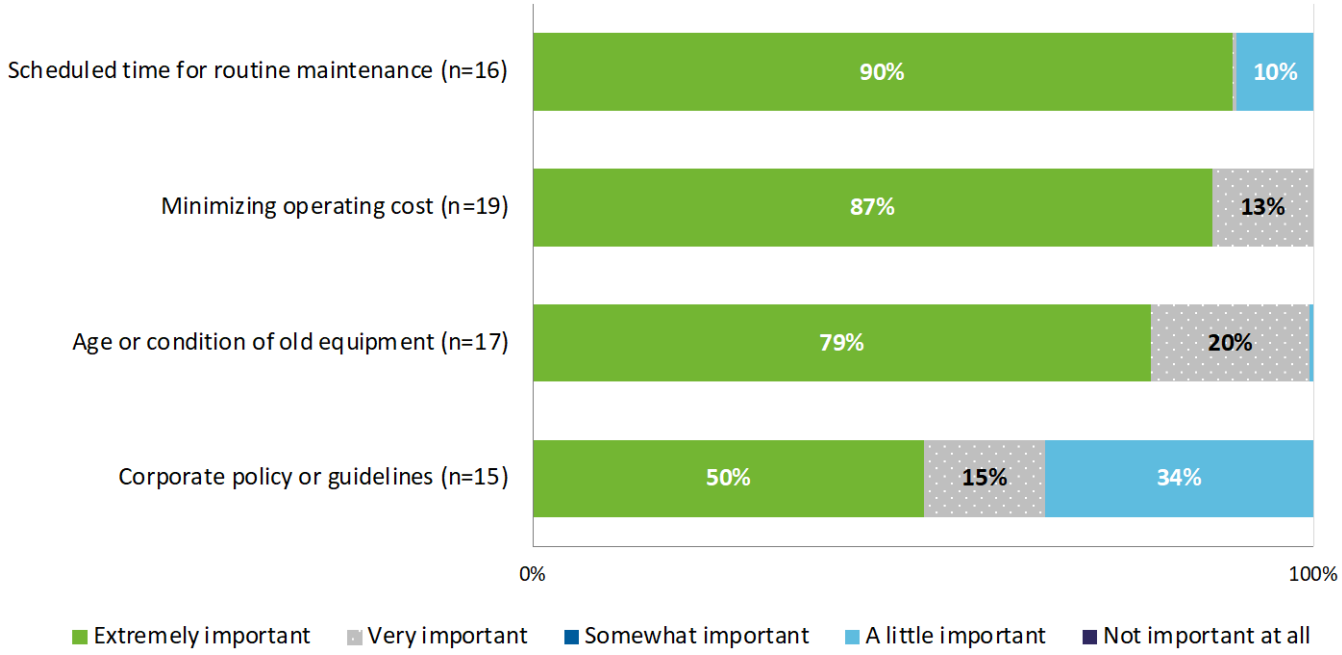


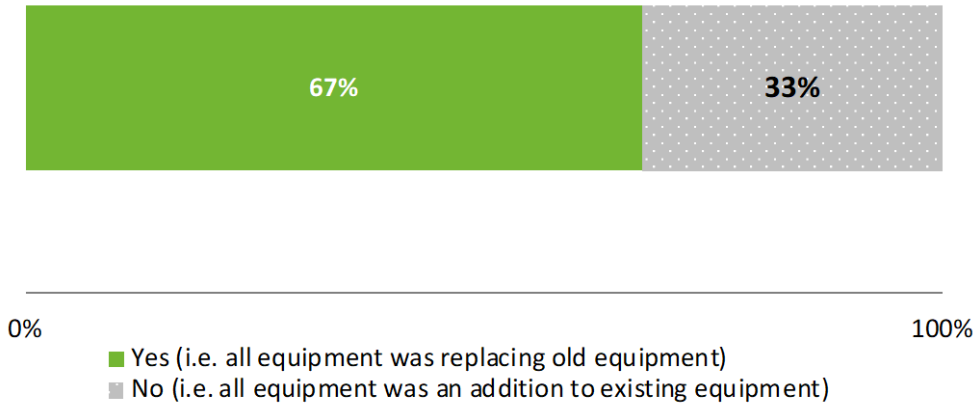
Figure 10 shows that the majority of the participants rated all non-program factors as extremely or very important in their decision to determine how energy efficient their project would be. The lowest rated non-program factor was corporate policy or guidelines, which 34 percent of participants found to be only a little important.

Figure 10: Importance of Non-Program Factors



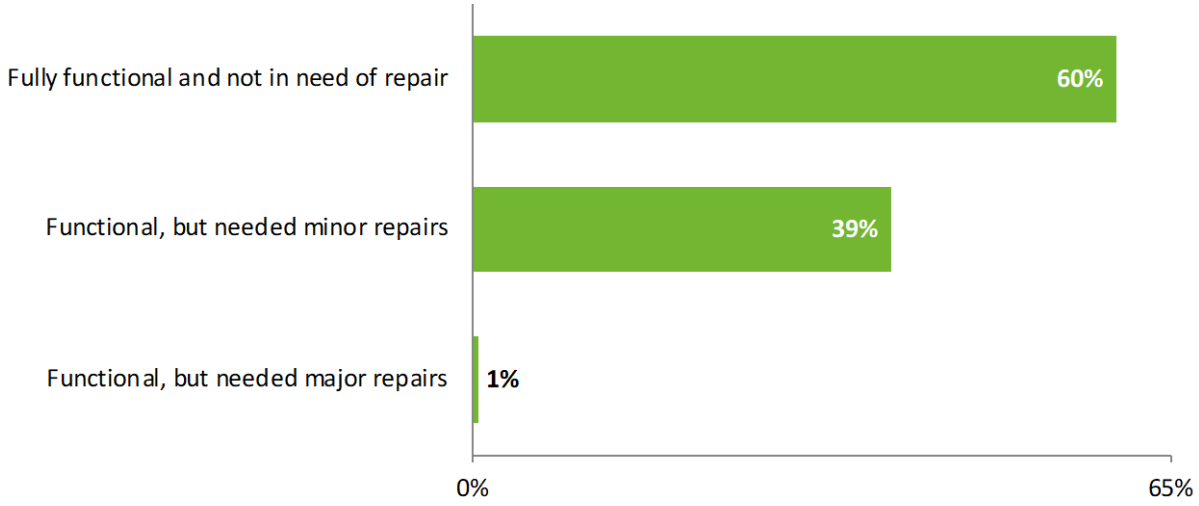
Participants were asked if the equipment installed through the program was intended to replace existing equipment and if existing equipment was functional or in need of repairs prior to replacement. Sixty-seven percent of participants reported that all equipment installed through the program replaced existing equipment (Figure 11).

Figure 11: Rebated Equipment Intended to Replace Existing Equipment (n=19)



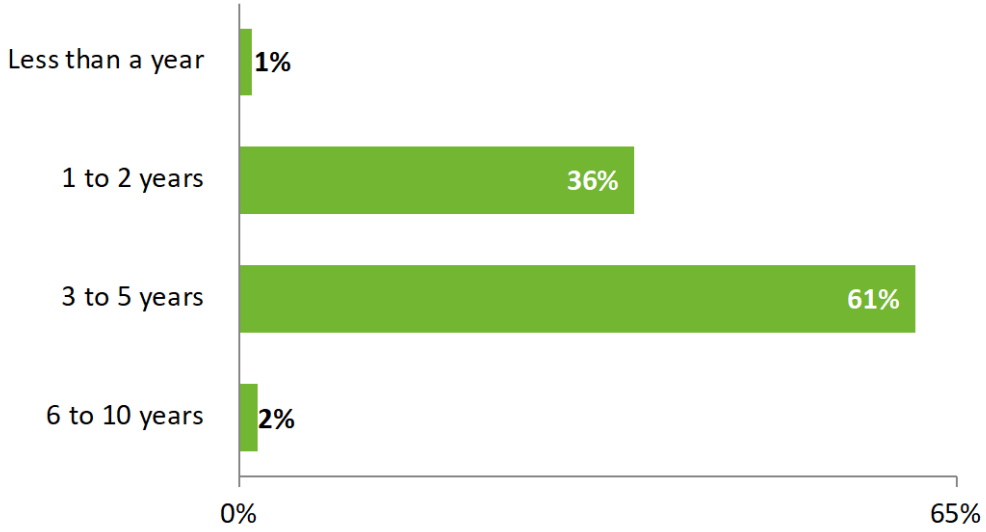
Participants were then asked about the state of the replaced equipment (Figure 12). Well over half of the participants (60%) reported that equipment replaced through the program was fully functional and not in need of repair, while 39 percent said that the equipment was functional and in need of some minor repairs.

Figure 12: State of Replaced Equipment (n=17)



In order to gain a better sense of the condition of the existing equipment, the evaluation team asked participants to estimate how much longer equipment would have lasted if it had not been replaced. Figure 13 shows that 61 percent of the participants believed their equipment would last 3 to 5 years. In fact, very few of the participants (1%) estimated that their equipment had less than a year of remaining life. These findings suggest that the program is doing a good job of targeting customers with functioning equipment, rather than those whose equipment is not working and would need to be replaced anyway (i.e., potential free riders).

Figure 13: Equipment Remaining Life (n=14)

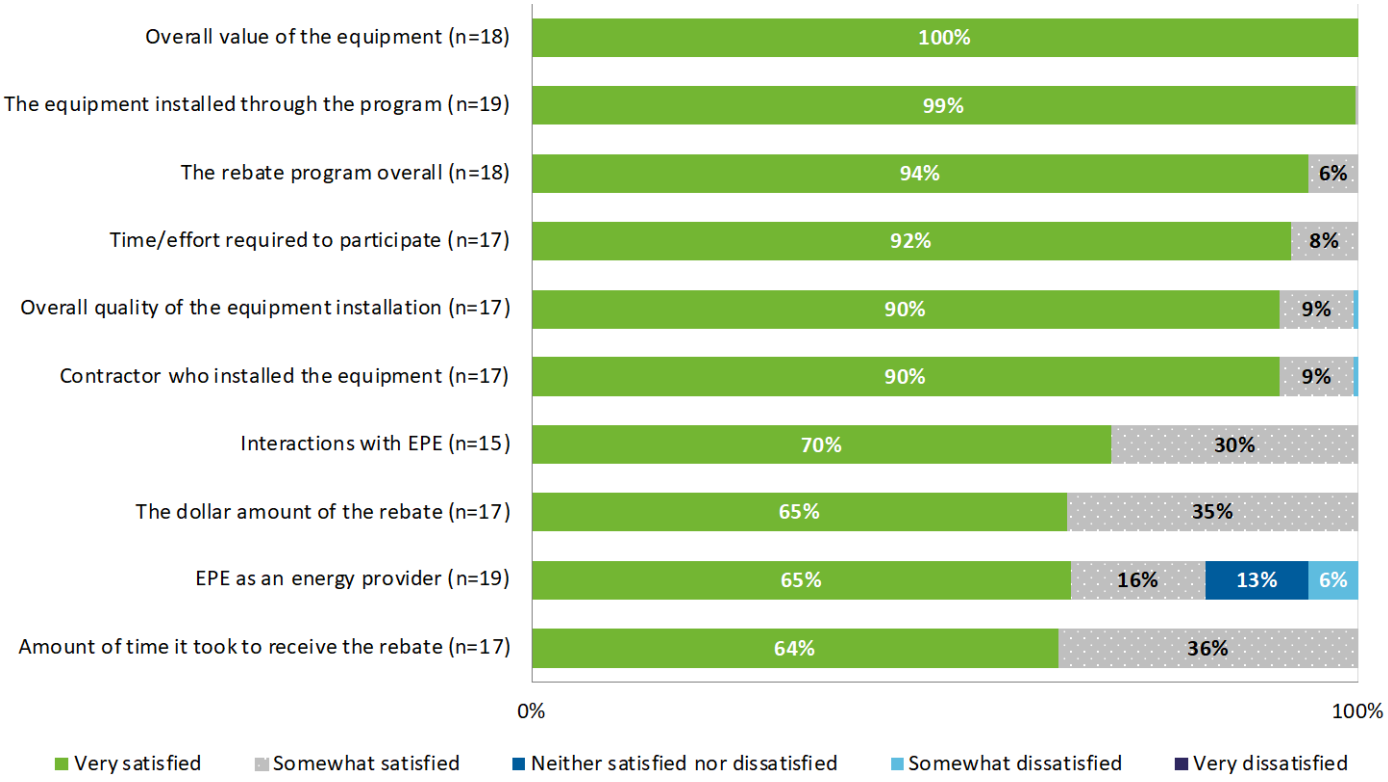


3.3.3 Participant Satisfaction

The participants evaluated their satisfaction with various components of the program on the following scale: very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. The individual components that participants were asked to rank their satisfaction on are summarized in the figure below.

Overall, surveyed program participants expressed high levels of satisfaction with the program components. As shown in Figure 14, the majority of participants reported that they were "very satisfied" with all the program components. One hundred percent reported that they were "very satisfied" with the overall value of the equipment. The satisfaction with the equipment installed through the program was rated highly as well, with 99 percent of participants reporting that they were "very satisfied" with this component of the program. The dollar amount of the rebate and the amount of time it took to receive the rebate received the lowest satisfaction rating from participants, but they were still quite satisfied, with 65 percent and 64 percent respectively reporting they were "very satisfied" with the components.

Figure 14: Participant Program Satisfaction



3.4 Small Business Comprehensive Contractor Interviews

The evaluation team completed interviews with nine contractors who participated in the 2022 Small Business Comprehensive program. The interviews were designed to investigate the specific topics below, while allowing for open discussion. Each interview lasted for a maximum of thirty minutes.

The interviews focused on the following topics:

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

3.4.1 Contractor Background

All participants had expertise in various fields related to energy efficiency, such as lighting, heating and cooling services, and wholesale supply distribution. They also had several years of experience providing energy efficiency-related services in Texas and other states. However, the extent of their relationships with EPE varied. Most indicated a long-standing relationship with the utility and its implementers, with one contractor stating that they had been working with the program since its inception; similarly, another contractor stated that they felt like "an extension of the [EPE] team." However, one participant mentioned that they had only recently started working with the program after learning about it from a colleague.

All contractors mentioned that they had a significant and direct role in their business's participation in the program. Most of them stated that they were very hands-on with the process of participating in the program. Once their customers expressed interest in moving forward, the majority of the contractors (7/9) mentioned that they handled everything from collecting the necessary information from the end-users to giving it to the program implementers, filling out the paperwork required to initiate the process, and performing the installations. One contractor said that they purchased the equipment for their customers and only got paid after the customer received the rebate.

3.4.2 Program Awareness, Influence, and Engagement

Contractors were asked how effectively the program engages and secures participants. Most of the participants stated that the program has been tremendously helpful to their business. The rebates offered by the program allow them to give customers good pricing while helping their customers upgrade to better equipment. This drives purchases and project closings. However, some of the participants (4/9) voiced concerns about the program, specifically with the turnaround time: the contractors mentioned that the program implementers were usually very communicative about the program process, but they also reported that implementers have had delays in responding to the contractors about the payments and the documentation contractors need to share with the customers. One contractor reported that it was difficult to access assistance from the implementer. Another contractor mentioned that there could be greater incentives offered.

Six contractors also stated that prospective program participants are usually hesitant and "on the fence" about upgrading to better equipment due to the perceived high costs and their disbelief of the program savings. They indicated that they have been able to overcome this challenge with a clear explanation of each aspect of the process. They emphasize the importance of energy efficient equipment and the potential cost savings by walking through each step with the customer and ensuring they feel comfortable with what they have agreed to do.

According to contractors, word of mouth between businesses regarding the more efficient equipment and its benefits as well as the program's assistance in procuring the equipment helps drive interest.

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

3.4.3 Program Process

With the exception of one contractor, interviewees stated that communication with program staff was clear and effective, and that the staff were prompt in answering any questions, making the whole process smooth and streamlined.

3.4.4 Market Response

There were varied responses among the contractors regarding the degree to which the program would increase the interest and demand for energy efficient equipment, but they were mostly positive. The contractors stated that given how the economy currently is, the market continues to respond to the incentives and that the program continues to persuade businesses to make energy efficiency investments since it helps them save money and energy, although certain issues were making it more challenging to attract prospective participants. These issues, according to certain contractors, include a lack of variety in terms of the rebates available, the small amounts of incentives offered, and a higher emphasis by the implementers on the residential sector as compared to the commercial even though the latter "uses substantially more energy." One contractor stated that when they relay their concerns for the slower turnaround time of the process and the perceived inaccessibility of the staff, customers are less willing to engage as much.

Four contractors also indicated it was more difficult to attract businesses in areas of perceived relative poverty. This was attributed to a misunderstanding of how the program works and its achievements as well as a mistrust regarding who pays for it. One of the contractors stated that the public's understanding of the program is greatly influenced by word of mouth and the utility's bigger push towards diversity, equity, and inclusion methods in terms of outreach, which helps overcome some of these barriers with harder-to-reach customers.

Two contractors pointed to the strength of customer preference. One of them provided the example of a customer who, after examining the impact the lighting equipment would have on their cultivation outcomes, bought the more expensive lighting even though there were no rebates offered for it. Six contractors reported combating customer preference with their own methods of persuasion, marketing materials and customer testimonials in their discussions with prospective clients. Despite client preferences for higher rebates or cheaper costs of goods, contractors report that customers are convinced to purchase efficient equipment and are often

surprised with their savings from the upfront costs and monthly utility bills, increasing customer satisfaction.

3.4.5 Satisfaction

The contractors stated that they were generally satisfied with the program. Aside from issues such as lower incentives, the lack of variety in the rebates, and the overall timeliness of the program's turnaround, which were shared by some of the contractors, they felt that the program continued to provide incentives to businesses that allowed them to make efficiency upgrades, which helped drive their own businesses. Contractors stated that they would keep recommending the program as long as it ran. When asked on a scale of 1 to 5 how satisfied they were with their participation in the program, most contractors responded with a 5, indicating that they were very satisfied.[7]

The contractors stated that they believed their customers would respond similarly, as they had also expressed high levels of satisfaction to the contractors. Only two contractors stated that they and their customers were less than "very satisfied" with the program, and they suggested that increasing the incentive amounts, having more rebates for a greater variety of measures available, and reducing uncertainties in the process and lack of communication from the program staff could increase their satisfaction. However, overall, people seem to be overwhelmingly satisfied with the program, with one contractor stating that the program is "helping plant seeds in the community that could get something to work."

[7] 1 being not at all satisfied, 2 somewhat dissatisfied, 3 neither satisfied nor dissatisfied, 4 somewhat satisfied and 5 very satisfied.

4 SCORE Plus Program

4.1 SCORE Plus Gross Impacts

The *ex ante* PY2022 impacts for the SCORE Plus program are summarized in Table 13. In total, the SCORE Plus program accounted for 12 percent of the *ex ante* energy impacts in EPE's overall portfolio.

Table 13: PY2022 SCORE Plus Savings Summary

Program	# of Projects	Expected Gross kWh Savings (*ex ante*)	Expected Gross kW Savings (*ex ante*)
SCORE Plus	17	1,291,442	153

The majority of the gross impact evaluation activities were devoted to engineering desk reviews of a sample of projects. 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 measure group. 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 14. The resulting sample achieved a relative precision of 90/2.0 overall.

Table 14: SCORE Plus Desk Review Sample

Measure Group	Stratum	Count	Average kWh	Total kWh Savings	% of Savings	Final Sample
Lighting	0	1	417,902	417,902	32%	1
Lighting	1	7	36,801	257,604	20%	6
Other	0	2	234,193	468,386	36%	2
Other	1	7	18,444	147,550	11%	4
Total		**17**	**176,835**	**1,291,442**	**100%**	**13**

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

EPE has developed Excel-based calculators to estimate savings for lighting and HVAC projects. The factors and assumptions used in these calculators were reviewed by the evaluation team and compared to the New Mexico TRM. The EPE Excel-based calculators appear to be in alignment with the New Mexico TRM.

For the projects that received engineering desk reviews, the evaluation team made adjustments to two projects that impact the energy savings.

- For one project, the *ex ante* calculation used two approaches to calculate the annual hours: Building Weighted Average and hours based on Area Type. The NM TRM says one method or the other should be used, with preference given to the Area Type method. Some space types in the *ex ante* calculator were unclear (e.g., "TLT-M") and could not be identified using the Area Type method for HOU. Thus, the *ex post* calculation used the Building Weighted Average approach. The use of a single approach, per the NM TRM, reduced the kWh RR.

- The evaluation team adjusted the hours of use for one project to align with a screw in bulb based on the supplied documentation. This adjustment increased the hours of use from 2,322 to 2,372, which increased the energy savings.

Table 15 shows the results of the desk reviews and how the resulting engineering adjustments were used to calculate realized savings. For the SCORE Plus program overall, these adjustments resulted in average engineering adjustment factors of 0.9925 for kWh and 1.0002 for kW.

Table 15: PY2022 SCORE Plus Gross Impact Summary

SCORE Plus	# of Projects	Expected Gross Savings (*ex ante*)	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	17	1,291,442	0.9925	1,281,732
kW Savings	17	153	1.0002	153

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

4.2 SCORE Plus Net Impacts

Net impacts for the SCORE Plus program were developed using the self-report method described in the *Evaluation Methods* chapter and based on participant phone survey data from the PY2021 evaluation. As noted previously, due to small sample sizes, the survey results from the PY2019 through PY2021 evaluations were averaged to get an updated NTG ratio of 0.6088. This new value is being applied to the PY2022 SCORE Plus program net impact results. The NTG ratio calculated using the PY2022 survey results will be applied to the PY2023 impacts.

Table 16 summarizes the PY2022 net impact calculations for the SCORE Plus program using the NTG ratio described above. Net realized savings for the program overall are 780,318 kWh, and net realized demand savings are 93 kW.

Table 16: PY2022 SCORE Plus Net Impact Summary

SCORE Plus	# of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	17	1,281,732	0.6088	780,318
kW Savings	17	153	0.6088	93

4.3 Participant Interviews

The evaluation team completed five interviews with project contacts who interacted with the PY2022 SCORE Plus program. For this evaluation round, the interviews covered the following topics:

- Interviewee background and relationship to project;
- Entree and role of the EPE program;
- Program influence on energy efficiency improvements; and
- Program satisfaction

This section primarily presents results qualitatively to show the range of perceptions and responses, but some numbers are featured to provide further context on frequency of types of responses.

4.3.1 Project Background

All the interviewees, through some assistance with El Paso Electric, had completed a variety of retrofit construction projects. All five participants completed more than one project through the SCORE Plus program, with one interviewee having worked with the program since its inception. While participants had varying levels of interaction with the SCORE Plus program directly, four out

of five were familiar with the recorded project and played a significant role in the participation of their organization in the program. The interviews were with high-level officials who reported having a lot of decision-making authority and included an executive director for energy management and construction, a senior program manager, two construction project managers, and a director of engineering.

Business types included schools, motels, a fire station, and a furniture retailer. Three out of the five participants completed some type of lighting measure in their SCORE Plus projects – including lighting fixtures and controls - while four of the five completed some type of HVAC measure in their SCORE Plus projects, including a variable frequency drive (VFD) that moderates the blower motor speed to reduce the overall energy use during the different cycles of an HVAC unit. One contractor mentioned completing the installation of weather stripping on doors and windows to seal air leaks.

Three of the four participants stated that they used one or more contractors to complete their projects through the SCORE Plus program. Four out of the five participants stated that they used contractors to complete their projects through the SCORE Plus program, although one stated that they did so internally as they already had contractors working for them.

In terms of the overall opinion on the projects, four out of five interviewees stated that they had almost no issues during the process and that the equipment was installed to their satisfaction and was functioning as expected.

4.3.2 Program Entree and Role

The evaluation team asked interviewees to describe where they learned about the EPE program, as well as to elaborate on EPE's role in their experience with the program process. Four out of the five interviewees had prior involvement or connection to the EPE program. The project contact who could not recall where they learned about the program hypothesized that their contractor shared the opportunity with them.

Most of the interviewees expressed frequent interaction with EPE or the implementer. These contacts cited EPE's responsiveness, involvement, and helpfulness. Only one of the interviewees felt that EPE was "hands off" in terms of the utility's role in the installation.

Many of the participants shared that the SCORE Plus program influenced their choices. For example, one interviewee noted that they immediately referenced SCORE Plus-eligible products when they realized they had upcoming HVAC projects. Another interviewee cited their project's short window of time as reason to rely on SCORE Plus to maximize savings. An additional participant echoed this sentiment of savings maximization, noting that the increasing cost of energy has influenced their decision-making and consideration of equipment price.

