[EXTERNAL] NMPRC Case No. 21-00114-UT/EPE's Annual Report

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1 attachments (5 MB)

24-00114-UT-2024-07-29-EPE Annual Report (01741545xB76D6).pdf;

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.

Please file the attached **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 2024 Annual Report for Energy Efficiency Programs, Program Year 2023** in the above captioned matter.

Thank you.

Teresa L. Pacheco
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July 29, 2024

Ms. Melanie Sandoval
Bureau Chief of Records Management
New Mexico Public Regulation Commission
P.O. Box 1269
Santa Fe, NM 87504-1269

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 2024 Annual Report for Energy Efficiency Programs, Program Year 2023

Dear Ms. Sandoval:

Enclosed for filing in Docket 21-00114-UT please find a PDF of *El Paso Electric Company's ("EPE") Annual Report on Energy Efficiency Programs for Program Year 2023*. 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/ Kari E. Olson
Kari E. Olson

KEO/tlp
Enclosures

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2024 ANNUAL REPORT FOR ENERGY EFFICIENCY PROGRAMS
PROGRAM YEAR 2023

NMPRC EFFICIENT USE OF ENERGY RULE 17.7.2 NMAC

JULY 29, 2024

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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 2023 ("2023 Programs"). This Annual Report for Energy Efficiency Programs ("Annual Report") covers the program period from January 1, 2023, through December 31, 2023, and relies on the statewide independent evaluator's report, *Evaluation of the 2023 El Paso Electric Energy Efficiency Programs* ("M&V Report") prepared by EcoMetric Consulting LLC ("EcoMetric"). 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. As more fully reported below, EPE's 2023 EE/LM Portfolio achieved cost effectiveness of 1.19 as measured by the Utility Cost Test ("UCT").

Summary of Results

The following 2023 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 EcoMetric.

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

- EPE's 2023 EE/LM Portfolio achieved cost effectiveness of 1.19 as measured by the UCT.[2] The majority of the 2023 Programs were cost effective.
- The total annual net energy savings were 17,667,997 kilowatt-hours ("kWh") at the customer meter.
- The total 2023 Programs expenditures were $5,566,077.
- The total amount collected through Rate No. 17 – Efficient Use of Energy Recovery Factor ("EUERF") was $5,471,863.

[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 2023 Programs.

Table 1 - Verified 2023 Results Summary

Program	Participants or Units	Annual Savings (kW)**	Annual Savings (kWh)**	Lifetime Savings (kWh)	Total Program Expenses*
Educational					
Smart Students Program	7,118	83	797,606	7,529,397	$ 314,683
Residential					
Residential Comprehensive Program	783	443	842,131	14,432,275	$ 491,915
Residential Lighting Program***	17	555	3,292,175	30,913,524	$ 493,977
ENERGY STAR New Homes Program	409	196	69,744	672,192	$ 391,565
Marketplace Program	103	4	413,850	8,696,271	$ 144,653
Residential Load Management	3,144	2,812	77,181	771,810	$ 281,111
Low Income					
EnergySaver Program	575	214	429,179	5,946,733	$ 289,958
Energy$mart Program	37	263	852,016	12,674,426	$ 478,695
Commercial					
Commercial Comprehensive Program	57	319	2,159,788	26,926,111	