A few of the participants—those whose projects were retrofits—discussed the estimated remaining life of equipment if it had not been replaced by SCORE Plus rebates. Two of the interviewees stated that the equipment would have been replaced regardless of the SCORE Plus program. One interviewee estimated that their equipment could have lasted for another 5 to 10 years. One interviewee estimated 12 to 15 years but cited drops in equipment efficiency as an important reason to make replacements now, rather than later. This interviewee said that equipment breaks down quicker if it is not maintained as needed.

4.3.3 Influence on Improvements

The evaluation team asked SCORE Plus interview participants a series of questions about how various factors—both internal to the program and independent of EPE—influenced their decision to install energy efficiency equipment. These questions were asked to gauge the level of influence that the SCORE Plus program had on the decision by participants to upgrade their equipment relative to the non-program factors.

Interviewees were asked to rate the level of importance for program and non-program factors on a scale of 0 to 10.[8] Participants could also indicate that a factor was not applicable to their experience with the project or SCORE Plus program. Examples of factors internal to the program were: the contractor who performed the work and or any distributor or vendor involved in supplying the equipment, the rebate available from EPE, any technical assistance, recommendations, or information from EPE or its implementers, including CLEAResult. Examples of non-program factors were: the age or condition of the old equipment, corporate policy, or the financial benefits of the efficiency upgrade by reducing operation costs.

On average, the participants rated individual program factors as more influential than the non-program factors. However, when participants were asked to estimate how much of the efficiency upgrades were due to the program versus non-program elements as a whole, the participants attributed more of their decision-making to all of the non-program elements. This may indicate that the individual factors that participants rated did not capture all components of their decision-making process. In fact, the majority (4/5) of participants stated that it was very or extremely likely that they would have completed the same efficiency upgrades even without the rebate.

In general, the participants expressed gratitude for the rebate program, but it seems that their decision-making and energy efficiency upgrades do not depend on the program. This may indicate that the rebate program is serving as a small nudge toward certain types of upgrades, but not as the entire basis for project decisions.

[8] 0 being not at all important and 10 being extremely important.

4.3.4 Program Satisfaction

The evaluation team asked the interviewees a series of questions to quantify their level of satisfaction with various components of the program. Participants were asked to rate their satisfaction on a scale of 1 to 5, with 1 being "very unsatisfied" and 5 being "very satisfied." Participants could also indicate if they were particularly satisfied or dissatisfied with anything specific. They could also indicate if a component were not applicable to their experience with the project or SCORE plus program.

The program components included:

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

Overall, participants expressed a high level of satisfaction across all program components, particularly with the El Paso Electric as a whole and the rebate program, including the effort required to participate in the program, the project application process, their interactions with EPE, and EPE as an energy provider.

No participants rated their level of satisfaction as less than a 3 for any of the factors provided, and the only factor rated a 3 was for the overall value of the equipment their company received for the price they paid. The participant gave this component a score of 3 because they felt that, in spite of the rebate, the prices were higher than what they had thought given the equipment's value.

Given the relatively high level of satisfaction, most participants did not share any direct suggestions for improving the SCORE Plus program. One participant did suggest increasing the amount of the rebate but aside from that, the general feeling shared among the participants was that the program was incredibly helpful with getting them the information they needed throughout the process.

5 Residential Comprehensive Program

The Residential Comprehensive program is a prescriptive program serving EPE's residential customers and offers measures such as insulation, duct sealing, air infiltration, solar screens, evaporative coolers, refrigerated air conditioning, windows, variable speed pool pumps, cool roofs, Energy Star windows, Energy Star smart thermostats, heat pump water heaters, and high efficient room air conditioners. These are prescriptive measures, and as such, the focus of the evaluation for this program was a deemed savings review. The evaluation team reviewed per-unit savings for measures installed through the program to determine the realized gross savings.

The evaluation of the Residential Comprehensive program included both an impact evaluation as described above and a process evaluation that consisted of participant phone surveys and interviews with participating contractors.

5.1 Residential Comprehensive Gross and Net Impacts

The impact evaluation consisted of a deemed savings review for the measures included in the Residential Comprehensive program. In the deemed savings review, we attempted to confirm the source of savings cited by EPE and/or replicate the per-unit savings values if savings were based on an algorithm from the New Mexico or Texas TRM. All measures in the Residential Comprehensive program use savings from the New Mexico TRM or another appropriate source. EPE does appear to be using the correct algorithms for all measures, and the savings were reasonable, so the evaluation team did not make adjustments to savings for these measures.

Net impacts for the Residential Comprehensive program were developed using the self-report method described in the *Evaluation Methods* section and based on participant phone survey data. The resulting PY2022 program-level NTG ratio is 0.6368. In PY2023, the NTG ratio will change from 0.6368 to 0.5514.

Table 17 summarizes the PY2022 gross and net impact results for the Residential Comprehensive program using the NTG ratio described above. Net realized savings for the program overall are 871,086 kWh, and net realized demand savings are 479 kW.

Table 17: PY2022 Residential Comprehensive Gross and Net Impact Summary

Residential Comprehensive	Number of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	607	1,367,911	1.0000	1,367,911	0.6368	871,086
kW Savings	607	752	1.0000	752	0.6368	479

5.2 Residential Comprehensive Participant Surveys

As part of the evaluation, the evaluation team conducted telephone surveys with 100 residential customers who received rebates through the EPE Residential Comprehensive program. These surveys were completed in March of 2023 and ranged from 15 to 20 minutes in length.

EPE provided program data on the Residential Comprehensive participant projects, which allowed the evaluation team to select a sample for interviews. The evaluation team randomly selected and recruited program participants from the entire population of Residential Comprehensive participants who had valid contact information.

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

5.2.1 Participant Demographics

We asked survey respondents a number of questions about the characteristics of their home and household, including whether they own or rent, the size of their home, the number of people in the household, and age of their home. All survey respondents reported owning their home. Respondents were then asked to estimate their home size; as seen in Figure 15, homes tended to be on the smaller side, with 58 percent of respondents reporting home sizes between 1,000 to 1,999 square feet. This is understandable given that respondents also reported small household sizes. As seen in Figure 16, 73 percent of respondents reported just one or two full-time residents living in the home where the project was completed.

Figure 15: Residential Comprehensive Respondent Home Size (n = 95)

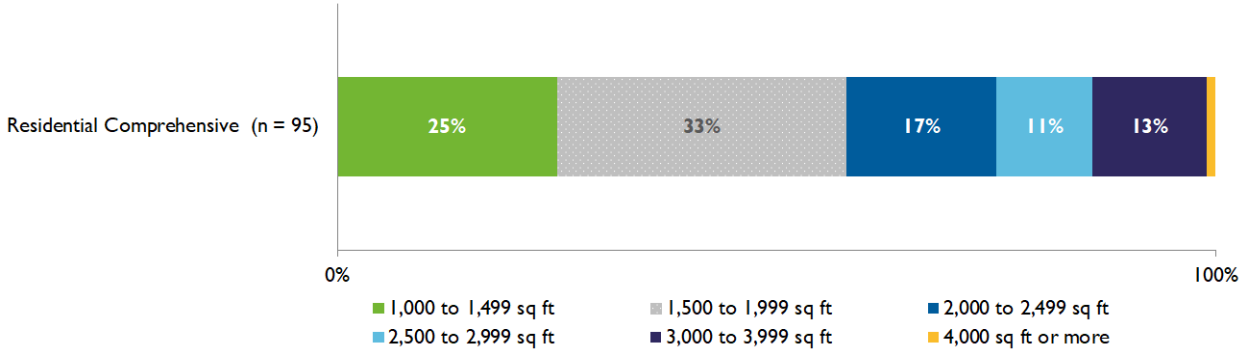
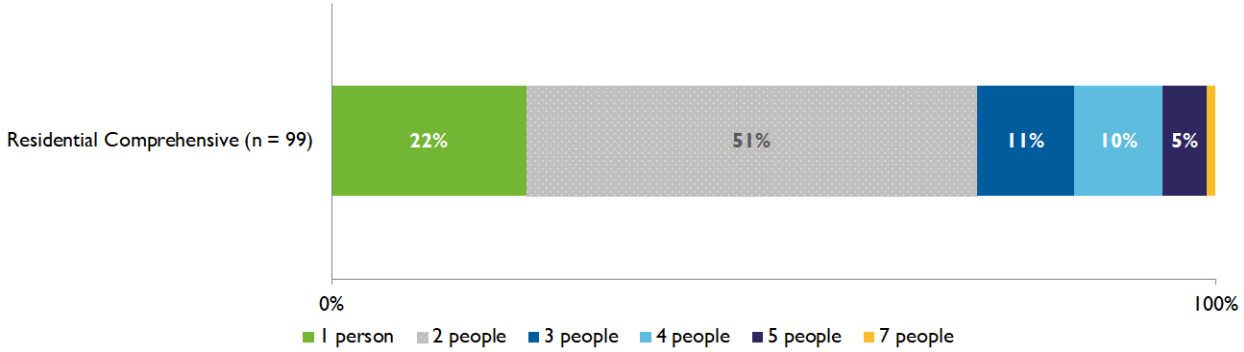
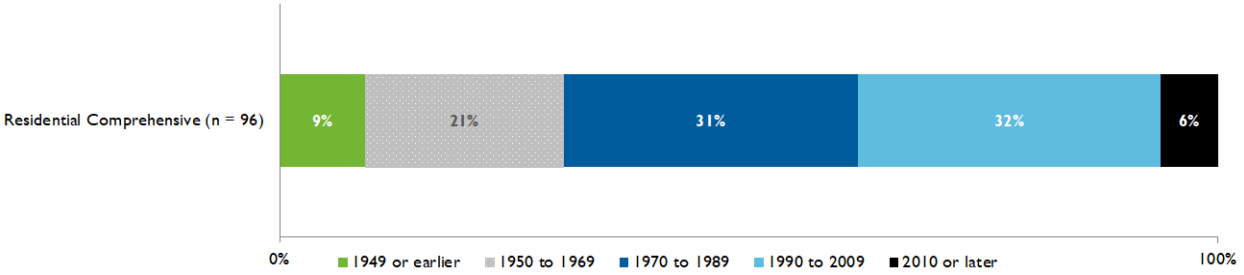


Figure 16: Residential Comprehensive Respondent Household Size (n = 99)



The program has continued to be effective at targeting older homes where the potential for significant energy savings is greatest, with a majority of respondents reporting that their home was built sometime between 1949 to 1989, or earlier (61%, Figure 17).

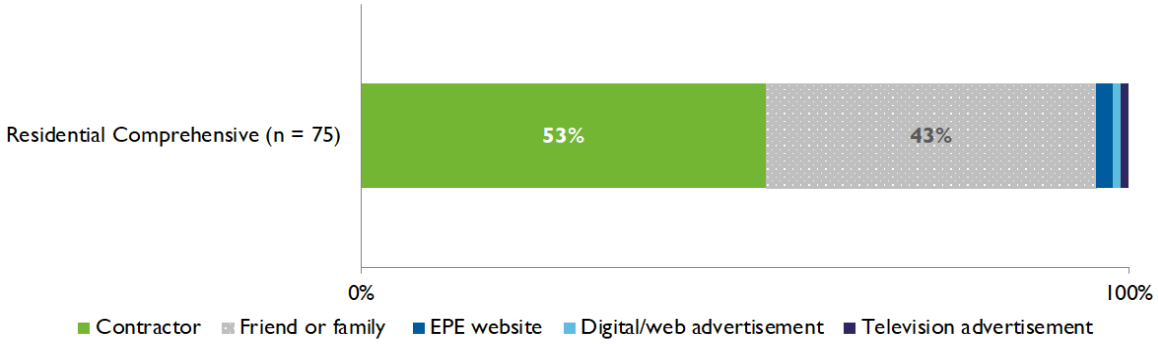
Figure 17: Residential Comprehensive Respondent Home Age (n = 96)



5.2.2 Sources of Awareness

Participants were next asked how they initially became aware of the program. The large majority of respondents reported becoming aware of the program through the contractor who installed the equipment (53%) or friends or family (43%), while other channels were very uncommon (Figure 18).

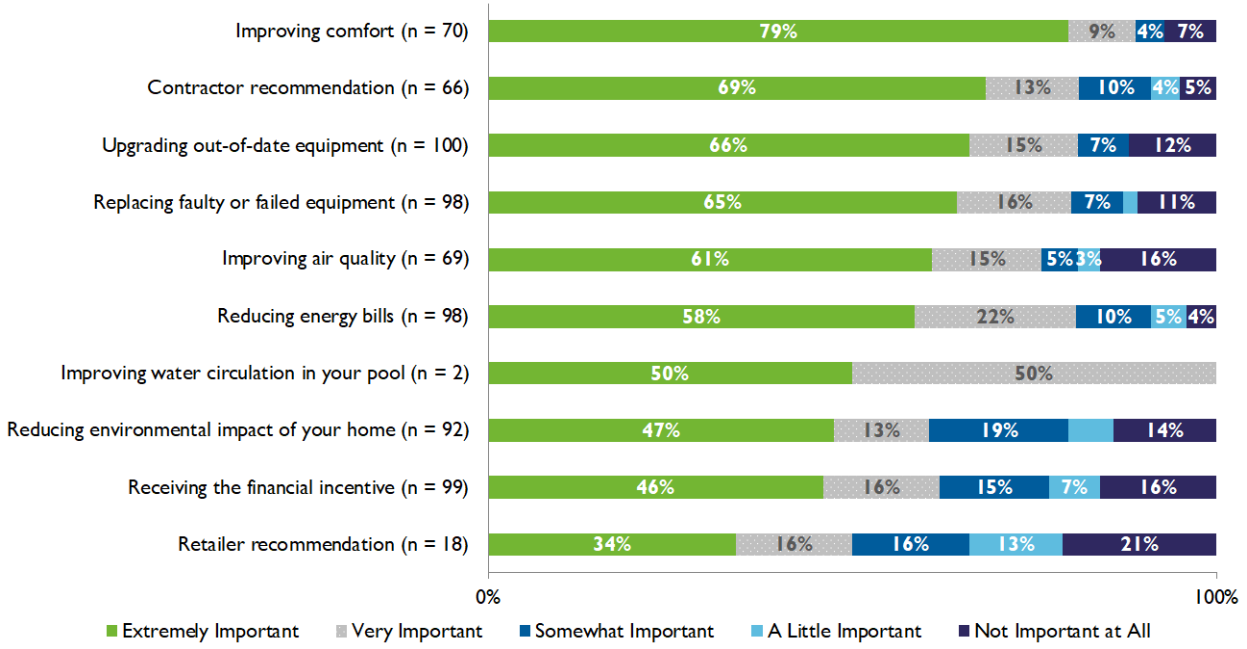
Figure 18: Residential Comprehensive Respondent Initial Sources of Awareness



5.2.3 Motivations for Participation

Participants were presented with potential motivating factors for participating in the program and were asked to rank how important each factor was in their decision to participate. Figure 19 summarizes the ranking of importance for each factor. Improving comfort in the home was the most important factor, with 79 percent of respondents ranking it as 'extremely important,' followed by a contractor recommendation (69% 'extremely important') and upgrading out-of-date equipment (66% 'extremely important'). Contractors played a large role in promoting both initial awareness and participation in the program.

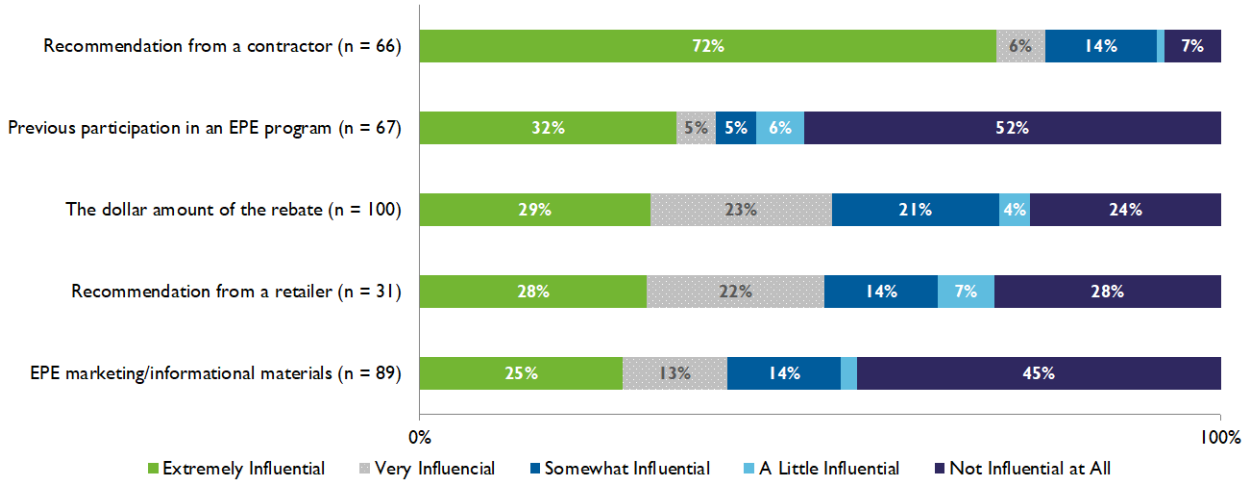
Figure 19: Residential Comprehensive Respondent Motivations for Participation



In addition to motivations for participating, survey respondents were presented with a list of program factors that might have influenced their decision to make the upgrade and were then asked to rate their influence on a 0 to 10 scale.[9] Unsurprisingly, a recommendation from a contractor was the most influential, with 72 percent of respondents reporting it as 'extremely influential' (Figure 20). Notably, 52 percent of respondents reported that previous participation in an EPE program was 'not influential at all' and 45 percent of respondents reported that EPE marketing/informational materials were 'not influential at all.'

[9] On the 0 to 10-point scale, 0 indicated 'Not influential at all' and 10 indicated 'Extremely influential.'

Figure 20: Residential Comprehensive Respondent Influence of Program Factors



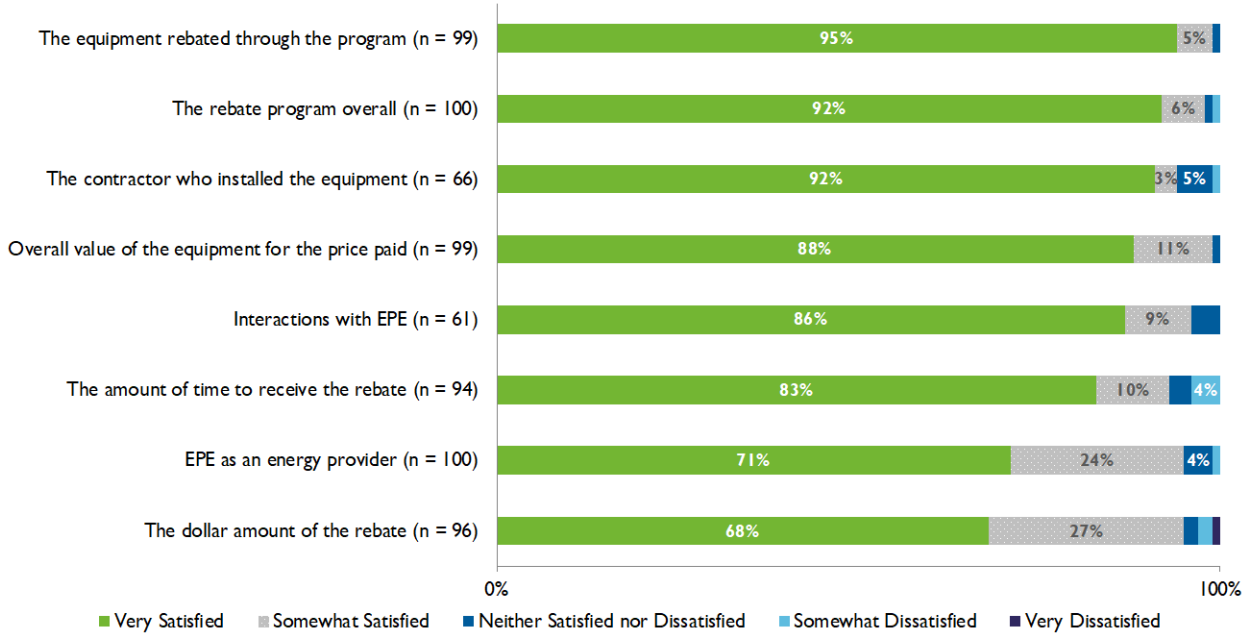
5.2.4 Participant Satisfaction

Participants were asked to evaluate their satisfaction with various components of the Residential Comprehensive program based on the following scale: very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and very dissatisfied. The program components that respondents were asked to rank their satisfaction with included:

- The equipment rebated through the program
- The rebate program overall
- The contractor who installed the equipment
- The overall value of the equipment for the price paid
- Interactions with EPE
- The amount of time to receive the rebate
- EPE as an energy provider
- The dollar amount of the rebate

Figure 21 summarizes the satisfaction levels of the Residential Comprehensive program survey respondents. Overall, respondents expressed high levels of satisfaction with the program, with the majority of respondents reporting being very satisfied with each program component. The equipment rebated through the program and the rebate program overall received the highest satisfaction ratings among respondents (95% and 92% 'very satisfied,' respectively). The only notable rating of dissatisfaction was the four percent of respondents who reported being 'somewhat dissatisfied' with the amount of time it took to receive the rebate. This is negligible considering that 93 percent of respondents reported being 'very satisfied' or 'somewhat satisfied' with the amount of time it took to receive the rebate.

Figure 21: Residential Comprehensive Respondent Program Satisfaction



5.3 Residential Comprehensive Trade Ally Interviews

The evaluation team completed ten interviews with trade allies (most were full-service HVAC contractors and some were solar screen salesmen, HVAC wholesalers or handymen) who were associated with the PY2022 Residential Comprehensive program. The interviews covered the following topics:

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

Interviews typically lasted 15 to 20 minutes. This section presents results qualitatively to show the range of perceptions and responses.

5.3.1 Trade Ally Background and Involvement

The trade allies interviewed were from businesses with a local to regional focus. Many of the interviewees noted that they serve El Paso and Las Cruses. Most of the interviewees were the owners of their firms. The firms offered various services and worked in wholesale, as installers, with one interviewee that is a handyman, and another in sales.

The trade allies shared their initial experiences with the program. About half of the trade allies could not recall how they became involved with the program, but they acknowledged that there were no major barriers to participating. The other half cited learning about the program via word-of-mouth or from EPE marketing pamphlets.

The interviewees expressed a range of involvement with the program. A few of the trade allies shared that they are thoroughly involved with the program, even supporting the customer's paperwork process. Other trade allies noted that the paperwork process has transitioned to the customer's responsibility, and thus, they direct customers to the online forms after providing them with the relevant information. A couple of the interviewees said that they only handle the installation, and just promote the opportunity to their customers. One interviewee does not interact with customers nor paperwork but does share the program information to other trade allies. None of the trade allies indicated that they currently have direct correspondence with EPE.

5.3.2 Program Process

The evaluation team asked trade allies to describe their specific engagement and role in the rebate program process. Only two of the trade allies state that they were actively involved in the rebate paperwork process. One of the two interviewees noted that the paperwork was not a significant time burden; the other said that they will fill out paperwork on behalf of older customers. All other interviewees said that the paperwork process is the customer's responsibility.

The evaluation team also explored how and when trade allies communicate about the EPE rebates with customers and what role they play in the trade allies' and customers' ultimate choices. The trade allies typically presented the rebate program and its offerings at the beginning of their interactions with customers.

Nearly every trade ally shared that the rebate program was helpful to their firm. None of the trade allies expressed significant concern regarding the program process. A few (4/10) of the trade allies recommended that the program offer higher rebate amounts to respond to the market's high inflation rates and perceived customer demand.

5.3.3 Program Influence

In order to understand the extent of the program awareness and influence, trade allies were asked to elaborate on the level of program engagement. Half of the interviewees estimated that over 90 percent of their residential projects within EPE territory end up qualifying for and receiving a rebate. The other half of the interviewees said only very few of their projects qualify and receive a rebate. This is seemingly attributed to the nature of the projects that these trade allies service.

The trade allies mostly felt that EPE is clear on which products are eligible for the program rebates. They reference having the knowledge and resources to clarify program ambiguity if confusion arises. For most trade allies, it does not seem that the program has had a significant influence on

what equipment they suggest to customers. One interviewee did note that they do promote newer and better equipment if customers express interest in the program, but they emphasize that it is up to the customer to make the final decision.

Additionally, trade allies were asked how effectively the program secures participants. The interviewees shared that customers were very interested in the opportunity.

The evaluation team asked trade allies to elaborate on the rebate program's influence on customer decision-making. Most (8/10) trade allies shared that the program has been helpful by allowing customers to better afford energy efficient equipment. A couple of the interviewees expressed that the program supports sales and that some customers would not be able to afford installations without the rebate.

In fact, half of the trade allies reported that customers outside of EPE territory are equally (3/10) or less likely (2/10) to install efficiency measures as those within EPE territory.

5.3.4 Market Response

To better understand the program's influence on the market, the evaluation team asked trade allies to estimate the degree to which the program increases the interest and demand for energy efficient equipment.

Some trade allies identified market patterns that may have a negative influence on the program's market effect. One trade ally noted that the rebate is not enough to entirely offset high prices and additional costs from the equipment, which dissuades customers from participating in the program. In these cases, customers will choose cheaper, but less energy efficient equipment. Another trade ally noted that with the adoption of solar panels, some customers perceive solar energy as "free electricity", which in turn reduces need or demand for energy efficient equipment. Two additional trade allies felt that the program itself was not increasing demand, but that the demand for energy efficient equipment was occurring organically. These interviewees felt that customers would transition to energy efficient equipment regardless of the EPE rebate program.

Conversely, some trade allies identified other shocks to the market that may have positive influence on the program's market effect. For example, one contractor felt that the program has had a particularly "huge impact as far as swimming pools", because some homeowners were struggling to adhere to new pool pump policies on their own.

Another contractor said that he thinks:

> *"[The EPE Residential Comprehensive Program] determines a lot of the [customer] demand, a lot of people do more efficient things because of the rebate."*

Another trade ally noted that electricity bills were increasing across the service area, which would influence homeowners to further reduce electricity bills.

The evaluation team asked the trade allies to identify markets that the energy efficiency program may not be reaching well. A couple of the interviewees mentioned that low-income residential communities could be better served by the program, which may be achieved through increased marketing efforts.

5.3.5 Satisfaction

The interviewed trade allies expressed high levels of satisfaction with the EPE Residential Comprehensive energy efficiency rebate program, rating it a 4.7 on average on a 1 to 5-point scale.[10]

Trade allies felt that the program information and processes were relatively clear to customers, estimating that customers would report a 5 on the same satisfaction point scale. Outside of concerns with reduced incentives, they felt that the program continues to provide incentives that allow more homeowners to make efficiency upgrades.

[10] 1 being not at all satisfied, 2 somewhat dissatisfied, 3 neither satisfied nor dissatisfied, 4 somewhat satisfied and 5 very satisfied.

6 Load Management as a Resource

El Paso Electric's Demand Side Management (DSM) resources, which include both Energy Efficiency and Residential and Commercial Load Management (LM) programs, are factored into the gross system demand estimates. Therefore, the LM resources are considered as "a reduction to the overall forecasted native system demand", in accordance with the 2021 El Paso Electric Company (EPE) Integrated Resource Plan (IRP).[11]

EPE has committed to a 0.2 Loss of Load Expectation (LOLE) target until 2029, after which it will be reduced to the industry standard of 0.1 LOLE. This target until 2029 is in line with the current challenges in transitioning to an electric grid powered by more intermittent energy sources. This essay emphasizes the significance of the LM resources in adapting to the changes in the energy mix, presenting several compelling reasons.

The importance of managing LM resources effectively in achieving the target LOLE in a cost-efficient manner can be understood from the LOLE calculation process. Essentially, achieving LOLE targets relies on mitigating rare events: the estimated system LOLE is determined by simulating 100 years of serially correlated load data by varying cross-sectionally correlated input conditions. In this scenario, rare occurrences resulting in loss of load drive up LOLE estimates, despite their low likelihood. Therefore, fulfilling LOLE requirements by deploying resources with minimal fixed costs is a more effective approach from an economic standpoint, as opposed to procuring resources with high fixed costs that may only be operational for a negligible portion of the system's lifespan.

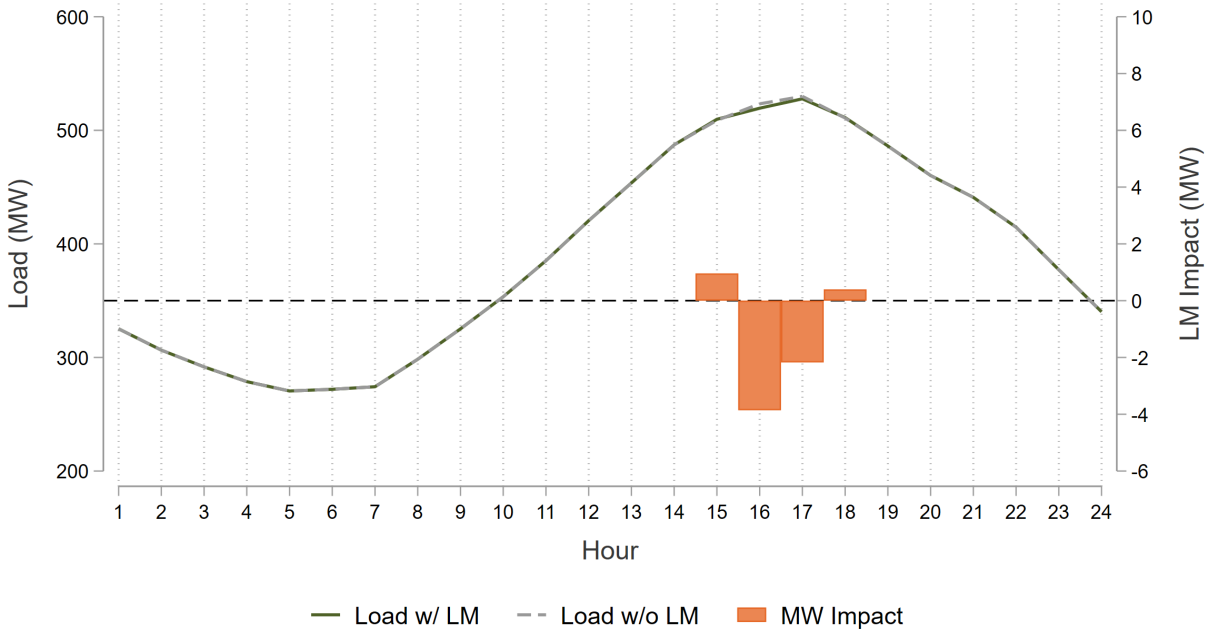
Residential and commercial LM programs differ from time-varying rates, which also use price signals to reduce load but focus on permanently changing customer load structures. In contrast, LM programs aim to release capacity resources to prevent system overload. Although LM programs generate energy savings, this value is secondary compared to their primary goal. Time-varying rates align the marginal cost of energy supply and demand through price incentives, whereas LM programs are primarily focused on capacity management.

For instance, the combined impact of residential and commercial LM programs resulted in a system capacity increase of approximately 4 MW during the initial hour (16) of the June 13th event. Figure 22 displays observed load and counterfactual load without LM resource dispatch (i.e., estimated load once adding back the MW impacts for commercial and residential programs combined) for New Mexico, which is assumed to account for one-fourth of the combined system load recorded in the native load data for New Mexico and Texas. The plotted bars represent the

[11] El Paso Electric: 2021 Integrated Resource Plan.
https://www.epelectric.com/files/html/EPE%202021%20Integrated%20Resource%20Plan.pdf

MW impacts during a time-window of one hour before and after the event: the two hours during the event demonstrate negative impacts, indicating a reduction in energy usage, and the hours preceding and following the event show minor snapbacks, indicating a marginal increase in baseline consumption. Overall, LM programs enabled a more uniform distribution of loads and facilitated a prompt, focused relief when the system was operating at capacity. Since EPE treats LM programs as a reduction in forecasted peak load, it is important that events are called on days like June 13th and deliver forecasted load reductions during peak hours.

Figure 22: EPE New Mexico System Load June 13, 2022



6.1 Intermittent Energy Sources

New Mexico's Renewable Energy Act (REA) has set ambitious goals that entail a significant shift towards intermittent energy sources. By 2030, the state aims to generate more than 50% of its power from renewable sources and over 80% by 2040. Moreover, the state has committed to achieving 100% carbon free by 2045. However, there are several capacity and load balancing challenges associated with this timeline, such as the declining marginal capacity value of resources needed to meet these goals and the need for additional carbon-free generation off-peak to offset thermal resource mobilization.

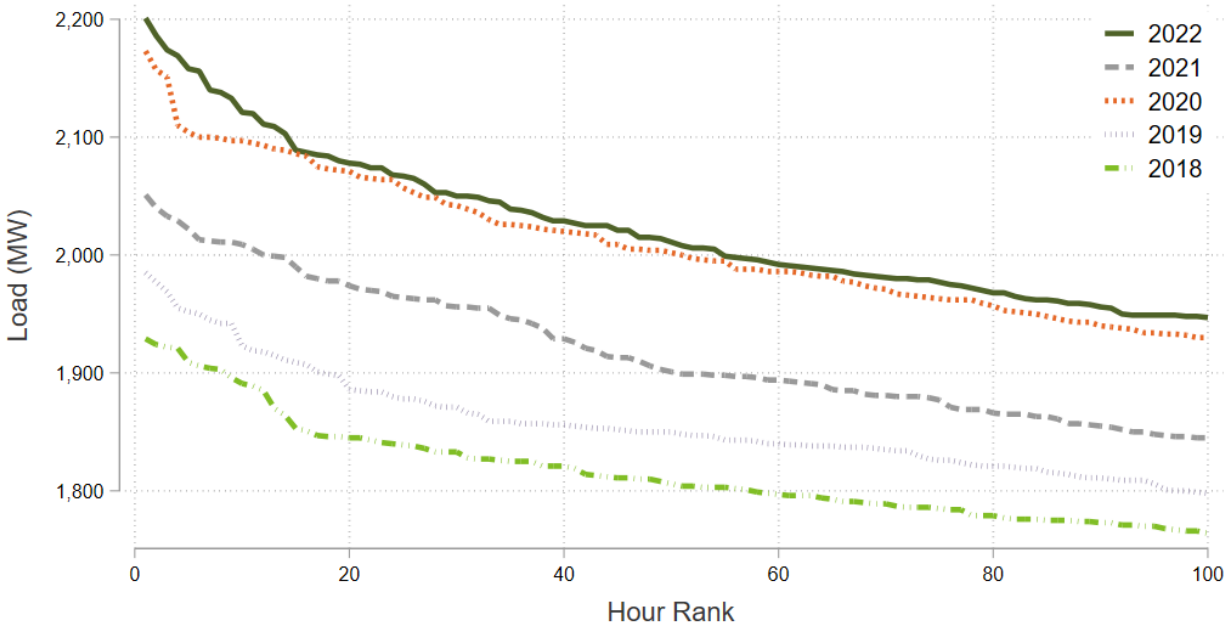
Intermittent energy resources experience a much steeper decline in marginal capacity value than thermal incremental ELCC. For instance, the current solar capacity, which is almost 400 MW, has an estimated Effective Load Carrying Capability (ELCC) of approximately 54%. Furthermore, the estimated marginal ELCC of adding more MW of installed solar capacity between 750 and 1,250 MW drops to 4.2%, with a further decline to 0.8%. To provide context, all four scenarios outlined

in the 2021 IRP portfolio analysis – ordered from least to most resource aggressive: Least-Cost; REA; REA with separate New Mexico capacity planning and hydrogen combustion; REA with separate New Mexico capacity planning REA and without hydrogen combustion – project a solar capacity contribution surpassing 1,250 MW, indicating that solar has passed the tipping point of 0.8% ELCC marginal capacity contribution. In the case with separate capacity planning with New Mexico and no hydrogen technology, solar total contribution to meeting the 2,450 MW planned system capacity needs is as little as 13.7%. The reason for this is that, unlike the Least-Cost and REA planning scenarios, hourly carbon neutrality is required because gas imports from Texas are not allowed to achieve net-zero balance throughout the rest of the day.

Wind has possibly even lower marginal capacity value, and more quickly dropping, than solar due to the inherent instability of wind power. Wind power contribution to the energy mix is going to be the most significant outside of the peak located in the months May through August and in the later hours of the afternoon. This is evident in the 2021 IRP portfolio analysis, where the contribution of wind is marginal in all four scenarios due to the stochastic nature of output generation. As a result, future capacity projections may be significantly reduced, particularly if there is a high level of verified DSM capability and low variability, underscoring the need for investment in LM resources.

To strengthen the argument for the efficacy of LM resources in achieving LOLE targets, one could analyze the load duration curve for the top 100 hours (refer to Figure 23). This curve demonstrates the significant variability in loads during the top 100 hours, and thus the low probability of rare events occurring. The variability is even greater during the top 20 hours, with a standard deviation of 109 MW. Load duration curve thus underpin the importance of LM resources as a tool to meet capacity requirements while avoiding increasing average cost of energy supply in order to pay off fixed costs.

Figure 23: Top 100 Hour Load Duration Curves 2018-2022 (Full EPE System)



6.2 Voltage Stability

Transmission infrastructure constraints pose an additional bottleneck to the deployment of Inverter-Based Resources (IBR), and investments in infrastructure improvements are dependent on the Western Electric Coordinating Council (WECC). As a result, LM may become particularly important in the short and medium term. However, it should be noted that measures planned for 2030, such as compensators and condensers, may be insufficient for 2038. The 2021 IRP acknowledges that "voltage exceedances occurred on higher voltage transmission lines in EPE's service territory in study years 2030 and 2038."

The 2021 IRP puts forth a trade-off between a highly-flexible system without load management and a highly-stable system with extensive load management. The preferred option is a middle-ground approach, which is considered the most economically sensible due to behavioral and operational constraints limiting the desirable frequency of curtailment and the high costs associated with flexibility solutions. Consequently, LM appears to be an appropriate solution, as it is a relatively infrequent and targeted resource that aligns with the goals outlined in the IRP.

6.3 Rising Temperatures

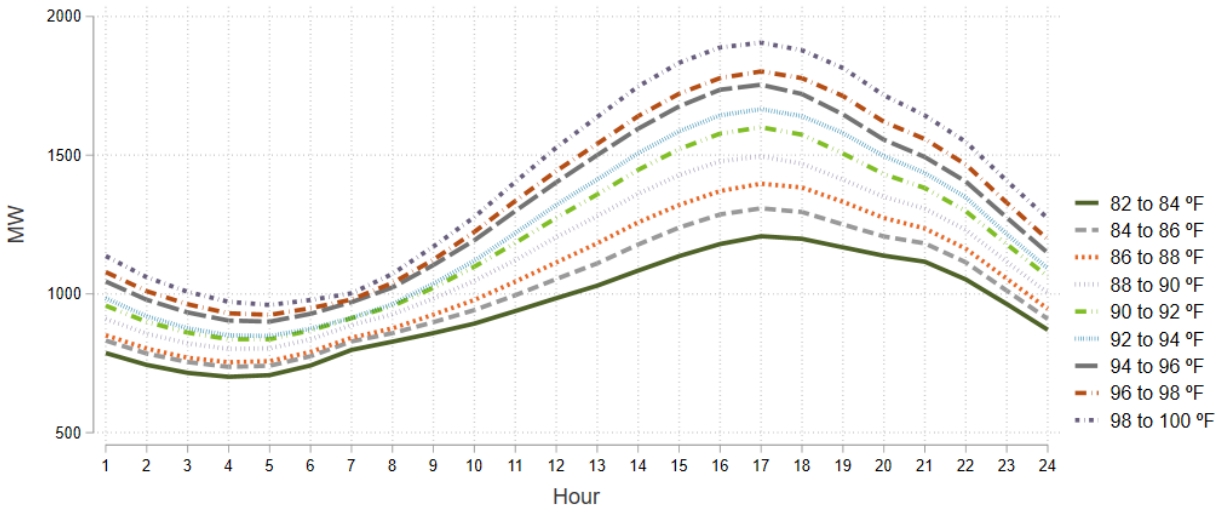
The 2021 IRP acknowledges changes in climate patterns forthrightly as a conduit for increased system capacity requirements:

Climate change could affect the Company's service area by causing higher temperatures, less winter precipitation, and less spring runoff, as well as by causing more extreme weather events. Such developments could change the demand for power in the region and could also impact the price or ready availability of water supplies or affect maintenance needs and the reliability of Company equipment.

To properly assess the capacity value of load management, it is important to comprehensively consider the impact of temperature in light of the summer-peaking nature of the system and the likely increase in maximum temperatures due to climate change. The IRP acknowledges that persistent increases in temperatures might have a twofold impact on the Planned Reserve Margin Requirement (PRM) by increasing loads, on the one hand, and by adding noise to forecasts, on the other hand.

Figure 24 shows the full EPE system (New Mexico and Texas) and demonstrates that with an increase in maximum daily temperature, load curves shift upward and exhibit greater variance through the day. Additionally, a greater dependence on solar power can result in a deficit during later afternoon hours when solar production declines, but loads remain high. The occurrence of higher and delayed peaks provides further evidence to support the acquisition of LM resources in order to fulfill system requirements.

Figure 24: Hourly Load Evaluated at Different Max Daily Temperatures 2018-2022



7 Commercial Load Management Program

For the PY2022 Commercial Load Management program, the evaluation team was unable to recreate most of Trane's calculations because Trane did not consistently apply a "high 8-of-10" methodology. The evaluation's validation of settlement claims is displayed in Table 18.

Table 18: Gross Reported Savings

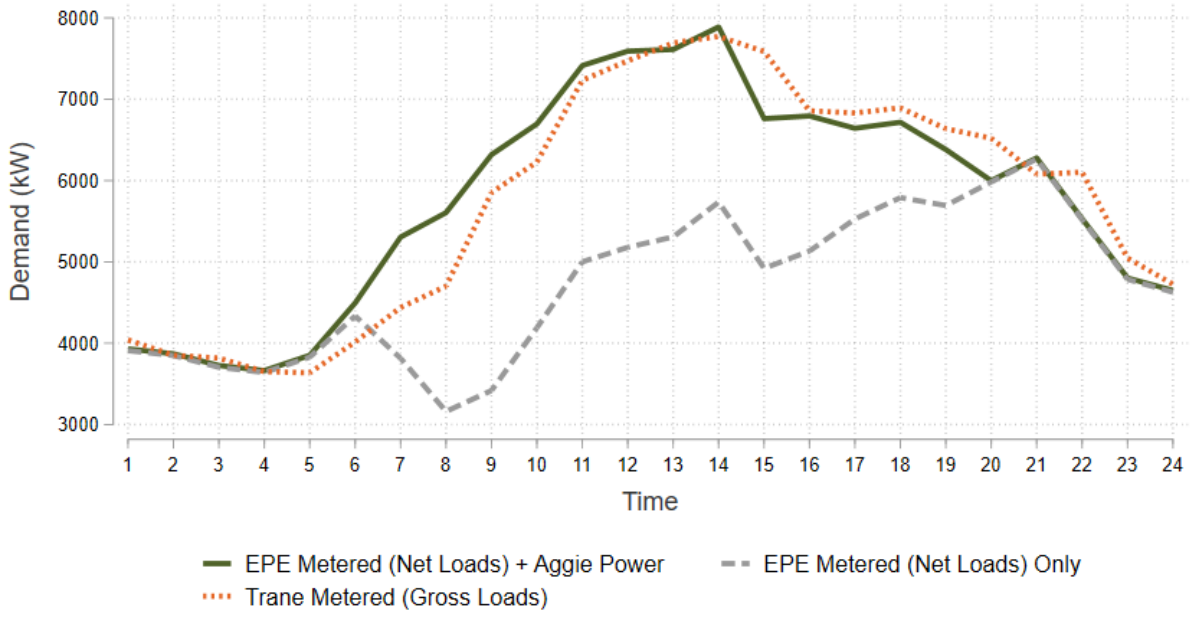
Date	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
June 10, 2022	1,195	1,198	100%
June 13, 2022	1,195	1,643	138%
July 11, 2022	1,195	749	63%
July 18, 2022	1,195	281	24%
July 19, 2022	1,195	333	28%
July 20, 2022	1,195	440	37%
Average	**1,195**	**774**	**65%**

We were able to replicate the Trane numbers exactly when Trane applied the "high 8-of-10" methodology. The evaluation team discovered Trane used eight baseline days for only 19 percent of their performance calculations. For all other calculations, the number of baseline days ranged from four to five. Our Raw Baseline calculations were consistently higher than Trane's, suggesting the "high 4" or "high 5" days used in their Raw Baseline calculations did not include the top demand days for the period.

In our savings verification, we used the same "8-of-10" methodology as Trane in the independent evaluation. We were provided conflicting load histories for Santa Theresa Middle School South from July 1st to July 11th. The evaluation team took the average over each 15-minute interval to calculate the Raw Baseline for this site.

The 15-minute interval data Trane uses to estimate DR performance comes from its own metering equipment rather than the EPE revenue meter. This is necessary for smaller sites where EPE does not have interval meters and useful for sites with behind-the-meter solar because Trane's metering captures gross load rather than the net load captured by EPE's revenue meter. Figure 25 compares load shapes from the Trane and EPE metering on July 11th for New Mexico State University (NMSU). EPE actually has separate metering for Aggie Power, NMSU's newly installed 3 MW solar and battery storage installation. However, many sites will not have separate metering of solar output.

Figure 25: New Mexico State University Load Shapes on July 11th (Net vs. Gross Loads)



The gross verified savings estimates for demand savings by event and in total are summarized in Table 19. The portfolio delivered average reductions above the 1,195 kW of committed capacity in the first event but fell short in the remaining five events, with the average portfolio load reduction being 706 kW, or 489 kW (41%) below the portfolio committed capacity. The difference between our independent evaluations results and our validated settlement claims comes entirely from which set of meter data is used for NMSU.

Table 19: Gross Verified Savings

Date	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
June 10, 2022	1,195	1,202	101%
June 13, 2022	1,195	1,100	92%
July 11, 2022	1,195	540	45%
July 18, 2022	1,195	146	12%
July 19, 2022	1,195	583	49%
July 20, 2022	1,195	665	56%
Average	**1,195**	**706**	**59%**

Demand response events may also yield energy savings if the demand reductions during the event window are not offset by actions like precooling or snapback, which shifts demand to intervals outside of the Event Window. The evaluations approach to estimating the net energy savings on DR event days is similar to the approach for estimating demand savings. Demand savings are estimated by calculating the difference between a site's actual load and its baseline load for the hours in the Event Window only. To calculate energy savings, the evaluation team measured the difference between a site's actual load and its baseline load for the daytime hours of event days from 8:00 AM to 8:00 PM.[12] By looking at the hours outside the Event Window, we account for increases in energy consumption that may occur before or after the DR event as a result of pre-cooling or other load-shifting activities.

Table 20 shows the portfolio net energy savings for each event and in total. Total energy savings across the six events was 11,920 kWh.

Table 20: Energy Savings by Event Day

Date	Energy Savings (kWh)
June 10, 2022	4,429
June 13, 2022	3,225
July 11, 2022	1,335
July 18, 2022	-626
July 19, 2022	2,140
July 20, 2022	1,414
Total	**11,920**

[12] The cutoff hours of 8:00 AM and 8:00 PM were chosen based on a comparison of daily load shapes across different days and specifically the observation that load profiles tend to track each other closely until 8:00 AM and converge again after 8:00 PM. We measure energy savings from 8:00 AM to 8:00 PM only because we would not expect the baseline and event day loads to differ outside of these time periods as a result of weather conditions or other factors.

8 Residential Load Management Program

For the Residential Load Management program, the impact analysis used a within-subjects regression analysis. For each event day and hour, the average hourly impact was estimated by subtracting the actual runtime from the baseline runtime estimate, where runtime is expressed as the number of minutes that the HVAC system is running that hour. The cooling runtime impacts (in minutes) are then converted to cooling load impacts (in kW), using the connected load assumptions in the New Mexico TRM.

Based on this approach, the gross verified impacts by event day are summarized in Table 21.

Table 21: Demand Impacts by Event Day

Date	Full Event Hours	Impact per Device (kW)	Total Impact (kW)
June 10, 2022	4	0.545	1,135
June 13, 2022	2	0.919	1,915
July 11, 2022	2	0.868	1,828
July 18, 2022	2	0.836	1,767
July 19, 2022	2	0.905	1,918
July 20, 2022	2	1.058	2,240
Event Average	**6 Events**	**0.855**	**1,800**
Hourly Average	**14 hours**	**0.811**	**1,705**

The total impact column refers to the estimated load reduction (in kW) delivered on each event day. This number is calculated by multiplying the impact per device by the total number of devices that were not missing AC runtime data on each event day.

The final 2022 gross verified impacts in Table 22 were calculated by multiplying the average of each event's device-level impacts during the first two hours of curtailment and the total number of devices that were enrolled in the program at the end of the summer DR season (2,616).

Table 22: Gross Verified Program Impacts

Impact per Online Device (kW)	End of Season Enrollment	Online Rate	Estimated Program Load Reduction (kW)
0.885	2,616	90.6%	2,098

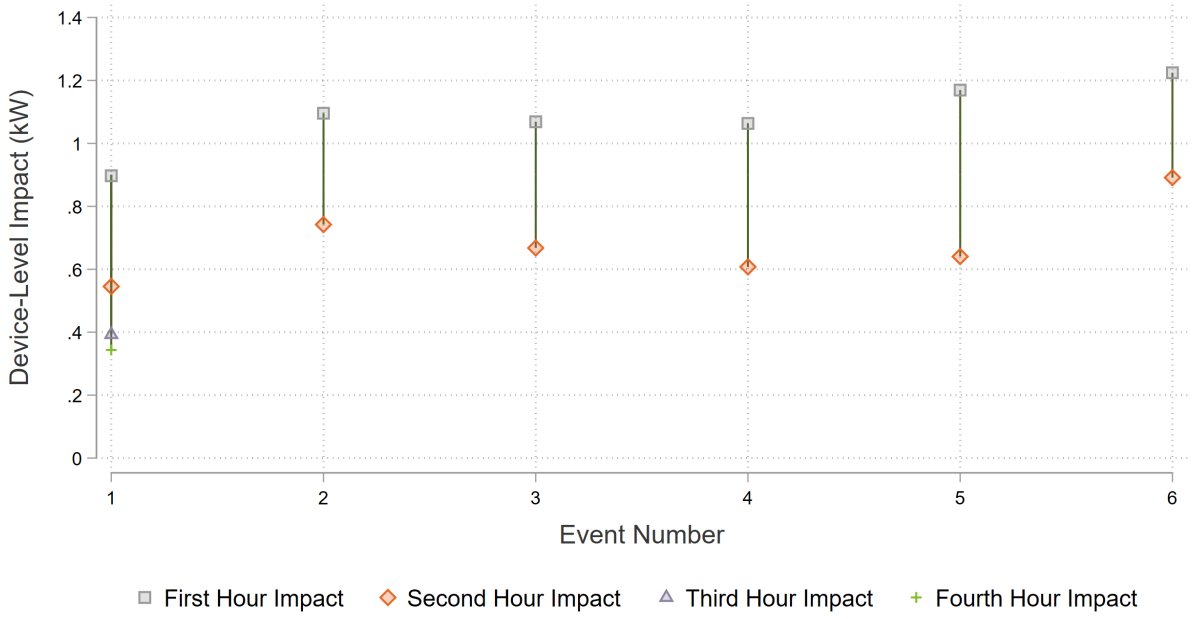
Table 23 shows the hourly demand impacts as well as a count of devices and temperature during each event.

Table 23: Hourly Demand Impacts

Date	Total Devices	Online Devices	Hour Ending (MDT)	Temp. (F)	Impact per Device (kW)	Total Impact (kW)
June 6, 2022	2,266	2,083	17	101	0.897	1,869
			18	103	0.546	1,136
			19	103	0.392	818
			20	101	0.344	716
June 13, 2022	2,276	2,084	16	102	1.096	2,284
			17	103	0.742	1,547
July 11, 2022	2,338	2,105	16	98	1.069	2,250
			17	100	0.668	1,406
July 18, 2022	2,348	2,115	16	99	1.064	2,249
			17	101	0.608	1,285
July 19, 2022	2,350	2,119	16	104	1.169	2,478
			17	104	0.641	1,357
July 20, 2022	2,356	2,117	16	101	1.225	2,593
			17	102	0.891	1,887

During each two-hour event, load impacts decline from hour to hour. The evaluation team used the average of the first two hourly impacts to calculate event-level impacts, to reflect this decline. Figure 26 provides a visual of the diminishing impacts for each event.

Figure 26: Diminishing Hourly Impacts



EPE resource planners and system operators should be aware of this decay. Figure 26 helps show that as events persist, impacts decline by the hour. This could ultimately affect the value of the program as a demand resource when events last over longer periods of time. Since 17 of 19 events over the last three program years have been two hours in duration, the evaluation team believes that the average impact for a two-hour event is most appropriate when reporting the program's verified impacts.

The Residential Load Management Program provides load reductions by reducing the amount of time a customer's HVAC system is running and cooling the home. If load reduction was the only program goal, Uplight would turn off the HVAC system entirely, rather than just manipulating temperature setpoints, however, customer comfort is also an important consideration. To help keep households cool throughout the event, Uplight "pre-cools" the home in the hours before the event by lowering the setpoint and then also allows the system to run more after the event to return the home to the customer's desired temperature. As a result, the demand response treatment increases runtime and energy usage in the hours before and after the event.

This can sometimes lead to an overall energy usage increase, even if there are significant peak demand savings. Figure 27 shows the estimated hourly energy impacts for each event day to illustrate the increased energy usage before and after the event and the decreased usage during the event. Negative impacts represent an increase in hourly cooling energy consumption at the device level.

Figure 27: Hourly Energy Impact by Event Day

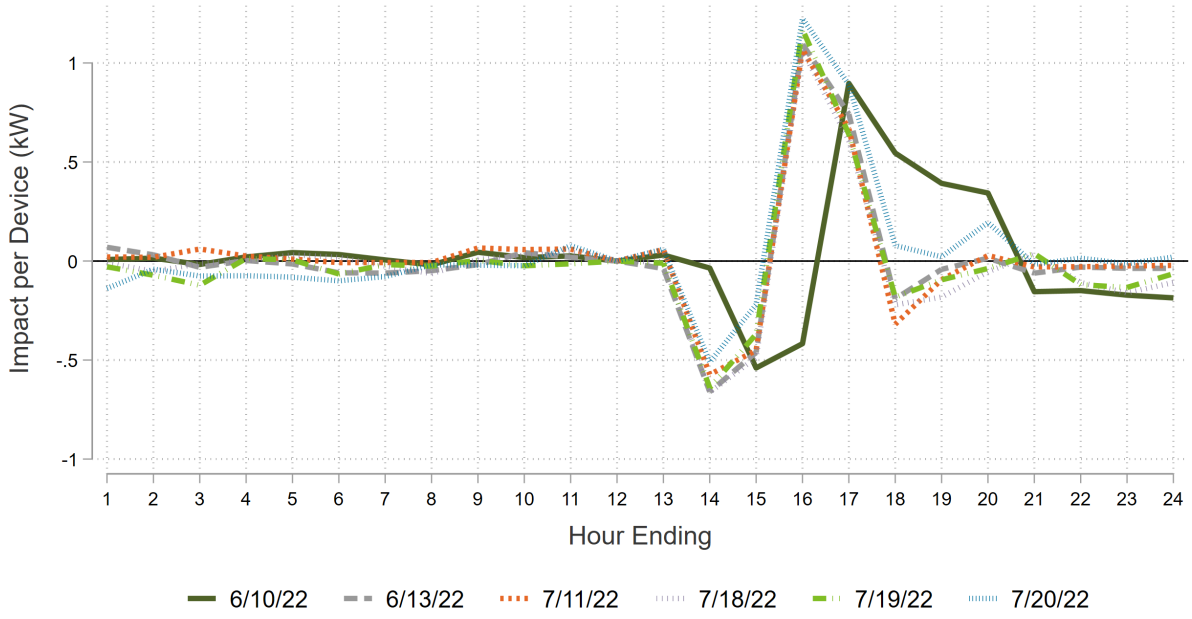


Table 24 shows the net energy impact across each full event day. Energy impacts varied by event day, with a positive impact for 4 event days and negative impact for two event days. The average impact across all five event days for the smart thermostat demand response program was close to zero and not statistically significant. Our interpretation of these results is that the Residential Load Management events are energy neutral in terms of savings.

Table 24: Device-Level Net Energy Impacts by Event Day

Date	Overall Event Day Impact (kWh)
June 10, 2022	0.733
June 13, 2022	0.230
July 11, 2022	0.579
July 18, 2022	-0.310
July 19, 2022	-0.147
July 20, 2022	1.171
Average	**0.376**

9 Cost Effectiveness Results

The evaluation team calculated cost effectiveness using the Utility Cost Test (UCT) for each individual EPE energy efficiency program, as well as the cost effectiveness of the entire portfolio of programs.[13] The evaluation team conducted these tests in a manner consistent with the California Energy Efficiency Policy Manual.[14]

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 25.

Table 25: 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 EPE, the evaluation team calculated the ratio of benefits to costs for each of EPE's programs and for the portfolio overall. The results of the UCT are shown below in Table 26. The portfolio overall was found to have a UCT ratio of 1.26.

[13] The Utility Cost Test is sometimes referred to as the Program Administrator Cost Test, or PACT.
[14] California Public Utilities Commission. 2020. *California Energy Efficiency Policy Manual – Version 6*. https://www.cpuc.ca.gov/-/media/cpuc-website/files/legacyfiles/e/6442465683-eepolicymanualrevised-march-20-2020-b.pdf

Table 26: PY2022 Cost Effectiveness

Program	Utility Cost Test (UCT)
Residential Comprehensive	1.26
Residential Lighting	2.43
ENERGY STAR New Homes	0.98
Residential Load Management	0.85
NM EnergySaver	1.60
Small Business Comprehensive	1.45
SCORE Plus	0.40
Commercial Load Management	0.47
Overall Portfolio	**1.26**

10 Conclusions and Recommendations

The general evaluation conclusions are presented below, along with recommendations for program improvement where appropriate.

10.1 Small Business Comprehensive Program

Conclusions and recommendations resulting from the evaluation of the Small Business Comprehensive Program include the following:

- The evaluation team modified savings in lighting projects 22LGT25 and 22LGT29 to align pre-retrofit fixture wattages with onsite findings.
    - The *ex ante* calculations assumed the fixture code F44T12 32 W/lamp, which corresponds to 112 W per the *ex ante* workbook, assuming a T8 baseline. Site pictures indicate the baseline fixtures are instead (4L) F40T12 40 W/lamp, which corresponds to 134 W (assuming an electronic ballast) per a default wattage guide.
    - The NM TRM permits T12 lamps and magnetic ballasts as retrofit baselines "for the foreseeable future."
    - **Recommendation**: Ensure fixture types and wattages used for savings calculations are consistent with onsite photos.
- The evaluation team modified savings in several lighting[15] projects to align efficient fixture wattages with DLC reported wattages.
    - **Recommendation**: Ensure the DLC or Energy Star reported wattages are used for efficient fixtures.
- The evaluation team modified savings for project 22LGT71 to align efficient horticultural lighting fixture wattages with DLC *tested* wattages. It is important to note that project 22LGT73 correctly used the DLC tested wattage for calculating savings.
    - **Recommendation**: Ensure the DLC tested wattages are used for efficient horticultural lighting fixtures.

10.2 SCORE Plus Program

Conclusions and recommendations resulting from the evaluation of the SCORE Plus Program include the following:

[15] Horticultural lighting fixtures are excluded from this finding and recommendation. Due to the nature of this fixture type, it has been addressed separately.

- The evaluation team modified savings for project PRJ-2172886. The *ex ante* calculation used two approaches for annual hours: (1) Building Weighted Average and (2) Area Type. As some space types in the *ex ante* calculator were unclear (e.g., "TLT-M"), they could not be identified using the preferred Area Type method for annual hours. Thus, the *ex post* calculation used the Building Weighted Average approach. The use of a single approach, per the New Mexico TRM, reduced kWh savings.
    - **Recommendation**: Utilize either the Building Weighted Average or Area Type method for annual hours, but not simultaneously. Preference is given to the Area Type method per the NM TRM.
- The evaluation team modified savings in several lighting projects to align efficient fixture wattages with DLC or Energy Star reported wattages.
    - **Recommendation**: Ensure the DLC or Energy Star reported wattages are used for efficient fixtures.
- The evaluation team modified savings for project PRJ-3146047. The kWh savings were affected by a modification to hours of use. The *ex ante* calculation classified the efficient fixture type as "other," which corresponds to 2,322 annual hours of use. Based on the project documents, the efficient fixture is a "screw-in bulb." This corresponds to 2,372 annual hours of use. This modification increased kWh RR.
    - **Recommendation**: Ensure the annual hours correctly correspond to the installed fixture type.
- There was a minor effect on kWh and kW savings based on the modification of horsepower (HP) for the Mitsubishi VFD in project PRJ-3090087. The *ex post* analysis used the HP ratings per manufacturer specifications.
    - **Recommendation**: Ensure the reported HP in manufacturer specifications is used for efficient equipment.

10.3 Residential Comprehensive Program

For the Residential Comprehensive program, gross impacts were determined based on a review of the deemed savings values used for the various measures rebated through the program. In all cases, the *ex ante* savings values either matched those in the New Mexico TRM, or were based on other reliable source (e.g., the Texas TRM) or were based on otherwise reasonable values and calculation procedures. As a result, no savings adjustments were made to the original *ex ante* savings values.

The process evaluation involved phone surveys with a sample of participants. For the residential customers, most owned homes that were built before 1990 (61%). Contractors were the most common source of awareness (53%), which indicates that the program has an effective network of contractors to market the program. As for factors driving participation, improving comfort in the home was the most important factor for participants, with 79 percent of respondents ranking it as extremely important in their decision to participate, followed by the contractor recommendation

(69%). Of the program factors driving participation, the contractor recommendation was most important (72 percent rating 8 or higher). Finally, participants reported very high levels of satisfaction with all aspects of the program.

10.4 Residential Load Management

Based on our impact evaluation of the 2022 Residential Load Management Program, the evaluation team offers the following conclusions and recommendations:

- Overall, this program analysis provided a defensible impact of 0.885 kW per *online* device. When multiplying this by the end-of-season enrollment and the average percentage of devices that were online during events, the gross verified impact came out to approximately 2,098 kW. This led to an average impact of 0.802 kW per *enrolled* device. These device-level impacts are lower than the per-device impact of 0.957 kW in 2021.
    - The 2021 impact evaluation assumed that offline devices delivered the same capacity reduction as online devices. The 2022 evaluation assumes devices without telemetry deliver zero kW reduction.
    - We also use a two-hour event definition for 2022. The 2021 impact evaluation averaged in the results from eight event hours across five distinct event days. Since kW impacts decay over time a 1-hour event will generate larger impacts than a 2-hour event.
- On average, nearly 10 percent of devices were missing data during event hours. Emerson saw the highest amount of missing data during events and Nest devices had the most missing data in the beginning of the season.
    - We recommend EPE and Uplight investigate the cause of devices going offline with the three thermostat manufacturers to determine if there are actions the program can take in 2023 to boost availability and communication with program thermostats.
- Events see atrophy in participation and kW impacts over event periods. This has implications for the feasibility of longer events.
    - When considering demand response as a resource it is important to understand that the capability of the program is a function of event duration.
- Ecobee devices had the highest participation rate (e.g., fewest opt-outs) and the largest average reference load, but the lowest average kW reduction per online device of the three device manufacturers.
    - The opt-out rate and kW impacts are likely correlated. We suspect that Ecobee's curtailment algorithm is less aggressive, which leads to fewer opt-outs, but also lower average kW reductions.
- Our analysis of non-event day load shapes suggests some Ecobee customers have enabled TOU rate optimization, which may lower baseline estimates for these devices. Interestingly, the on-peak optimization window appears to align with EPE's Texas tariff rather than the New Mexico rate.

  - We will work with EPE to determine which Ecobee participants are on the Power Hours Time-of-Day rate and whether optimization load shape is most pronounced among these accounts.
  - EPE should reach to Ecobee to ensure users can select the New Mexico rate when they enable TOU optimization on their thermostat.

10.5 Commercial Load Management

Based on our impact evaluation of the 2022 Commercial Load Management Program, the evaluation team offers the following conclusions and recommendations:

- The evaluation team recommends Trane consistently apply the "high 8-of-10" methodology in future program years to ensure settlement with participating customers is calculated according to the agreed upon terms.
- The evaluation team also recommends Trane revisit their data management strategy to improve scalability and reduce human error. Instead of calculating performance for each site and event day in a standalone Excel workbook, the evaluation recommends Trane consolidate the data into one analysis data set and procedure to simplify access and eliminate redundancies. Consolidating the disparate datasets during preprocessing can also lower the likelihood of mislabeling from one place to another while promoting consistent formatting and standardization of data types.
- Lastly, the evaluation team recommends Trane perform their calculations outside of the raw data file. While the team appreciates the transparency into the Excel formulas Trane used in their calculations, we recommend separating the calculations to lower the chances of incorrectly manipulating the raw data in place.

Evaluation of the 2022 El Paso Electric Energy Efficiency Programs

Final Report - Appendices

May 19, 2023

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Appendix A: Small Business Comprehensive Participant Survey Instrument

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

Yes 1
No 2
Never installed 3

Q1-M1. (A 1) Our records show in 2022 your business got a rebate through EL PASO ELECTRIC for installing *lighting/ (measure 1)***. Are you familiar with this project?**

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

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

Yes 1
No 2
Never installed 3

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

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

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

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

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

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

Yes, it was removed .. 01
No 02
Prefer not to answer . 03
Don't know 99

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

Yes, never installed ... 01
Prefer not to answer . 02
Don't know 99

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

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

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

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

Contractor 01
Internal Staff 02
Prefer not to answer . 03
..... 04
..... 05
Don't know 99

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

Prefer not to answer 98
Don't know 99

Q1-M2. (A 1) Our records show in 2022 your business got a rebate through EL PASO ELECTRIC for installing a *(measure 2)***. Do you remember this?** *(Among those who received rebates for more than one measure.)*

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

Q1a-M2. Our records show *(measure 2)* **was installed at** *(site address)* **in (***site city)***. Is that correct?** *(Among those who received rebates for more than one measure.)*

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

Q1b-M2. Where was *(measure 2)* **installed?** *(Among those who received rebates for more than one measure and installed measure 2 at a different location than EL PASO ELECTRIC's records.)*

Q3-M2. (A 2) Thinking about the *(measure 2)* **for which you received a rebate, is the** *(measure 2)* **still installed in your facility?** *(Among those who received rebates for more than one measure.)*

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

Q4a-M2. (A 3) Was the *(measure 2)* **removed?** *(Among those who received rebates for more than one measure and currently do not have measure 2 installed at their facility.)*

Yes, it was removed .. 01
No 02
Prefer not to answer . 03
Don't know 99

Q4b-M2. (A 3) Was the *(measure 2)* **never installed?** *(Among those who received rebates for more than one measure and currently do not have measure 2 installed at their facility.)*

Yes, never installed ... 01
Prefer not to answer . 02
Don't know 99

Q5-M2. (A3a) Why was the *(measure 2)* **removed/never installed?** *(Among those who received rebates for more than one measure and currently do not have measure 2 installed at their facility or never installed measure 2.)*

Q6-M2. (A 4) Is the *(measure 2)* **still functioning as intended?** *(Among those who received rebates for more than one measure and have measure 2 installed.)*

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

Q7-M2. (A 5) Did your firm use a contractor to install the *(measure 2)* **or did internal staff do the work?** *(Among those who received rebates for more than one measure and have measure 2 installed.)*

Contractor 01
Internal Staff 02
Prefer not to answer . 03
Don't know 99

Q8-M2. (A 6) Why did your firm choose to use internal staff instead of a contractor? *(Among those who received rebates for more than one measure and had internal staff install measure 2.)*

Prefer not to answer 98
Don't know 99

Q9-M2. (A 7) Were your *lighting/ (measure 1)* **and** *(measure 2)* **installed/purchased together as a single project or were these done separately?** *(Among those who received rebates for two measures.)*

Together as one project 1
Separately 2
Prefer not to answer 3
Don't know 4

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

Word of mouth (business associate, co-worker) 01

Utility program staff 02
Utility website 03
Utility bill insert 04
Utility representative 05
Utility advertising 06
Email from utility 07
Contractor/distributor 08
Building audit or assessment 09
Television Advertisement - Mass Media 10
Other mass media 11
Event (conference, seminar, workshop) 12
Online search, web links 13
Participated or received rebate before 14
Retailer 15
No way in particular 98
Don't know 99

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

Word of mouth (business associate, co-worker) 01
Utility program staff 02
Utility website 03
Utility bill insert 04
Utility representative 05
Utility advertising 06
Email from utility 07
Contractor/distributor 08
Building audit or assessment 09
Television Advertisement - Mass Media 10
Other mass media 11
Event (conference, seminar, workshop) 12
Online search, web links 13
Participated or received rebate before 14
None 98
Don't know 99

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

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

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

Yes ..... No 2

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

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

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

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

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

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

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

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

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

Number of years _____

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

Number of years _____

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

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

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

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

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

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

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

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

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

Yes .. 1
No ... 2

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

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

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

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

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

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

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

Yes .. 1
No ... 2

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

1 - Not Important at All . 1

2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know/Won't Say .. 6

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

Yes .. 1
No ... 2

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

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

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

0 – Not important at all ... 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 – Extremely important 10

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

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

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

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

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

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

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

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

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

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

0 – Not important at all ... 00
1 01
2 02
3 03
4 04
5 05
6 06
7 07

8 08
9 09
10 – Extremely important 10
Don't know 97
Prefer not to answer 98
N/A 99

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

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

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

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

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

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

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

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

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

0 – Not important at all ... 00
1 01
2 02
3 03

4 04
5 05
6 06
7 07
8 08
9 09
10 – Extremely important 10
Don't know 97
Prefer not to answer 98
N/A 99

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

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

Q37. (D 2) Of the items I just asked you about, think of the program factors as relating to assistance provided by the utility, such as the rebate, marketing from EL PASO ELECTRIC, recommendation by a contractor and technical assistance from EL PASO ELECTRIC. 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 EL PASO ELECTRIC program and non-program factors, what percent would you give to the importance of the program factors? *(Among those who did not use direct install.)*

Percentage Program Factors ... _____%

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

Percentage Non-Program Factors .. _____%

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

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

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

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

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

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

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

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

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

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

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

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

Q46. (D 11) Using a scale from 0 to 10, where 0 means *not at all likely* and 10 means *extremely likely*, please rate the likelihood that you would have installed the same <u>quantity</u> of lights if the *(rebate program)* **was not available.** *(Among those who installed lighting*

0 - Not at all likely 00
1 01

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

Q47. (D 12) Can you briefly explain why you were likely to install the same number of lights without the *(rebate program)* **program?** *(Among those who were likely to have installed the same quantity of lights)*

Q48. (E 1a) For each of the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **EL PASO ELECTRIC as an energy provider.**

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

Q49. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with EL PASO ELECTRIC as an energy provider.)*

Q50. (E 1b) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The rebate program overall.**

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

Q51. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the rebate program overall.)*

Q52. (E 1c) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The equipment installed through the program.**

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

Q53. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the equipment installed through the program.)*

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

Yes .. 1
No ... 2

Q54. (E 1d) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The contractor who installed the equipment.** *(Among those who used a contractor to do the installation.)*

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

Q55. Can you tell me why you gave that rating? *(Among those who used a contractor to do the installation and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the contractor who installed the equipment.)*

Q56. (E 1e) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The overall quality of the equipment installation.** *(Among those who used a contractor to do the installation.)*

Very Dissatisfied 1
Somewhat Dissatisfied 2

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

Q57. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the overall quality of the equipment installation.)*

Q58. (E 1f) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The amount of time it took to receive your rebate for your equipment.** *(Among those who did not use direct install.)*

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

Q59. Can you tell me why you gave that rating? *(Among those who did not use direct install and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the amount of time it took to receive the rebate for the equipment.)*

Q60. (E 1g) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The dollar amount of the rebate for the equipment.** *(Among those who did not use direct install.)*

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

Q61. Can you tell me why you gave that rating? *(Among those who did not use direct install and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the dollar amount of the rebate for the equipment.)*

Q62. (E 1h) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **Interactions with EL PASO ELECTRIC.**

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

Q63. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with interactions with EL PASO ELECTRIC.)*

Q64. (E 1I) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The overall value of the equipment your company received for the price you paid.**

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

Q65. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the overall value of the equipment their company received for the price they paid.)*

Q66. (E 1j) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The amount of time and effort required to participate in the program.**

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

Q67. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the amount of time and effort required to participate in the program.)*

Q68. (E 1k) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The project application process.** *(Among those who did not use direct install.)*

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

Q69. Can you tell me why you gave that rating? *(Among those who did not use direct install and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the project application process.)*

Q70. (E 2) Do you have any recommendations for improving the *(rebate program)* **program?**

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

Q71. (Gen 1) Finally, we have a few questions about your firm for classification purposes only. Do you own or lease your building where the project was completed?

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

Q72. (Gen 1a) Does your firm pay your EL PASO ELECTRIC bill, or does someone else (e.g., a landlord)? *(Among those who answered that they own, lease, or rent the building where the project was completed.)*

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

Q73. (Gen 2) Approximately what is the total square footage of the building where the project was completed?

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

Q74. (Gen 3) Approximately what year was your firm's building built?

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

Q75. (Gen 4) Approximately, how many full-time equivalent (FTE) employees does your company currently have in the state of New Mexico?

Less than 5 01
5-9 02
10-19 03
20 - 49 04
50 - 99 05
100 - 249 06
250 - 499 07
500 - 999 08
1,000 - 2,500 09
More than 2,500 . 10
Prefer not to say . 11
Don't know 12

Q76. (Gen 5) And this is my last question. How long has your company been in business?

Number of years_____

Appendix B: SCORE Plus Participant Interview Guide

Introduction

Talking points for recruitment

- Evergreen Economics is conducting an evaluation of utility energy efficiency programs for the New Mexico Public Service Commission and El Paso Electric
- We have identified selected efficiency projects that were supported by the efficiency programs in 2022 for brief telephone interviews; one of those was an upgrade in [insert general description of end-uses, not specific measures] at the building at [address].
- You were listed as the project contact. Are you the best person to discuss the efficiency upgrade, the decision-making behind it, and your organization's experiences with the rebate program? Or is there someone else involved in the project 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 El Paso Electric 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.
- Thank you for taking the time to talk about the efficiency upgrades at [building name/address] that were conducted with support from El Paso Electric's SCORE Plus 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 program participants will be helpful to El Paso Electric to ensure their programs best serve their customers.
- 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.

Context and Measures

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

A1. Please tell me a little bit about the building or complex.

Probe on:

- size
- location
- building age or when completed
- who pays for the energy use in the building?

A2. Please tell me a bit about your role and connection with the building.

Probe enough to understand:

- temporary or long-term role
- level or sphere of decision-making authority

A3. Next, I just want to confirm the efficiency upgrades you installed with utility support. I will read the main items on my list. Afterwards, please tell me if anything on my list didn't get installed, or if I missed anything important. According to my records, you installed [summarize the primary measures from program records].

Probe on:

- anything missing
- anything on my list that didn't get installed

A4. How have those efficiency upgrades or equipment worked out for you?

Probe specifically to understand:

- did everything get installed to your satisfaction?
- is everything still functioning as expected?
- has anything been replaced?

A5. Was a contractor involved in installing any rebated equipment? [INTERVIEWER NOTE: USED FOR SKIP INSTRUCTIONS IN SECTION D]

A6. [FOR NEW CONSTRUCTION] Did you receive a rebate based on the overall efficiency of the design of the building or for including specific equipment?

Overall Entree and Role of Utility Program

B1. Now I'd be interested to understand how and when the El Paso Electric rebates first entered the picture. When and where did you first hear about the rebates program?

Probe to understand:

- information source
- timing – before or during consideration of the project

B2. Can you describe the role that the El Paso Electric program played in this project?

B3a. [if B2 response indicates that program was influential] Please elaborate on how the program or rebates changed your plans.

If needed, probe by group of measures to understand:

- what would you have done differently?
- how/why did the [utility name] program influence your choices?
- (for new construction) how much better than code did you end up and how much better than code would the building have been without the El Paso Electric program input and incentives?

B3b. [if B2 response indicates program was not influential] So, just to confirm, the El Paso Electric program didn't really change what you did but made it less costly with the rebate. Is that correct?

B4. [FOR RETROFITS] How much longer would the equipment that was in place have lasted before it would have needed replacement?

Quantitative Program Influence Questions

Next, I'd like to try to quantify some of what we've been talking about, as best as possible. For these next questions, please step back and think about the efficiency improvements made to the building [FOR NEW CONSTRUCTION, ADD: compared to code requirements] [FOR RETROFITS, ADD: from the upgrades you did as part of this project].

[IF NEEDED: Let's talk specifically about [refer to most impactful measure or group of measures].]

C1. For this next question, I will read a number of factors that might have played a role in the upgrade of the building's efficiency [FOR RETROFITS, ADD: from what it was] [FOR NEW CONSTRUCTION, ADD: compared to code]. For each one, please indicate how important that factor was in influencing the energy efficiency level you ended up with on a scale from 0 to 10. Zero means the factor was not at all important, and 10 means it was extremely important. If something just isn't applicable, let me know that too.

[READ AS NEEDED: How important was ... [insert items below] ... in influencing the ultimate efficiency level?]

a) [SKIP IF NO CONTRACTOR INVOLVED] the contractor who performed the work and any distributor or vendor involved in supplying the equipment

b) the rebate available from El Paso Electric

c) any technical assistance, recommendations, or information from El Paso Electric or its program representatives, including CLEAResult

d) your (or your colleagues') previous participation in a El Paso Electric program

e) [SKIP FOR NEW CONSTRUCTION] the age or condition of the old equipment

f) [SKIP FOR NEW CONSTRUCTION] routine maintenance practices

g) corporate policy, guidelines or pre-existing energy efficiency goals

h) the financial benefits of the efficiency upgrade through reduced operating costs

C2. Some of the factors we just talked about are related to the El Paso Electric program, while others are completely independent of the utility. I'd like you to assign 100 points across both the utility program elements and the non-utility factors based on how much they contributed to the upgrade in efficiency [FOR NEW CONSTRUCTION, ADD: compared to code].

[PARAPRHASE AS NEEDED BASED ON PRIOR RESPONSES in C1, REFERRING TO ITEMS THAT SCORED 7-10 OR THE HIGHER RATED ONES:] Again, the utility program elements were the rebate and any technical assistance, recommendations, and information from the utility or its program partners, and your prior participation in the utility rebate programs. The non-utility factors are everything else, like the financial benefits of the upgrade on its own, corporate policy, maintenance and operational needs, and so forth.

a) How much of the efficiency upgrades was due to the program elements together?

b) How much was due to non-program factors together?

[REVISIT / CLARIFY IF THE TWO NUMBERS DO NOT ADD TO 100.]

C3. Now, please consider what you would have done if the El Paso Electric program hadn't existed at all. Using that 0-10 scale, how likely is it that you would have [FOR RETROFITS: installed the same equipment with the same efficiency level] [FOR NEW CONSTRUCTION: reached the same building energy efficiency level (or higher)]? Zero means not at all likely, and 10 means extremely likely.

C3a. Thinking just about the energy efficient part of your project for which you got a rebate from El Paso Electric, how likely would you have been to do that part of the project the same, with the exact same efficiency level, if the program support and rebate had not been available? Please tell me on the same 0-10 scale where zero means not at all likely, and 10 means extremely likely.

C4. [FOR RETROFITS] If you had done the same things or something similar, when would you have made those upgrades?

Probe to categorize:

- within one year
- between 12 months and less than 2 years
- between 2 and 3 years
- greater than 3 years
- not at all

C5. [AS NEEDED IF WE ARE GETTING A MIXED MESSAGE ON PROGRAM INFLUENCE OVERALL BASED ON RESPONSES TO SECTIONS B2, C1, and C3.]

Please help me understand just how and how much the utility efforts influenced the efficiency upgrade for this building. I feel like I am hearing that [DESCRIBE THE MIXED MESSAGE, SUCH AS: the utility had a high influence, but you would have done the same thing anyway]. I may have misunderstood something. Can you elaborate?

Program Satisfaction

Finally, I have some questions about your satisfaction with El Paso Electric and its rebate program.

D1. For each of the following, please tell me how satisfied you are on a scale of 1 to 5, where 1 is "very dissatisfied", and 5 is "very satisfied". If you are dissatisfied with anything specific, please tell me a bit more about that too.

[READ AS NEEDED: How satisfied were you with ... [insert items below]?]

[INTERVIEWER NOTE: OKAY TO ACCEPT "NOT APPLICABLE," "PREFER NOT TO ANSWER," AND "DON'T KNOW." WE JUST DON'T WANT TO OFFER THOSE AS STANDARD OPTIONS.]

a) El Paso Electric as an energy provider

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

b) the rebate program overall

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

c) the equipment installed through the program [INTERVIEWER NOTE: THIS MAY NOT APPLY TO SOME NEW CONSTRUCTION PARTICIPANTS. RECORD "NOT APPLICABLE" AS NEEDED.]

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

d) [IF CONTRACTOR INVOLVED] the contractor who installed the equipment

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

e) [IF CONTRACTOR INVOLVED] the overall quality of the equipment installation

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

f) the amount of time it took to receive your rebate

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

g) the dollar amount of the rebate

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

h) interactions with El Paso Electric

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

i) the overall value of the equipment your company received for the price you paid [INTERVIEWER NOTE: MAY NOT APPLY FOR NEW CONSTRUCTION IF THE REBATE WAS BASED ON BUILDING DESIGN RATHER THAN EQUIPMENT.]

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

j) the amount of time and effort required to participate in the program

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

k) the project application process

[IF RATING = 1 OR 2] Can you tell me why you gave that rating?

D2. Do you have any recommendations for El Paso Electric concerning their energy efficiency program?

Closing

E1. Those are all the questions I have. Is there anything else you would like to comment on?

[Thank the interviewee.]

Appendix C: Residential Comprehensive Participant Survey Instrument

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

Yes 1
No 2
Never installed 3

Q1-M1. (A 1) Just to confirm, our records show that you received a rebate from EL PASO ELECTRIC when you installed a *(measure 1)* **at your home in 2022. Is this correct?**

Yes 1
No 2
Don't know 3

Q2-M1. (A 2) Is the *(measure 1)* **still installed?**

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

Q3-M1. (A 3) Was the *(measure 1)* **removed or never installed?** *(Among those who do not currently have measure 1 installed at their home.)*

Removed 01
Never installed 02
Prefer not to answer . 03
Don't know 99

Q4-M1. (A 3a) Why was the *(measure 1)* **removed/never installed?** *(Among those who do not currently have measure 1 installed at their home or never installed measure 1.)*

[Data Processing Use Only] POLLER NOTE: Was measure ever installed?

Yes .. 1
No ... 2

Q5-M1. (A 4) Is the *(measure 1)* **still functioning properly?**

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

Q1-M2. (A 1) Just to confirm, our records show that you received a rebate from EL PASO ELECTRIC when you installed a *(measure 2)* **at your home in 2022. Is this correct?**

Yes 1
No 2
Don't know 3

Q2-M2. (A 2) Is the *(measure 2)* **still installed?**

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

Q3-M2. (A 3) Was the *(measure 2)* **removed or never installed?** *(Among those who do not currently have measure 2 installed at their home.)*

Yes, it was removed .. 01
No 02
Prefer not to answer . 03
Don't know 99

Q4-M2. (A 3a) Why was the *(measure 2)* **removed/never installed?** *(Among those who do not currently have measure 2 installed at their home or never installed measure 2.)*

[Data Processing Use Only] POLLER NOTE: Was measure ever installed?

Yes .. 1
No ... 2

Q5-M2. (A 4) Is the *(measure 2)* **still functioning properly?**

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

Q6. (B 1) Did you go through a contractor to purchase the efficient equipment or did you purchase it directly from a retailer?

Used a contractor 1
Purchased at retailer . 2
Prefer not to answer . 3
Don't know 4

Q7. (B 2) Did you use a contractor to install the equipment or did you do it yourself?

Contractor installed . 1
Did it myself 2
Prefer not to answer 3
Don't know 4

Q8. (C 1) How did you <u>first</u> hear about EL PASO ELECTRIC's rebates for energy efficient equipment?

Bill insert 01
EL PASO ELECTRIC website 02
Digital/web advertisement not on EPE website 03
Television advertisement 04
Radio advertisement 05
Contractor 06
Friend or family 07
Social media 08
EL PASO ELECTRIC representative 09
Prefer not to answer 98
Don't know 99

Q9. (C 2a) Next I will read a list of reasons you may have considered when you decided to make your energy efficient 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 <u>reducing environmental impact of your home</u> on your decision to make the upgrade?***

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

Q10. (C 2b) ***How important was <u>upgrading out-of-date equipment</u> on your decision to make the upgrade?***

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

Q11. (C 2c) ***How important was <u>replacing faulty or failed equipment</u> on your decision to make the upgrade?***

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

[Data Processing Use Only] POLLER NOTE: Was cooling measure installed?

Yes .. 1
No ... 2

Q12. (C 2d) ***How important was <u>improving comfort of your home</u> on your decision to make the upgrade?***
(Among those who installed a cooling measure)

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4

5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

Q13. (C 2e) ***How important was improving air quality on your decision to make the upgrade?*** *(Among those who installed a cooling measure.)*

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

[Data Processing Use Only] POLLER NOTE: Was a pool pump installed?

Yes .. 1
No ... 2

Q14. (C 2f) ***How important was improving water circulation in your pool on your decision to make the upgrade?*** *(Among those who installed a pool pump measure)*

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

Q15. (C 2g) ***How important was receiving the financial incentive on your decision to make the upgrade?***

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

Q16. (C 2h) ***How important was reducing energy bill amounts on your decision to make the upgrade?***

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

[Data Processing Use Only] POLLER NOTE: Did respondent answer Contractor in Q.6?

Yes .. 1
No ... 2

Q17. (C 2i) ***How important was the contractor recommendation on your decision to make the upgrade?***
(Among those who used a contractor to install the measure.)

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6
Prefer not to answer 7
N/A 8

[Data Processing Use Only] POLLER NOTE: Did respondent answer Retailer in Q.6?

Yes .. 1
No ... 2

Q18. (C 2j) ***How important was the retailer recommendation on your decision to make the upgrade?*** *(Among those who purchased the measure at a retailer.)*

1 - Not Important at All . 1
2 - A Little Important 2
3 - Somewhat Important 3
4 - Very Important 4
5 - Extremely Important 5
Don't Know 6

Prefer not to answer 7
N/A 8

Q19. (C 3) Were there any other reasons that you installed the equipment that were more important than the ones we have mentioned?

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

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

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

Q21. (D 2a) ***How influential was <u>the dollar amount of the rebate</u> on your decision to make the upgrade?***

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

[Data Processing Use Only] POLLER NOTE: Did respondent answer Contractor in Q.6?

Yes .. 1
No ... 2

Q22. (D 2b) ***How influential was <u>the contractor recommendation</u> on your decision to make the upgrade?***
(Among those who used a contractor to install the measure.)

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

[Data Processing Use Only] POLLER NOTE: Did respondent answer Retailer in Q.6?

Yes .. 1
No ... 2

Q23. (D 2c) ***How influential was <u>the retailer recommendation</u> your decision to make the upgrade?*** *(Among those who purchased the measure at a retailer.)*

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

Q24. (D 2d) ***How influential was <u>information from EL PASO ELECTRIC marketing or informational materials</u> on your decision to make the upgrade?***

0 - Not influential at all ... 00
1 01
2 02

3 03
4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely influential 10
Don't know 97
Prefer not to answer 98
N/A 99

Q25. (D 2e) ***How influential was <u>previous participation in a EL PASO ELECTRIC program</u> on your decision to make the upgrade?***

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

Q26. (D 3) Did you first learn about the EL PASO ELECTRIC rebate program BEFORE or AFTER you decided how energy efficient your equipment would be?

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

Q27. (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 purchased the exact same efficiency level of equipment if the EL PASO ELECTRIC rebate program was NOT available.

0 - Not at all likely 00
1 01
2 02
3 03

4 04
5 05
6 06
7 07
8 08
9 09
10 - Extremely likely 10
Don't know 97
Prefer not to answer 98
N/A 99

Q28. (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 EL PASO ELECTRIC rebate program was NOT available.

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

Q29. (D 6) In your own words, how would you describe the influence the EL PASO ELECTRIC rebate program had on your decision to install the new equipment?

Q30. (E 1) About how long did it take to receive your rebate after the equipment was installed?

1 week or less 1
More than a week but less than 1 month 2
About 1 month 3
Between 1 and 2 months 4
About 2 months 5
More than 2 months 6
Have not received rebate yet 7
Prefer not to answer 8
Don't know 9

Q31. (F 1a) For each of the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **EL PASO ELECTRIC as an energy provider.**

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

Q32. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with EL PASO ELECTRIC as an energy provider.)*

Q33. (F 1b) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The rebate program overall.**

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

Q34. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the rebate program overall.)*

Q35. (F 1c) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The equipment that was rebated through the program.**

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

Q36. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the equipment that was rebated through the program.)*

[Data Processing Use Only] POLLER NOTE: Did respondent answer Contractor in Q.6?

Yes .. 1
No ... 2

Q37. (F 1d) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The contractor who installed the equipment.** *(Among those who used a contractor to install the measure.)*

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

Q38. Can you tell me why you gave that rating? *(Among those who used a contractor to install the measure and were* Very Dissatisfied *or* Somewhat Dissatisfied *with the contractor who installed the equipment.)*

Q39. (F 1e) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The amount of time it took to receive your rebate.**

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

Q40. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the amount of time it took to receive your rebate.)*

Q41. (F 1f) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The dollar amount of the rebate.**

Very Dissatisfied 1

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

Q42. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the dollar amount of the rebate.)*

Q43. (F 1g) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **Interactions with EL PASO ELECTRIC regarding this project.**

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

Q44. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with interactions with EL PASO ELECTRIC regarding this project.)*

Q45. (F 1h) For the following, please tell me if you were *very dissatisfied*, *somewhat dissatisfied*, *neither satisfied nor dissatisfied*, *somewhat satisfied* or *very satisfied*. **The overall value of the equipment you received for the price you paid.**

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

Q46. Can you tell me why you gave that rating? *(Among those who were* Very Dissatisfied *or* Somewhat Dissatisfied *with the overall value of the equipment you received for the price you paid.)*

Q47. (F 2) Do you have any recommendations for improving the EL PASO ELECTRIC program?

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

Q48. (Gen 1) Finally, we have a few questions about your firm for classification purposes only. Do you own or rent your home where the equipment was installed?

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

Q49. (Gen 1a) Do you pay your EL PASO ELECTRIC bill, or does someone else (e.g., a landlord)? *(Among those who answered that they own or rent the building where the project was completed.)*

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

Q50. (Gen2) Is your home a single-family home or part of a multifamily building with more than one unit?

Single-family home 1
More than one residence in building 2
Prefer not to answer 3
Don't know 9

Q51. (Gen2a) How many units are in the structure?

Number of units: _____

Prefer not to answer 499
Don't know 500

Q52. (Gen 3) Approximately what is the total square footage of your home?

Less than 1,000 square feet 1
Between 1,000 and 1,499 square feet 2
Between 1,500 and 1,999 square feet 3
Between 2,000 and 2,499 square feet 4
Between 2,500 and 2,499 square feet 5

Between 3,000 and 3,999 square feet 6
4,000 square feet or more 7
Prefer not to answer 8
Don't know 9

Q53. (Gen 4) Approximately what year was your home built?

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

Q54. (Gen 5) How many people live in your household?

Number of people: _____

Prefer not to answer 99

Q55. (Gen 6) How long have you lived in this home?

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

Appendix D: Commercial Load Management Detailed Methods and Findings

1.1 Summary

As the statewide evaluator for New Mexico, Evergreen Economics was asked to verify the savings calculated by Trane for purposes of settlement with the participating customers and perform an independent evaluation of program performance. Average portfolio load reduction estimates for each are presented in Table 1.

Table 1: Portfolio Results Summary

Trane Gross Reported Savings (kW)	Validation of Settlement Claims (kW)	Independent Evaluation (kW)
667	774	706

1.2 Background

El Paso Electric (EPE) operates a Commercial Load Management demand response (DR) program for seven schools in its service territory, including three middle schools, three high schools, and one university. A meatpacking facility elected to opt out of the EPE DR season due to equipment failure for the second consecutive year. The program compensates participants for reducing electric load upon dispatch during periods of high system load. For summer 2022, the portfolio committed capacity was 1,195 kW. Individual participant committed capacities ranged from 20 kW to 750 kW.

During the summer 2022 demand response season, EPE and the program implementer (Trane) called six demand response events, each lasting two hours from 3:00-5:00 PM Mountain Daylight Time (MDT). These events are summarized in Table 2.

Table 2: 2022 Event Summary

Date	Weekday	Start Time (MDT)	End Time (MDT)	Max Temp in Interval (°F) – Las Cruces
June 10	Friday	3:00 PM	5:00 PM	103
June 13	Monday	3:00 PM	5:00 PM	103
July 11	Monday	3:00 PM	5:00 PM	100
July 18	Monday	3:00 PM	5:00 PM	102
July 19	Tuesday	3:00 PM	5:00 PM	105
July 20	Wednesday	3:00 PM	5:00 PM	102

1.3 Validation of Settlement Claims

Evergreen Economics was asked to verify the savings calculated by Trane for purposes of settlement with the participating customers. Trane's gross reported savings are displayed in Table 3.

Table 3: Gross Reported Savings

Date	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
June 10	1,195	1,111	93%
June 13	1,195	1,255	105%[1]
July 11	1,195	711	60%
July 18	1,195	224	19%
July 19	1,195	307	25%
July 20	1,195	390	32%
Average	**1,195**	**667**	**55%**

1.3.1 Methodology

In 2018, Evergreen worked closely with EPE and Trane to reach agreement on the mechanics of the DR performance calculation mechanism. This calculation centers on the baseline, or estimate of what load would have been in the participating facilities on event days if DR had not be called. The settlement calculations called for a "high 8-of-10" baseline with a capped, symmetric day-of

[1] Trane reported a Portfolio Delivered Capacity Percentage of 100% for the June 13th event day.

adjustment. Only non-event, non-holiday weekdays were eligible to be baseline days. For each Event Day, the method was as follows:

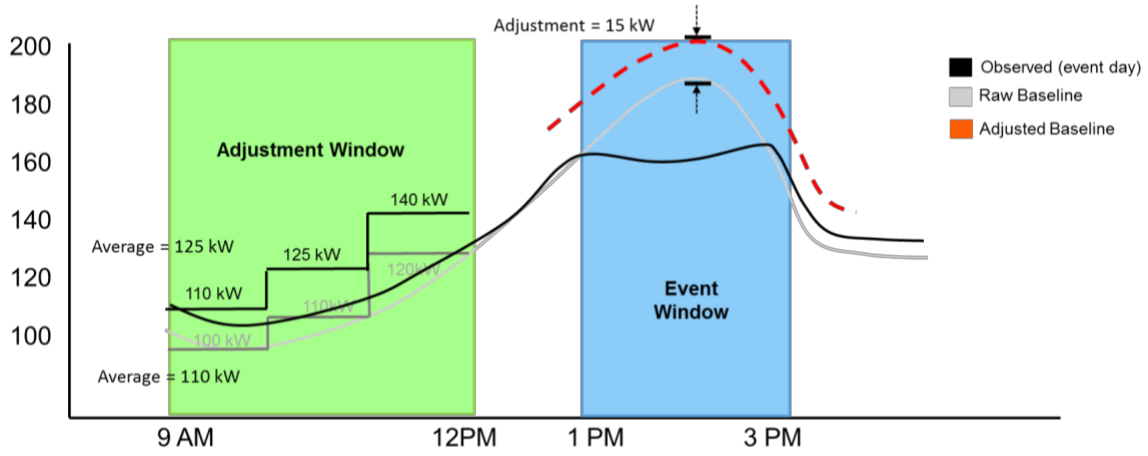
- Select the last ten non-event, non-holiday weekdays
- Select the eight days (out of ten) with the highest average load during the Event Window, using the 15-minute interval load data. For summer 2022, the Event Window was 3pm to 5pm for all six events.
- For each 15-minute interval, calculate the average load of the eight selected baseline days. This is known as the "Raw Baseline."

After the Raw Baseline was calculated, a day-of "Adjustment Factor" was calculated and applied to the Raw Baseline to create the "Adjusted Baseline," as follows:

- Designate the three hours prior to the event, excluding the hour immediately prior to the event, as the "Adjustment Window". For summer 2022, the Adjustment Window was 11am to 2pm for all six events.
- Calculate the average observed load on the event day during the Adjustment Window (single value)
- The Adjustment Factor (single kW value) is defined as the difference of the average observed load during the Adjustment Window and the average load of the Raw Baseline during the corresponding event window, capped at +/- 20% of the Raw Baseline
- For each interval in the event window, add/subtract the Adjustment Factor to/from the Raw Baseline to calculate the Adjusted Baseline

A sample calculation is illustrated in Figure 1. In this example, the Adjusted Baseline is 15 kW higher than the Raw Baseline during the event window, because the actual average observed load during the Adjustment Window was 15 kW higher on the event day (125 kW) compared to the baseline days (110 kW).

Figure 1: Illustration of Adjusted Baseline Calculation



1.3.2 Results

Evergreen was unable to recreate most of Trane's calculations because Trane did not consistently apply a "high 8-of-10"methodology. Evergreen's validation of settlement claims results are displayed in Table 4.

Table 4: Validation of Settlement Claims

Date	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
June 10	1,195	1,198	100%
June 13	1,195	1,643	138%
July 11	1,195	749	63%
July 18	1,195	281	24%
July 19	1,195	333	28%
July 20	1,195	440	37%
Average	**1,195**	**774**	**65%**

Evergreen was able to replicate the Trane numbers exactly when Trane applied the "high 8-of-10" methodology. As outlined in the Methodology section above, the "high 8-of-10" calls for the use of eight baseline days to calculate the Raw Baseline. The Evergreen team discovered Trane used eight baseline days for only 19% of their performance calculations. For all other calculations, the number of baseline days ranged from four to five. Our Raw Baseline calculations were consistently higher than Trane's, suggesting the "high 4" or "high 5" days used in their Raw Baseline calculations did not include the top demand days for the period.

Table 5 compares the baseline days used in the Evergreen and Trane calculations for Gadsden High School on the June 10 event day. The eight eligible baseline days with the highest average demand during the event window are shaded in green. Trane only selected five total baseline days, including two days outside the top eight eligible baseline days. As a result, Trane's estimated load reduction for this site was 96 kW compared to Evergreen's 128 kW (a 33% difference).

Table 5: Gadsden HS Baseline Day Comparison (June 10 Event)

Eligible Baseline Days	Avg. Demand During Event Window (kW)	Evergreen Baseline Day?	Trane Baseline Day?
May 26	566	Yes	Yes
May 27	556	Yes	Yes
May 31	479	Yes	No
June 1	518	Yes	No
June 2	455	Yes	No
June 3	421	Yes	Yes
June 6	398	No	Yes
June 7	470	Yes	No
June 8	460	Yes	No
June 9	417	No	Yes

The Evergreen team found that consistently applying the "high 8-of-10" using Trane's 15-minute interval load data produces greater load reductions per site and a 10% increase in average Actual Enabled Capacity Percentage at the portfolio level. We suspect Trane's limited baseline day selections were due to formula errors in their spreadsheets. The Evergreen team did not debug each Excel workbook to determine why the "high 8-of-10" formulas did not compute as expected in most workbooks. But the fact that most formulas were not working correctly suggests a more robust analysis procedure is needed. Because performance measurement is entirely dependent on the baseline calculation, its important that the baseline calculation follows the agreed upon procedure and participants are compensated fairly for the grid value they provide.

The Evergreen team also found several data integrity issues in the Data Verification data that inhibited proper verification and analysis. Each site's interval data appeared in multiple files, resulting in duplicate data and sometimes conflicting load histories. For one site in particular, interval data used in baseline calculations for a July event did not match the interval data for the same site during the same time period in another file. Additionally, Evergreen noticed a mislabeled column in one file that did not match the file name. The file name suggested the data was for one

site while the column label indicated a different site. We confirmed the site results in the Event Participation Report reflected the data in the file and changed the column label accordingly.

1.4 Independent Evaluation

1.4.1 Methodology

Evergreen consistently used the "high 8-of-10" methodology in the independent evaluation. As noted above, we were provided conflicting load histories for Santa Theresa Middle School South from July 1st to July 11th. The Evergreen team took the average over each 15-minute interval to calculate the Raw Baseline for this site.

The 15-minute interval data Trane uses to estimate DR performance comes from its own metering equipment rather than the EPE revenue meter. This is necessary for smaller sites where EPE does not have interval meters and useful for sites with behind-the-meter solar because Trane's metering captures gross load rather than the net load captured by EPE's revenue meter. Figure 2 compares load shapes from the Trane and EPE metering on July 11th for NMSU. EPE actually has separate metering for Aggie Power, NMSU's newly installed 3 MW solar and battery storage installation. However, many sites will not have separate metering of solar output.

Figure 2: NMSU Load Shapes on July 11th (Net vs. Gross Loads)

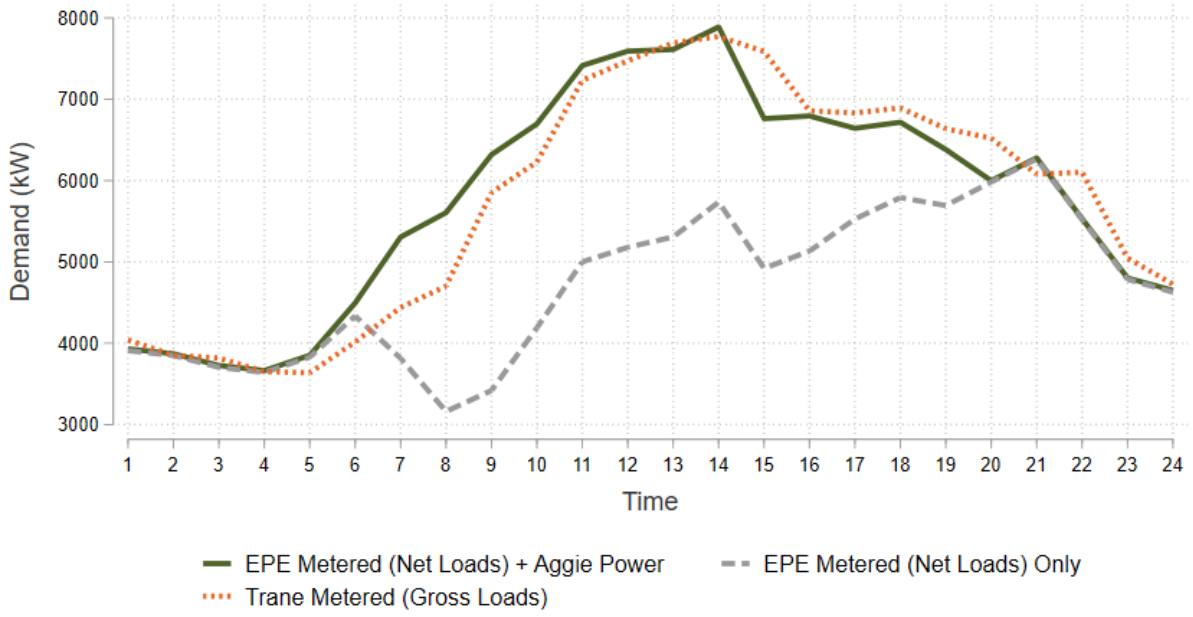


Table 6 below shows the differences in load reduction estimates for NMSU using Trane's Gross Loads, EPE's Net Loads only, and EPE's Net Loads plus Aggie Power. If the only data available for NMSU were net loads, the site would actually have a negative estimate of DR performance. This is

because cloud cover and solar production can obfuscate the gross energy use pattern in the facility.

Table 6: NMSU Load Reduction Estimates

Date	Committed Capacity (kW)	Load Reduction: Trane's Gross Loads (kW)	Load Reduction: EPE's Net Loads (kW)	Load Reduction: EPE's Net Loads + Aggie Power Output (kW)
June 10	750	744	792	748
June 13	750	1,130	-1,128	587
July 11	750	489	-107	280
July 18	750	-31	-590	-166
July 19	750	-7	16	243
July 20	750	85	880	310
Average	**750**	**402**	**-23**	**334**

The results of the independent evaluation below use the Net Loads plus Aggie Power output provided by EPE for the NMSU site. As EPE considers program expansion it may not always be possible for program implementers to install their own metering and control equipment onsite due to IT security or other concerns. Many C&I demand response programs rely exclusively on utility meter data and participant activated curtailment actions to deliver and measure capacity savings. If EPE transitions to this program model, treatment of sites with behind-the-meter solar will become an important consideration.

1.4.2 Results

Table 7 summarizes Evergreen's gross verified demand savings estimates by event and in total. The portfolio delivered average reductions above the 1,195 kW of committed capacity in the first event but fell short in the remaining five events, with the average portfolio load reduction being 706 kW, or 489 kW (41%) below the portfolio committed capacity. The difference between our independent evaluations results and our validated settlement claims comes entirely from which set of meter data is used for NMSU.

Table 7: Gross Verified Savings

Date	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
June 10	1,195	1,202	101%
June 13	1,195	1,100	92%
July 11	1,195	540	45%
July 18	1,195	146	12%
July 19	1,195	583	49%
July 20	1,195	665	56%
Average	**1,195**	**706**	**59%**

1.4.3 Recommendations

The Evergreen team recommends Trane consistently apply the "high 8-of-10" methodology in future program years to ensure settlement with participating customers is calculated according to agreed upon terms. Evergreen also recommends Trane revisit their data management strategy to improve scalability and reduce human error. Instead of calculating performance for each site and event day in a standalone Excel workbook, Evergreen recommends Trane consolidate the data into one analysis data set and procedure to simplify access and eliminate redundancies. Consolidating the disparate datasets during preprocessing can also lower the likelihood of mislabeling from one place to another while promoting consistent formatting and standardization of data types. Finally, Evergreen recommends Trane perform their calculations outside of the raw data file. While the team appreciates the transparency into the Excel formulas Trane used in their calculations, we recommend separating the calculations to lower the chances of incorrectly manipulating the raw data in place.

1.5 Detailed Results

1.5.1 Energy Savings

Demand response events may also yield energy savings if the demand reductions during the event window are not offset by actions like precooling or snapback, which shifts demand to intervals outside of the Event Window. Evergreen's approach to estimating the net energy savings on DR event days is similar to the approach for estimating demand savings. Demand savings are estimated by calculating the difference between a site's actual load and its baseline load for the hours in the Event Window only. To calculate energy savings, Evergreen measured the difference between a site's actual load and its baseline load for the daytime hours of event days from 8:00

AM to 8:00 PM.[2] By looking at the hours outside the Event Window, we account for increases in energy consumption that may occur before or after the DR event as a result of pre-cooling or other load-shifting activities.

Table 8 shows the portfolio net energy savings for each event and in total. Total energy savings across the six events was 11,920 kWh.

Table 8: Energy Savings by Event Day

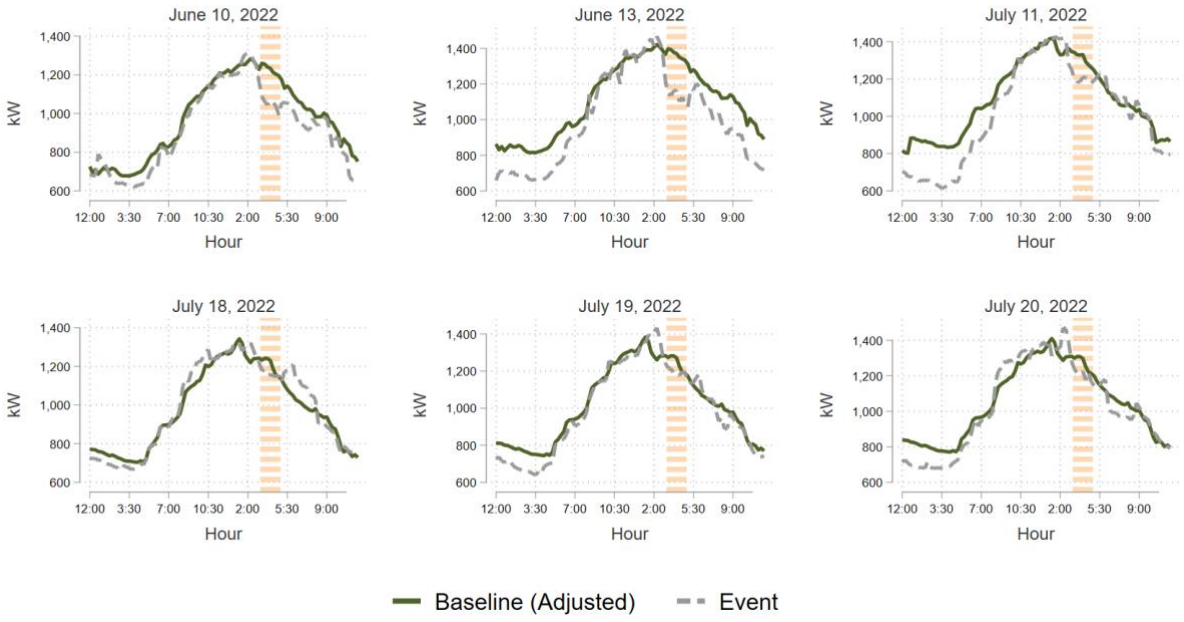
Date	Energy Savings (kWh)
June 10	4,429
June 13	3,225
July 11	1,335
July 18	-626
July 19	2,140
July 20	1,414
Total	**11,920**

1.5.2 Baseline and Event Load Visualization

Figure 3 shows the average event-day and baseline-day site loads for each event. There is a clear reduction in load during event hours on all six event days.

[2] The cutoff hours of 8:00 AM and 8:00 PM were chosen based on a comparison of daily load shapes across different days and specifically the observation that load profiles tend to track each other closely until 8:00 AM and converge again after 8:00 PM. We measure energy savings from 8:00 AM to 8:00 PM only because we would not expect the baseline and event day loads to differ outside of these time periods as a result of weather conditions or other factors.

Figure 3: Average Baseline and Event Loads for each Event



1.5.3 Duration of Load Reductions

While settlement is based on the average load reduction across each two-hour event window, the minimum or first interval load reduction may also be of interest, depending on the DR use case. Figure 4 shows how the magnitude of kW savings varies depending on which metric is used – average, minimum, and first-interval value – using 15-minute intervals. The average reduction, shown in green, corresponds to the values presented in Table 7.

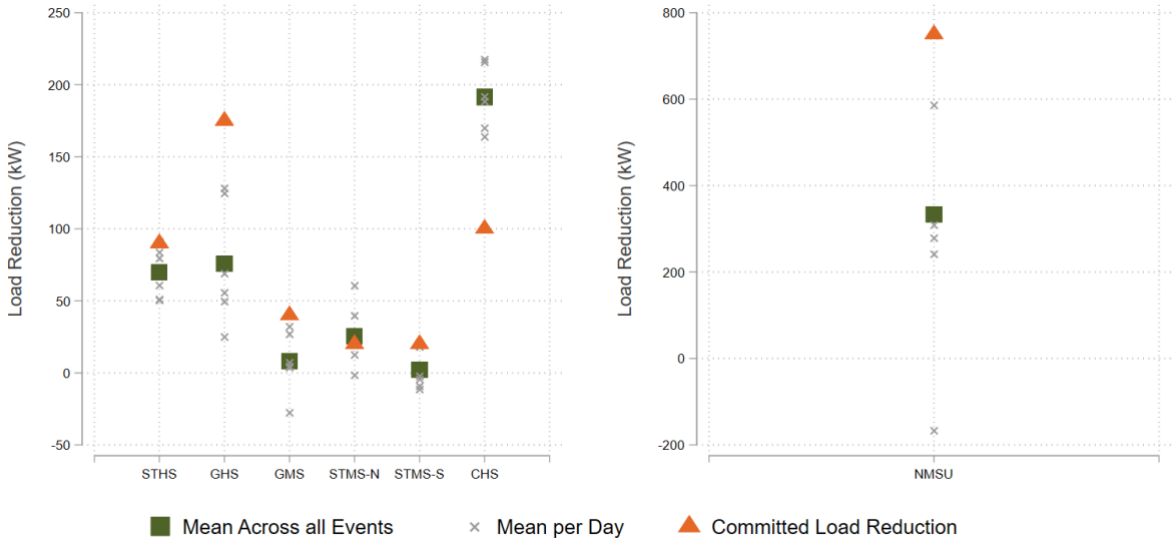
Figure 4: Average, Minimum, and First-Interval Load Reduction by Event

1.5.4 Load Reduction by School

Figure 5 shows the variance by site of the average event load reductions across the six summer 2022 DR events. The gray marks represent average load reduction for each of the six events, and the green square represents the average load reduction across all six events. The orange triangle represents the committed reduction for each site. NMSU is shown in a separate panel since its loads are significantly higher than the high school and middle school sites.

The graph shows that only one site – Chaparral High School – consistently outperformed their committed reductions. Santa Teresa Middle School North performed in line with their committed reductions on average, while the remaining five sites were below their target capacity for nearly every event. Most notably, NMSU performed below their committed reductions on all event days for the second consecutive year.

Figure 5: Average Event Reduction by Day



1.5.5 Historical Results

Table 9 below offers a year-over-year comparison of Evergreen's gross verified demand savings estimates for the Commercial Load Management Program. Portfolio committed capacity increased significantly with the inclusion of NMSU in 2020. For the last two summers, delivered capacity has decreased to less than two-thirds of capacity.

Table 9: Historical Gross Verified Savings Averages

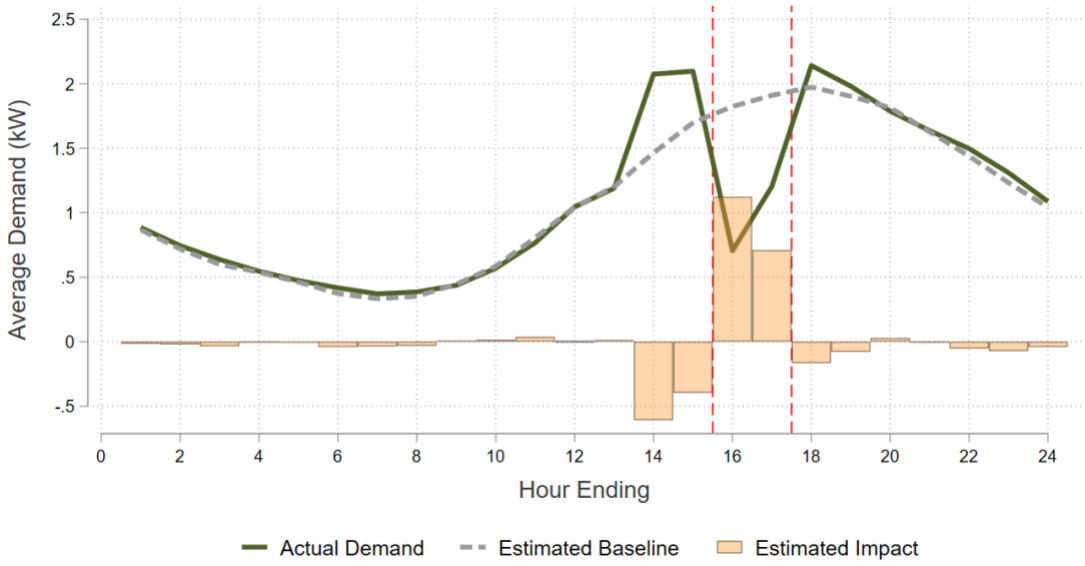
Year	Participants	Events	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
2019	6	8	380	489	129%
2020	7	6	1,130	1,122	99%
2021	7	3	1,195	793	66%
2022	7	6	1,195	706	59%
Average	**6.75**	**5.8**	**975**	**778**	**80%**

Appendix E: Residential Load Management Detailed Methods and Findings

1 Background

EPE's Residential Load Management program is a demand response (DR) program with over 2600 participants. The program provides participants with annual incentives for allowing EPE to curtail their electric cooling load during periods of high system demand. During an event, load curtailment is achieved via communication with WiFi-enabled smart thermostats. Devices are remotely controlled to raise temperature set points and reduce air conditioning (AC) runtimes, which in turn translates to reduced electric loads. Figure 6 illustrates the impact of dispatch on the average AC unit's electricity consumption during a typical two-hour event.

Figure 6: Residential Load Management Example - Average Two-Hour Event



During the summer 2022 demand response season, EPE and the program implementer (Uplight) called six demand response events, one of which lasted four hours from 4:00 – 8:00 PM Mountain Daylight Time (MDT) and the rest lasting two hours, all from 3:00 – 5:00 PM. Table 10 provides some information on these six events.

Table 10: 2022 Residential Load Management Event Summary

Date	Weekday	Start Time (MDT)	End Time (MDT)	Max Temperature in Interval (°F)
10-Jun	Friday	4:00 PM	8:00 PM	103.1
13-Jun	Monday	3:00 PM	5:00 PM	102.7
11-Jul	Monday	3:00 PM	5:00 PM	99.5
18-Jul	Monday	3:00 PM	5:00 PM	102.1
19-Jul	Tuesday	3:00 PM	5:00 PM	105.0
20-Jul	Wednesday	3:00 PM	5:00 PM	102.1

By the end of summer 2022, there were 2,616 devices and approximately 2,200 distinct accounts enrolled in the program.

New thermostat installations are also treated as an energy efficiency measure with annual kWh savings over the life of the device. During 2022 EPE rebated 448 new WiFi thermostats; the remainder of the program devices were existing devices recruited exclusively for DR purposes. As the statewide evaluator for New Mexico, Evergreen Economics was asked to perform an independent evaluation of program performance and verify the savings achieved by the program. Table 11 shows the results.

Table 11: Evaluation Results

Resource	Number of Devices	Verified Savings	Measure Life (Years)
Demand (kW)	2,616	2,098	1
Energy (kWh)	448	285,761	10

2 Independent Evaluation

2.1 Methodology

2.1.1 Introduction

For 2022, EPE and Uplight utilized a full dispatch model where all devices were curtailed on event days. To track which devices actually received this curtailment, various statuses were assigned to them on both event and non-event days. On non-event days, devices were uncontrolled and allowed to operate based on customer preferences, indicated by the "Learning" status. For each event day, devices were then set to the "Demand Response" status to receive curtailment. Devices could also fall under the categories of "Ineligible," "Inoperative," and "Unknown" on any given day throughout the program. As seen in Figure 7, the signature curtailment drop during hours 16 and 17 is not limited to devices with the "Demand Response" status. Rather, it seems many devices received curtailment regardless of M&V status.

Figure 7: Average Load by Status Over the Average Event Day

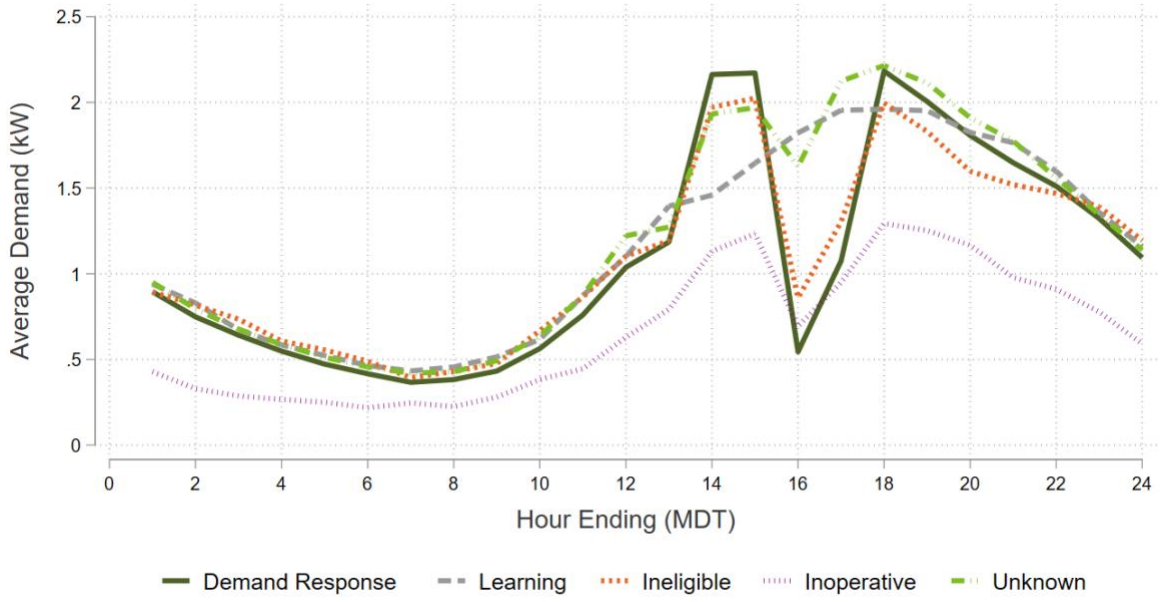


Table 12 summarizes the statuses across all devices that had telemetry data on each event day. Also included in the table is a column for devices where AC runtime data was missing marked by "Offline." It is unclear what caused a limited number of devices to be in "Learning" mode on event days. Additionally, there was a significant number of devices marked as "Unknown." Note that the number of total devices increased by approximately 4.0% from the first event to the last.

Table 12: Device Counts by Status on Event Days

Date	Demand Response	Learning	Ineligible	Inoperative	Unknown	Offline	TOTAL
10-Jun	1,653	85	70	70	205	183	2,266
13-Jun	1,713	84	65	71	151	192	2,276
11-Jul	1,704	86	66	84	165	233	2,338
18-Jul	1,729	90	66	75	155	233	2,348
19-Jul	1,643	92	68	55	261	231	2,350
20-Jul	1,735	92	67	58	165	239	2,356

In order to track the efficacy of the program, Uplight provided the Evergreen team with hourly device-level telemetry data. This data included device-level information such as the thermostat's serial number, location, AC runtime, M&V status, weather and other device-specific data. The Evergreen team identified some concerns with the outdoor temperature and humidity values. Therefore, we used hourly NOAA records from Las Cruces for modeling.

Additionally, since thermostat performance was measured using AC runtime data, not electricity usage, a conversion from runtime to kW was necessary. The cooling runtimes (in minutes) were converted to cooling load impacts (in kW), using the connected load assumptions in the New Mexico TRM, shown in Equation 1.

Equation 1: New Mexico TRM Smart Thermostat Connected Load

$$HVAC\ Capacity\ (kW) = \frac{Capacity_{cool}}{1000\frac{W}{kW}} x \frac{1}{EER} = 3.22\ kW$$

Where:

- $Capacity_{cool}$ = 36,000 BTU/hour (2021 TRM Section 4.20.3)
- EER = -0.02 * $SEER^2$ + 1.12 * SEER = 11.18 (2021 TRM Section 4.6.4)
    - Assuming SEER = 13 (2021 TRM Section 4.20.3)

For each hourly observation, the cooling runtime values (in minutes) were multiplied by the estimated HVAC system capacity, then divided by 60. This represented the electric demand per device per hour. To determine the impact of calling an event, the Evergreen team developed a regression model to estimate what AC demand would have been on event days if no event was

called. Non-event weekdays, with average temperatures above 75 degrees Fahrenheit were used to build this model. The most accurate, cross-validated model in predicting load was then applied to event days to determine impacts.

Since curtailment occurs among M&V statuses other than "Demand Response" on an event day, our modeling approach was to include all devices with AC runtime data in our model, regardless of M&V status. This approach returned an estimate of the average performance per device that was online during an event. This was then multiplied by the number of devices enrolled at the end of the 2022 season and the average proportion of devices that were not missing AC runtime data during the 2022 events. This product resulted in our estimate of the aggregate program impacts.

2.1.2 Impact Evaluation

The Evergreen team chose a within-subjects regression analysis to estimate the baseline demand on event days. The particular model used was selected by testing the average out-of-sample performance of several regression models. This was done by first randomly dividing eligible observations (non-event weekdays above 75 degrees Fahrenheit) into 5 equally sized groups. Each regression specification was then run on 4 of the 5 groups. After this, out-of-sample performance was measured by making predictions on the remaining group and calculating the root mean squared error. This process was then repeated, rotating which of the 5 groups was used as the testing set. The model that had the lowest error, averaged over each out-of-sample test, was selected for this analysis. As displayed in Equation 2, the optimized model explains the electric demand of AC units as a function of temperature, dew point, and the device-specific demand observed at noon on the event day. Note the interaction between temperature and dewpoint in the fourth term.

Equation 2: Regression Specification for Estimating Baseline Load

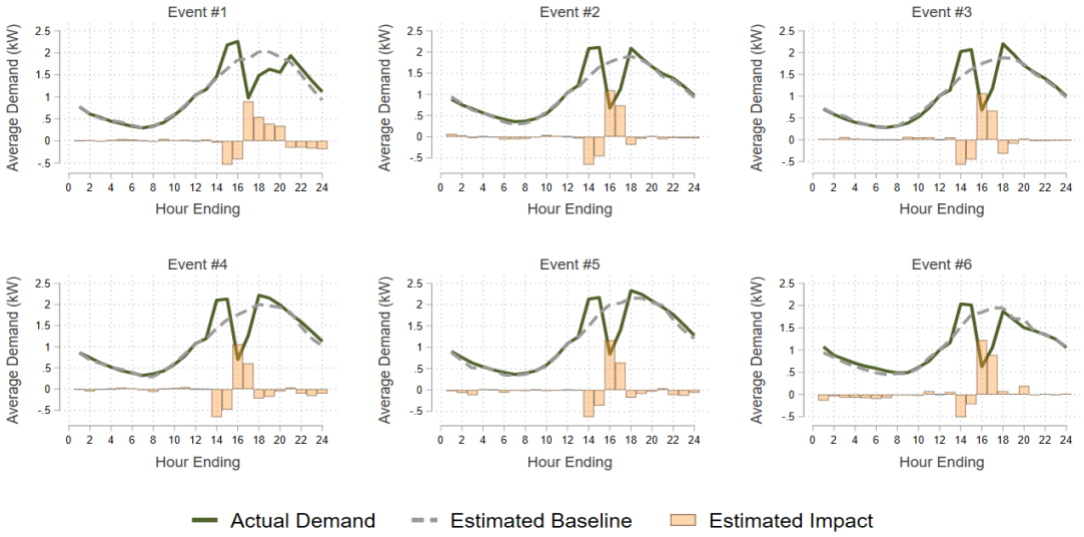
$$Demand\ (kW) = \beta_1 + \beta_2 TEMP + \beta_3 DEW + \beta_4 TEMP * DEW + \beta_5 PRE\_EVENT + e$$

Where:

- β_i = Variable Coefficients
- $TEMP$ = Temperature Variable in Degrees Fahrenheit
- DEW = Dew Point Variable
- PRE_EVENT = Device-specific Demand (kW) at Hour 12 of the Event Day
- e = Error Term

For each event day and hour, this model was used to make predictions as to what demand would have been if no event was called. These predictions were used as our baseline. Average hourly impacts were then calculated by subtracting the estimated baseline kW demand from the observed kW demand. Figure 8 displays these observations and estimates for each event.

Figure 8: Each Event Day's Average Demand, Baseline, and Impacts



2.2 Results

2.2.1 Demand Impacts

Utilizing the methods above, Evergreen's gross verified impacts by event day are summarized in Table 13.

Table 13: Demand Impacts by Event Day

Date	Full Event Hours	Impact per Device (kW)	Total Impact (kW)
10-Jun	4	0.545	1,135
13-Jun	2	0.919	1,915
11-Jul	2	0.868	1,828
18-Jul	2	0.836	1,767
19-Jul	2	0.905	1,918
20-Jul	2	1.058	2,240
Event Average	**6 Events**	**0.855**	**1,800**
Hourly Average	**14 hours**	**0.811**	**1,705**

The "Impact per Device" values were calculated by estimating each device's impacts for each hour on each event day. These hourly impacts were then averaged over the course of each event. The Total Impact column refers to the estimated load reduction (in kW) delivered on each event day. This number was calculated by multiplying the impact per device by the total number of devices that were not missing AC runtime data on each event day. Finally, a simple average for the impacts over all events was calculated in addition to a weighted average based on the number of hours per event.

We can see that the first event (June 10th, 2022) spanned the longest time-period and had the lowest average impact. The last event (July 20th, 2022) had the greatest impact. July 20th was the last of three events occurring consecutively, which all saw increasing performance from one event to the next.

The gross verified impacts in Table 14 are calculated by multiplying the average of each event's device-level impacts during the first two hours of curtailment and the total number of devices that were enrolled in the program at the end of the summer DR season (2,616). This number was then multiplied by the average percentage of devices that were considered online (devices that were not missing AC runtime data) during the 2022 events. Focusing on the first two hours allows for equal contribution from the six events and returns an estimate of expected performance during a typical two-hour dispatch. Section 3.3 includes a detailed discussion of the relationship between load impacts and event duration and the diminishing effects of longer events.

Table 14: Gross Verified Program Impacts

Impact per Online Device (kW)	End of Season Enrollment	Online Rate	Estimated Program Load Reduction (kW)
0.885	2,616	90.6%	2,098

2.2.2 Energy Impacts for New Devices

New smart thermostat devices that are purchased from the EPE marketplace are treated as an energy efficiency measure. Evergreen was able to exactly replicate EPE's calculation of annual energy savings per device using the assumptions from the New Mexico TRM. In 2022, EPE incentivized a total of 448 eligible smart thermostat devices. Table 15 shows the annual energy savings results for these devices along with the measure life and lifetime savings. No peak demand savings are claimed for the efficiency measure.

Table 15: Annual Energy Savings Values

Annual Energy Savings per Device (kWh)	Total Devices Purchase in EPE Marketplace	Total Energy Savings (kWh)	Measure Life (Years)	Lifetime kWh Savings
637.86	448	285,761	10	2,857,610

3 Detailed Results

This section reviews the impacts calculated by the Evergreen team and presents other relevant findings from the evaluation.

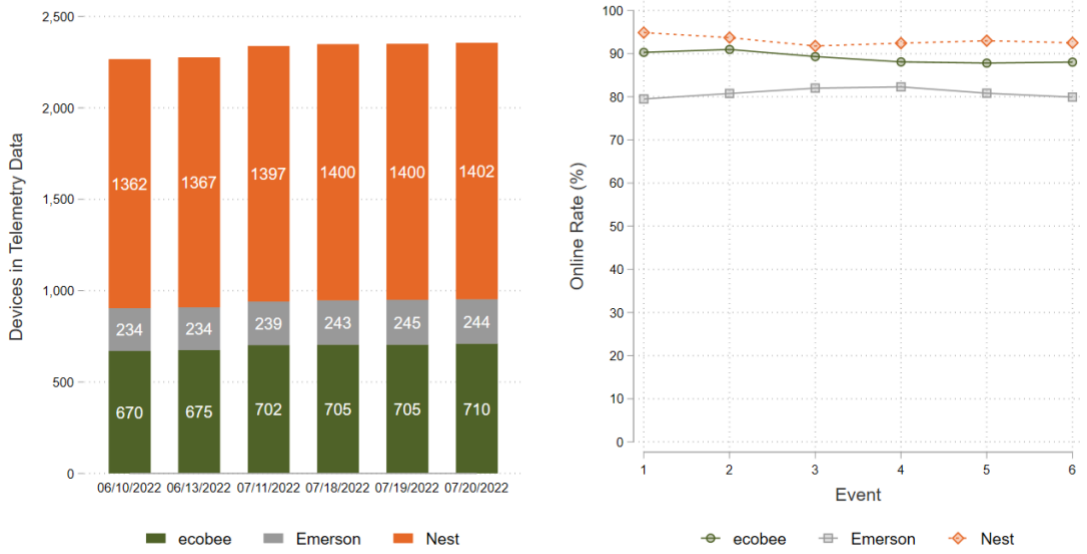
3.1 Event Participation

3.1.1 Online Devices

It is important to note that impacts were only estimated for *online* devices, or devices that were not missing AC runtime data during the event period. In

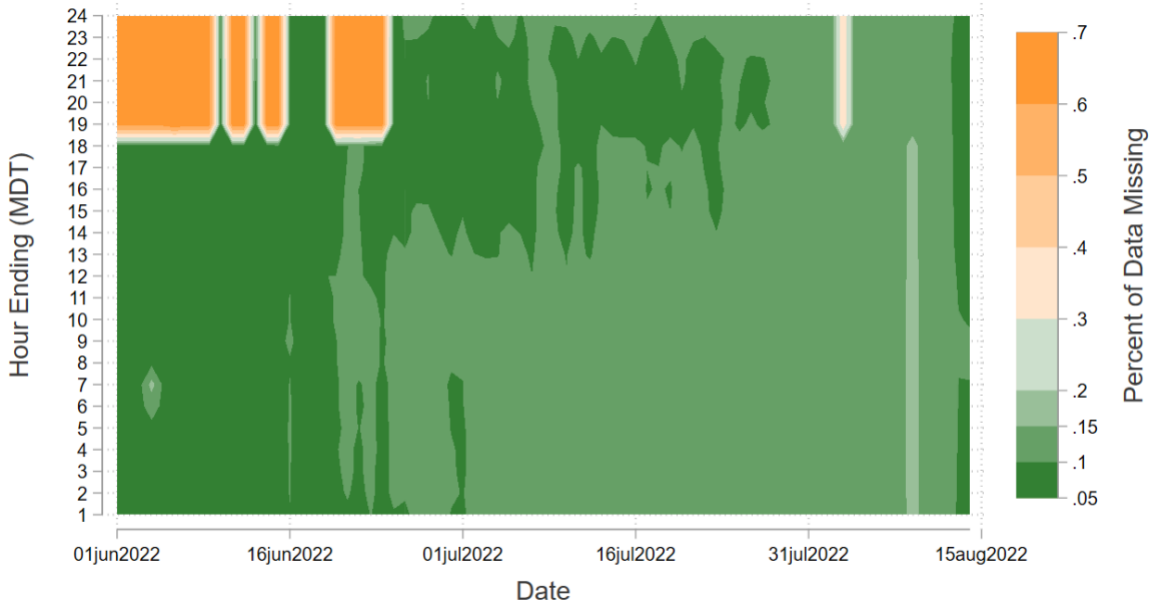
Figure 9, the left pane displays device counts on each event day, while the right pane shows each brand's proportion of devices that were online. Nest had the highest online rate and Emerson had the lowest online rate across all size events.

Figure 9: Total Count and Devices Online by Device Brand on Event Days



On non-event days, approximately 13% of the observations in the telemetry data were missing AC runtime values. This value remained fairly stable throughout most of the period, however; there were some significant spikes early in the season. The heat map in Figure 10 displays these trends, highlighting when missing data was most prevalent.

Figure 10: Missing Data Heat Map



Amongst the three device brands, each had varying impacts on the total percentage of missing data. For example, Nest devices saw the greatest amount of missing data early in the season. Prior to June 25th, roughly 77% of Nest entries past the hour of 6:00PM were missing. After this date, Nest's missing data rates stabilized at approximately 10% for the remainder of the season. Ecobee and Emerson saw fairly stable missing data rates, but about 20% of Emerson devices were missing data throughout the period. This was twice that of Ecobee which held at approximately 10%.

3.1.2 Participation Rates

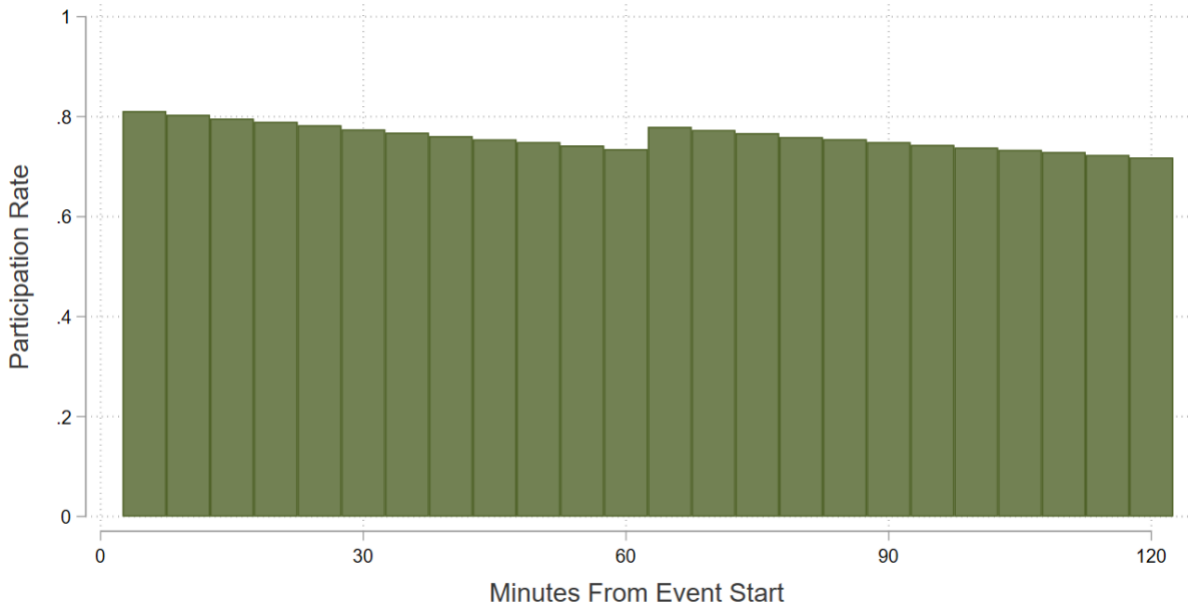
In conjunction with the telemetry data, the Evergreen team was provided information for each device brand detailing the times in which a particular device opted out of an event. A device was considered "opted out" if the customer declined participation, the thermostat set point was changed during an event, or the device was turned off. Table 16 provides an overview of the trends in this data.

Table 16: Runtime Overview

Date	Brand	Total Devices with Runtime Data	Active Devices at the End of the Event	Completion Percentage	Average Minutes of Event Participation per Device
10-Jun	Ecobee	586	394	67.2%	181
	Emerson	187	94	50.3%	144
	Nest	1403	726	51.7%	153
13-Jun	Ecobee	593	572	96.5%	116
	Emerson	189	123	65.1%	86
	Nest	1408	936	66.5%	90
11-Jul	Ecobee	608	583	95.9%	58
	Emerson	196	134	68.4%	90
	Nest	1415	936	66.1%	90
18-Jul	Ecobee	611	578	94.6%	114
	Emerson	200	130	65.0%	84
	Nest	1410	912	64.7%	89
19-Jul	Ecobee	609	488	80.1%	102
	Emerson	201	138	68.7%	86
	Nest	1410	900	63.8%	88
20-Jul	Ecobee	611	469	76.8%	99
	Emerson	195	127	65.1%	83
	Nest	1410	924	65.5%	89

The table above shows that, in general, ecobee had a greater proportion of devices complete events and had the highest average number of minute participating. Moreover, the four-hour event on June 10th saw lower completion percentages for all brands. This points to how, as events persist, the number of devices that are opted in tends to atrophy. Figure 11 depicts this phenomenon for the average two-hour event. It is important to note, the device counts in these data sets were typically less than the counts in the telemetry data. The reason for this discrepancy is currently unknown.

Figure 11: Average Two Hour Event Participation Rates

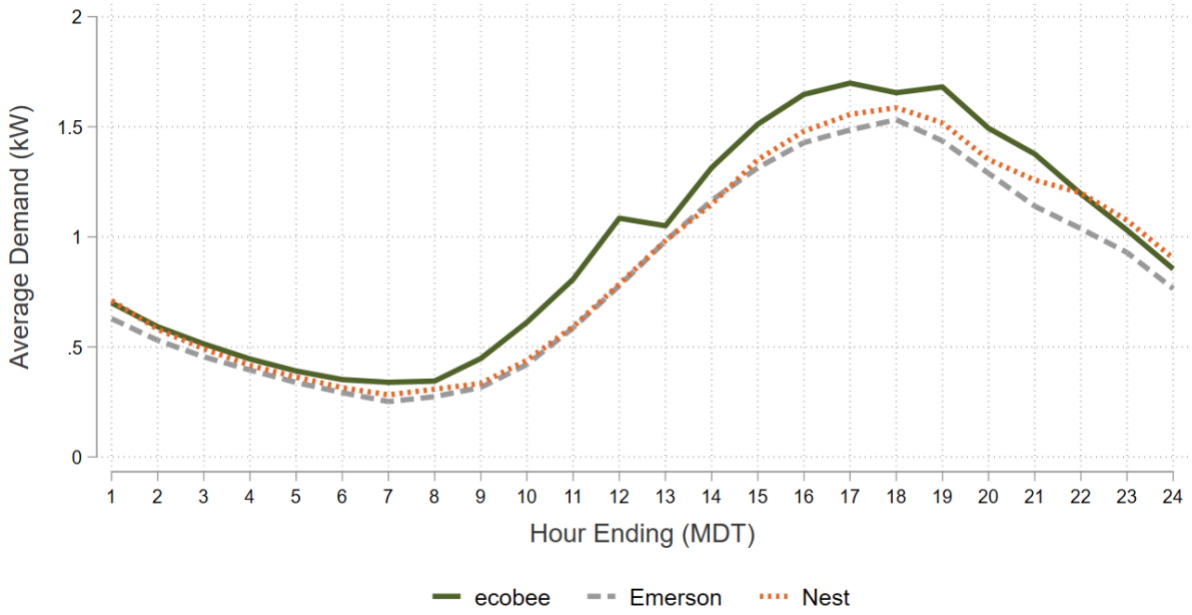


3.2 Time of Use Rate Interference

Figure 12 shows the average device-level demand for thermostats on non-event days for each brand. In hour 12, ecobee thermostats typically see an increase in consumption followed by a decrease during hour 13. The Evergreen team suspects that this is due to ecobee's Time-of-Use (TOU) feature offered to customers who are on a time-varying rate such as El Paso Electric's Power Hours Time-of-Day program[3]. If a participant is on a TOU rate and enables the optimization feature, ecobee thermostats will automatically pre-cool a home prior to a price increase and then reduce cooling consumption when prices are higher. This is important to consider because this "everyday DR" can potentially lower the baseline for ecobee thermostats during peak hours. Of the devices in the telemetry data, approximately half of ecobee thermostats showed signs of this behavior.

[3] https://www.epelectric.com/customers/rates-and-regulations/residential-rates-and-information/power-hours-time-of-use-rate

Figure 12: Average Non-Event Day Device-Level Loads



While this time-of-use rate optimization is mutually beneficial for the utility and customer, there are several issues to consider:

- If the device is enrolled in the Residential Load Management program, the baseline is reduced due to the "everyday DR" happening in response to the TOU rate.
    - Interestingly, the ecobee devices in EPE's Residential LM program have the highest baseline despite the apparent TOU optimization

- Based on visual inspection, ecobee appears to be optimizing to the Texas rate not the New Mexico rate. Texas has an earlier definition for their "On-Peak Period" than New Mexico, so load reductions from TOU optimization could reduce baseline estimates just prior to demand response event windows. Figure 13 displays snap shots of these rates taken from the EPE's website.

Figure 13: Time-of-Use Rates for New Mexico and Texas

- **New Mexico:**

TIME-OF-DAY (TOD) MONTHLY RATE TARIFF

Customers that can easily reduce their energy use during On-Peak Periods; weekdays (Monday through Friday), between 3 p.m. and 7 p.m., for the months of June through September, to Off-Peak Periods; all other hours not covered in the On-Peak Period, can benefit from the TOD energy charge option thanks to its significantly lower price than the Standard Service Rate.

CUSTOMER CHARGE (PER METER PER MONTH)		$7.00
ENERGY CHARGE PER kWh	SUMMER (JUNE THROUGH SEPTEMBER)	WINTER (OCTOBER THROUGH MAY)
ON-PEAK PERIOD (3 PM - 7 PM)	$0.22016	----------
OFF-PEAK PERIOD	$0.05504	$0.05782

- **Texas:**

TIME-OF-DAY (TOD) MONTHLY RATE TARIFF

Customers that can easily reduce their energy use during On-Peak Periods; weekdays (Monday through Friday), between 12 p.m. and 6 p.m., during the summer season (June through September), to Off-Peak Periods; all other hours not covered in the On-Peak Period, can benefit from the TOD energy charge option thanks to its significantly lower price than the Standard Service Rate.

CUSTOMER CHARGE (PER METER PER MONTH)		$9.25
ENERGY CHARGE PER kWh	SUMMER (JUNE THROUGH SEPTEMBER)	WINTER (OCTOBER THROUGH MAY)
ON-PEAK PERIOD	$0.23975	----------
OFF-PEAK PERIOD	$0.07001	$0.09171

3.3 Demand Impacts

Table 17 shows Evergreen's hourly demand impacts as well as a count of devices and temperature during each event.

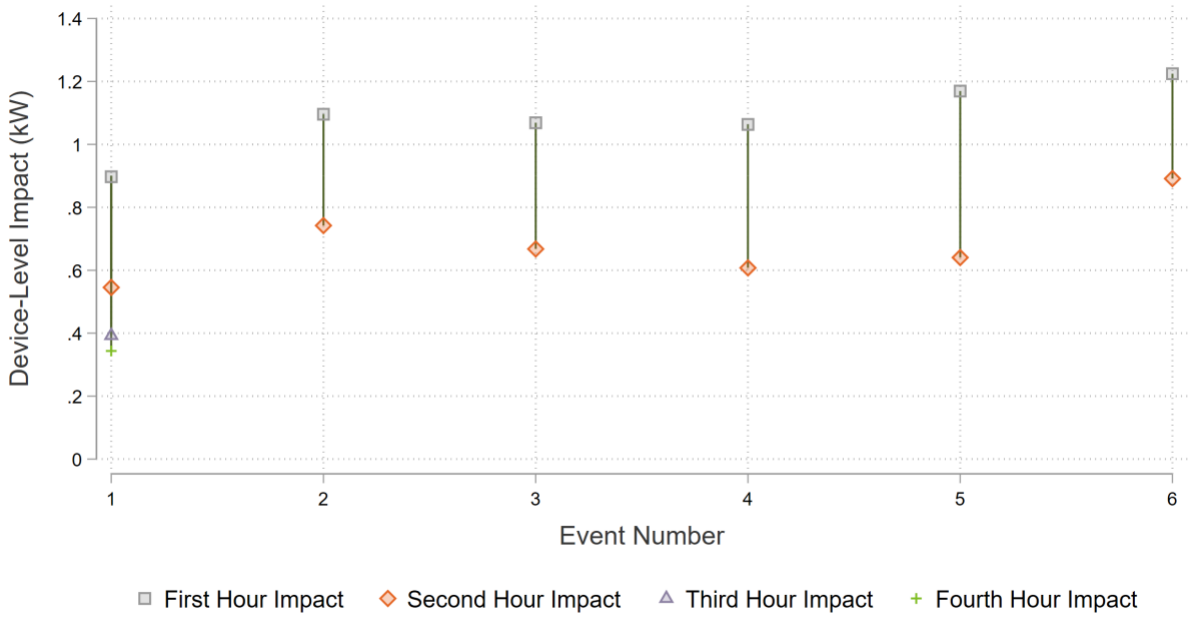
Table 17: Hourly Demand Impacts

Date	Total Devices	Online Devices	Hour Ending (MDT)	Temperature (°F)	Impact per Device (kW)	Total Impact (kW)
6/10/2022	2,266	2,083	17	101	0.897	1,869
			18	103	0.546	1,136
			19	103	0.392	818
			20	101	0.344	716
6/13/2022	2,276	2,084	16	102	1.096	2,284
			17	103	0.742	1,547
7/11/2022	2,338	2,105	16	98	1.069	2,250
			17	100	0.668	1,406
7/18/2022	2,348	2,115	16	99	1.064	2,249
			17	101	0.608	1,285
7/19/2022	2,350	2,119	16	104	1.169	2,478
			17	104	0.641	1,357
7/20/2022	2,356	2,117	16	101	1.225	2,593
			17	102	0.891	1,887

For each event, load impacts decline from hour to hour. In Section 2.2.1, the Evergreen team used the average of the first two hourly impacts to calculate event-level impacts, to reflect this decline.

Figure 14 provides a visual of the diminishing impacts for each event.

Figure 14: Diminishing Hourly Impacts



EPE resource planners and system operators should be aware of this decay. The figure above helps show that as events persist, impacts decline by the hour. This could ultimately affect the value of the program as a demand resource when events last over longer periods of time. Since 17 of 19 events over the last three program years have been two hours in duration, the Evergreen team believes that the average impact for a two-hour event is most appropriate when reporting the program's verified impacts.

3.4 Net Energy Impacts

The Residential Load Management Program provides load reductions by reducing the amount of time a customer's HVAC system is running and cooling the home. If load reduction was the only program goal, Uplight would turn off the HVAC system entirely, rather than just manipulating temperature setpoints, however, customer comfort is also an important consideration. To help keep households cool throughout the event, Uplight "pre-cools" the home in the hours before the event by lowering the setpoint and then also allows the system to run more after the event to return the home to the customer's desired temperature. As a result, the demand response treatment increases runtime and energy usage in the hours before and after the event. This can sometimes lead to an overall energy usage increase, even if there are significant peak demand savings. Figure 15 shows the estimated hourly energy impacts for each event day to illustrate the

increased energy usage before and after the event and the decreased usage during the event. Negative impacts represent an increase in hourly cooling energy consumption at the device level.

Figure 15: Hourly Energy Impact by Event Day

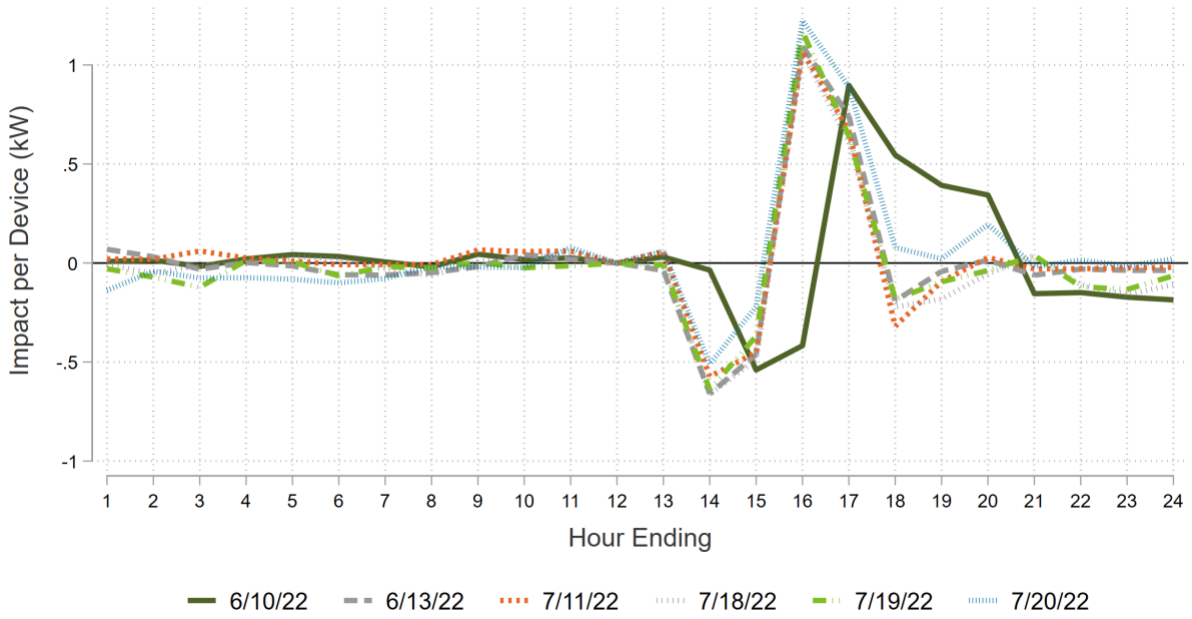


Table 18 shows the net energy impact across each full event day. Energy impacts varied by event day, with a positive impact for 4 event days and negative impact for two event days. The average impact across all five event days for the smart thermostat demand response program was close to zero and not statistically significant. Our interpretation of these results is that the Residential Load Management events are energy neutral, and the kWh impacts of the program should be limited to the energy efficiency impacts discussed in Section 2.2.2.

Table 18: Device-Level Net Energy Impacts by Event Day

Date	Overall Event Day Impact (kWh)
10-Jun	0.733
13-Jun	0.230
11-Jul	0.579
18-Jul	-0.310
19-Jul	-0.147
20-Jul	1.171
Average	**0.376**

4 Conclusions & Recommendations

Based on our impact evaluation of the 2022 Residential Load Management Program, the Evergreen team offers the following conclusions and recommendations:

- Overall, this program analysis provided a defensible impact of 0.885 kW per *online* device. When multiplying this by the end-of-season enrollment and the average percentage of devices that were online during events, the gross verified impact came out to approximately 2,098 kW. This led to an average impact of 0.802 kW per *enrolled* device. These device-level impacts are lower than the per-device impact of 0.957 kW in 2021.
    - The 2021 impact evaluation assumed that offline devices delivered the same capacity reduction as online devices. The 2022 evaluation assumes devices without telemetry deliver zero kW reduction.
    - We also use a two-hour event definition for 2022. The 2021 impact evaluation averaged in the results from eight event hours across five distinct event days. Since kW impacts decay over time a 1-hour event will generate larger impacts than a 2-hour event.
- On average, nearly 10% of devices were missing data during event hours. Emerson saw the highest amount of missing data during events and Nest devices had the most missing data in the beginning of the season.
    - We recommend EPE and Uplight investigate the cause of devices going offline with the three thermostat manufacturers to determine if there are actions the program can take in 2023 to boost availability and communication with program thermostats.
- Events see atrophy in participation and kW impacts over event periods. This has implications for the feasibility of longer events.
    - When considering demand response as a resource it is important to understand that the capability of the program is a function of event duration.
- Ecobee devices had the highest participation rate (e.g. fewest opt-outs) and the largest average reference load, but the lowest average kW reduction per online device of the three device manufacturers.
    - The opt-out rate and kW impacts are likely correlated. We suspect that ecobee's curtailment algorithm is less aggressive, which leads to fewer opt-outs, but also lower average kW reductions.
- Our analysis of non-event day load shapes suggests some ecobee customers have enabled TOU rate optimization, which may lower baseline estimates for these devices. Interestingly, the on-peak optimization window appears to align with EPE's Texas tariff rather than the New Mexico rate.
    - We will work with EPE to determine which ecobee participants are on the Power Hours Time-of-Day rate and whether optimization load shape is most pronounced among these accounts.

- EPE should reach to ecobee to ensure users can select the New Mexico rate when they enable TOU optimization on their thermostat.

Appendix F: Small Business Comprehensive Desk Review Detailed Results

Project ID	22CLG2	22CLG3	22EC01
Utility	EPE	EPE	EPE
Program	Small Commercial Comprehensive	Small Commercial Comprehensive	Small Commercial Comprehensive
Project Description	PTHP, DX	PTHP and Vertical AC/HP	Evaporative Cooling
Measure Type	Retrofit HVAC	Retrofit HVAC	Retrofit HVAC
Building Type	Office	Miscellaneous	Miscellaneous
Other Building Type		Hotel	Assembly (Church)
Site Visit Being Conducted	No	No	No
Gross Reported kWh	2,329	13,257	11,157
Gross Reported kW	0.98	4.29	8.79
Gross Verified kWh	2,337	13,261	11,157
Gross Verified kW	0.98	4.29	8.79
kWh Realization Rate	1.00	1.00	1.00
kW Realization Rate	1.00	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1			

Project ID	22ECO4	22LGT15	22LGT25
Utility	EPE	EPE	EPE
Program	Small Commercial Comprehensive	Small Commercial Comprehensive	Small Commercial Comprehensive
Project Description	Evaporative Cooling	Interior/Exterior LED Lighting	Interior LED Lighting
Measure Type	Retrofit HVAC	Retrofit Lighting	Retrofit Lighting
Building Type	Miscellaneous	Office	Office
Other Building Type	Assembly	Church	Church
Site Visit Being Conducted	No	No	Yes
Gross Reported kWh	5,180	15,783	17,336
Gross Reported kW	4.18	3.30	5.07
Gross Verified kWh	5,180	15,783	20,845
Gross Verified kW	4.18	3.30	6.11
kWh Realization Rate	1.00	1.00	1.20
kW Realization Rate	1.00	1.00	1.21
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1			There is a discrepancy in kWh and kW savings due to a modification to pre-fixture wattage for one fixture type. The ex ante calculation assumed the fixture code F44T12 32 W/lamp, which corresponds to 112 W per the ex-ante workbook. Site pictures indicate the baseline fixtures are instead (4L) F40T12 40 W/lamp fixture, which corresponds to 134 W (assuming an electronic ballast) per the lighting efficiency input of a default wattage guide.

Project ID	22LGT29	22LGT45	22LGT02
Utility	EPE	EPE	EPE
Program	Small Commercial Comprehensive	Small Commercial Comprehensive	Small Commercial Comprehensive
Project Description	Interior LED Lighting	Exterior LED Lighting	Lighting Retrofit
Measure Type	Retrofit Lighting	Retrofit Lighting	Retrofit Lighting
Building Type	Office	Exterior	Office
Other Building Type	Assembly/Church		
Site Visit Being Conducted	No	No	Yes
Gross Reported kWh	3,045	2,926	56,487
Gross Reported kW	0.98	0.00	2.39
Gross Verified kWh	3,112	2,922	56,231
Gross Verified kW	0.99	0.00	2.31
kWh Realization Rate	1.02	1.00	1.00
kW Realization Rate	1.01		0.97
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1	There is a discrepancy in kWh and kW savings due to a modification to pre-fixture wattage for one fixture type. The ex ante calculation assumed the fixture code F44T12 32 W/lamp, which corresponds to 112 W per the ex-ante workbook. Site pictures indicate the baseline fixtures are instead (4L) F40T12 40 W/lamp fixture, which corresponds to 134 W (assuming an electronic ballast) per the lighting efficiency input of a default wattage guide.	There is a minor discrepancy in savings due to the ex ante calculation using a different post-fixture wattage than DLC stated wattage.	The discrepancy in savings is due to the ex ante calculation using a different post-fixture wattage than DLC stated wattage.

Project ID	22LGT10	22LGT20	22LGT31
Utility	EPE	EPE	EPE
Program	Small Commercial Comprehensive	Small Commercial Comprehensive	Small Commercial Comprehensive
Project Description	Lighting Retrofit	Lighting Retrofit	Interior and Exterior lighting retrofit
Measure Type	Retrofit Lighting	Retrofit Lighting	Retrofit Lighting
Building Type	Miscellaneous	Miscellaneous	Warehouse/ Industrial
Other Building Type	Assembly	Assembly	Storage- Unconditioned
Site Visit Being Conducted	Yes	No	No
Gross Reported kWh	31,680	26,897	41,326
Gross Reported kW	9.90	6.95	7.70
Gross Verified kWh	31,564	26,254	41,286
Gross Verified kW	9.93	6.80	7.69
kWh Realization Rate	1.00	0.98	1.00
kW Realization Rate	1.00	0.98	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1	There is a minor discrepancy in savings due to the ex ante calculation using a different post-fixture wattage than DLC stated wattage.	The discrepancy in savings is due to the ex ante calculation using a different post-fixture wattage than DLC/Energy Star stated wattage.	There is a minor discrepancy in savings due to the ex ante calculation using a different post-fixture wattage than DLC stated wattage.

Project ID	22LGT46	22AF01	22AF02
Utility	EPE	EPE	EPE
Program	Small Commercial Comprehensive	Small Commercial Comprehensive	Small Commercial Comprehensive
Project Description	Lighting Retrofit	Weather stripping/door sweep installation	Weather stripping/door sweep installation
Measure Type	Retrofit Lighting	Retrofit Other	Retrofit Other
Building Type	Exterior	Miscellaneous	Miscellaneous
Other Building Type		Hotel	Hotel
Site Visit Being Conducted	Yes	No	No
Gross Reported kWh	51,342	124,138	146,879
Gross Reported kW	0.00	5.93	7.01
Gross Verified kWh	51,341	124,138	146,879
Gross Verified kW	0.00	5.93	7.01
kWh Realization Rate	1.00	1.00	1.00
kW Realization Rate		1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1			

Project ID	22LGT71	22LGT73
Utility	EPE	EPE
Program	Small Commercial Comprehensive	Small Commercial Comprehensive
Project Description	New Construction LED Grow Lights	New Construction LED Grow Lights
Measure Type	New Construction Lighting	New Construction Lighting
Building Type	Miscellaneous	Miscellaneous
Other Building Type	Agriculture: Cannabis (Recreational)	Agriculture: Cannabis (Recreational)
Site Visit Being Conducted	No	No
Gross Reported kWh	228,735	192,007
Gross Reported kW	41.05	34.46
Gross Verified kWh	201,140	192,007
Gross Verified kW	36.10	34.46
kWh Realization Rate	0.88	1.00
kW Realization Rate	0.88	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment		
Reasons for RR(s) <> 1	kWh and kW RRs were affected by a modification to the efficient fixture wattage. The ex ante calculation used DLC reported wattage, whereas the ex post calculation used DLC tested wattage. The DLC reported wattage in this instance appears to the nominal fixture wattage.	

Appendix G: SCORE Plus Desk Review Detailed Results

Project ID	PRJ-3059638	PRJ-3090087	PRJ-3012428
Utility	EPE	EPE	EPE
Program	SCORE PLUS	SCORE PLUS	SCORE PLUS
Project Description	Retrofit of VFD to HVAC Fans	Retrofit of VFD to HVAC Fans and Pumps	DX AC/HP
Measure Type	Retrofit HVAC	Retrofit HVAC	Retrofit HVAC
Building Type	Retail	Retail	Office
Other Building Type			
Site Visit Being Conducted	Yes	Yes	No
Gross Reported kWh	77,254	46,556	491
Gross Reported kW	10.87	6.55	0.13
Gross Verified kWh	77,254	46,759	491
Gross Verified kW	10.87	6.58	0.13
kWh Realization Rate	1.00	1.00	1.00
kW Realization Rate	1.00	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1		There was a minor effect on kWh and kW savings based on the modification of horsepower (HP) for the Mitsubishi VFD. The ex ante analysis considers HP for Mitsubishi FR-D720-100-NXR as 2.9 HP. The ex post analysis considers the HP ratings per manufacturer specifications as 3 HP.	

Project ID	PRJ-3072230	PRJ-2172886	PRJ-3072221
Utility	EPE	EPE	EPE
Program	SCORE PLUS	SCORE PLUS	SCORE PLUS
Project Description	DX HP	Primary School lighting retrofit	Secondary School HVAC New construction
Measure Type	Retrofit HVAC	Retrofit Lighting	Retrofit HVAC
Building Type	Education	Education	Education
Other Building Type	Secondary School		
Site Visit Being Conducted	No	No	No
Gross Reported kWh	82	147,620	2,057
Gross Reported kW	0.05	41.08	3.91
Gross Verified kWh	82	137,857	2,057
Gross Verified kW	0.05	41.08	3.90
kWh Realization Rate	1.00	0.93	1.00
kW Realization Rate	1.00	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1		The ex ante calculation used two approaches for annual hours: Building Weighted Average and hours based on Area Type. Some space types in the ex ante calculator were unclear (e.g., "TLT-M") and could not be identified using the Area Type method for HOU. Thus, the ex post calculation used the Building Weighted Average approach. The use of a single approach, per the NM TRM, reduced the kWh RR.	

Project ID	PRJ-3093193	PRJ-3093317	PRJ-3114165
Utility	EPE	EPE	EPE
Program	SCORE PLUS	SCORE PLUS	SCORE PLUS
Project Description	Exterior lighting retrofit	New construction Lighting and Controls installation	Retrofit Lighting (interior and exterior)
Measure Type	Retrofit Lighting	New Construction Lighting	Retrofit Lighting
Building Type	Education	Office	Retail
Other Building Type		Mechanical/Electrical Room	Retail - Single-Story Large (interior) plus
Site Visit Being Conducted	No	No	No
Gross Reported kWh	17,908	2,619	417,902
Gross Reported kW	0.00	0.79	17.52
Gross Verified kWh	17,941	2,620	417,943
Gross Verified kW	0.00	0.79	17.53
kWh Realization Rate	1.00	1.00	1.00
kW Realization Rate		1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1	There is a minor discrepancy in savings due to the ex ante calculation using a different post-fixture wattage than DLC stated wattage.	There is a minor discrepancy in savings due to the ex ante calculations using a different post-fixture wattage (44W) than DLC stated wattage (43.9W).	There is a minor discrepancy in savings due to the ex ante calculations using a different post-fixture wattage than DLC stated wattage.

Project ID	PRJ-3145983	PRJ-3146047	PRJ-3184019
Utility	EPE	EPE	EPE
Program	SCORE PLUS	SCORE PLUS	SCORE PLUS
Project Description	Lighting Retrofit	Installation of high-efficiency LED fixtures	Weather stripping installation
Measure Type	Retrofit Lighting	Retrofit Lighting	Retrofit Other
Building Type	Education	Education	Miscellaneous
Other Building Type			Hotel
Site Visit Being Conducted	No	No	No
Gross Reported kWh	18,885	22,222	330,679
Gross Reported kW	5.19	6.10	15.78
Gross Verified kWh	18,885	22,700	330,679
Gross Verified kW	5.19	6.10	15.78
kWh Realization Rate	1.00	1.02	1.00
kW Realization Rate	1.00	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM	New Mexico TRM	New Mexico TRM
TRM/Workpaper Assessment			
Reasons for RR(s) <> 1	There is a minor discrepancy in kW savings due to rounding.	The kWh RR is affected by a modification to hours of use. The ex-ante calculation classified the efficient fixture type as "other," which corresponds to 2,322 annual hours of use. Based on the invoice, manufacturer specifications, DLC categorization, and post inspection notes, the efficient fixture is a "screw-in bulb." This corresponds to 2,372 annual hours of use. This modification increased kWh RR.	

Project ID	PRJ-3184981
Utility	EPE
Program	SCORE PLUS
Project Description	Weathers stripping installation
Measure Type	Building Envelope
Building Type	Miscellaneous
Other Building Type	Hotel
Site Visit Being Conducted	No
Gross Reported kWh	137,707
Gross Reported kW	6.57
Gross Verified kWh	137,707
Gross Verified kW	6.57
kWh Realization Rate	1.00
kW Realization Rate	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)
Savings Source	New Mexico TRM
TRM/Workpaper Assessment	
Reasons for RR(s) <> 1	

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF EL PASO ELECTRIC COMPANY'S APPLICATION FOR APPROVAL OF ITS 2022-2024 ENERGY EFFICIENCY AND LOAD MANAGEMENT PLAN, UTILITY INCENTIVE AND REVISED RATE NO. 17- EFFICIENT USE OF ENERGY RECOVERY FACTOR	)	**Case No. 21-00114-UT**
EL PASO ELECTRIC COMPANY, Applicant.	)	

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that **El Paso Electric Company's Compliance Filing, Efficient Use of Energy Rule 17.7.2.8 NMAC and Final Order in NMPRC Case No. 21-00114-UT; El Paso Electric Company's Annual Report for Energy Efficiency Programs, Program Year 2022** was emailed on June 1, 2022, to each of the following:

Nancy Burns	nancy.burns@epelectric.com;	Cara Lynch	lynch.cara.nm@gmail.com;
Jeffrey Wechsler	jwechsler@montand.com;	Justin Brant	jbrant@swenergy.org;
Linda Pleasant	linda.pleasant@epelectric.com;	Don Hancock	sricdon@earthlink.net;
Curtis Hutcheson	curtis.hutcheson@epelectric.com;	CCAE Admin	ccae@elliottanalytics.com;
Patricia Griego	patricia.griego@epelectric.com;	Dylan Fuge	dylan.fuge@state.nm.us;
Kari Olson	kolson@montand.com;	Ed Rilkoff	ed.rilkoff@prc.nm.gov;
Jocelyn Barrett-Kapin	jbarrettkapin@montand.com;	Bradford Borman	bradford.borman@prc.nm.gov;
Teresa Pacheco	tpacheco@montand.com;	John Bogatko	john.bogatko@prc.nm.gov;
Diana Luna	dluna@montand.com;	David Black	david.black@prc.nm.gov;
Yolanda Sandoval	ysandoval@montand.com;	Elizabeth Ramirez	elizabeth.ramirez@prc.nm.gov;
Anastasia Stevens	astevens.law@gmail.com;	Peggy Martinez-Rael	peggy.martinez-rael@prc.nm.gov;
Jennifer Vega-Brown	jvega-brown@las-cruces.org;	Elisha Leyba-Tercero	elisha.leyba-tercero@prc.nm.gov;
Delilah Walsh	dwalsh@las-cruces.org;	Christopher Dunn	christopher.dunn@prc.nm.gov;
Jose Provencio	joprovencio@las-cruces.org;	Russell Fisk	russell.fisk@prc.nm.gov;
Lisa LaRocque	llarocque@las-cruces.org;	Ana Kippenbrock	ana.kippenbrock@prc.nm.gov;
Gideon Elliot	gelliot@nmag.gov;	Robert Lennon	robert.lennon@prc.nm.gov;
Keven Gedko	kgedko@nmag.gov;		
Sydnee Wright	swright@nmag.gov;		
Doug Gegax	dgegax@nmsu.edu;		
Andrea Crane	ctcolumbia@aol.com;		
Philip Simpson	philipbsimpson@comcast.net;		

DATED this 1st day of June 2023.

/s/ Trish Griego
Trish Griego
Legal Assistant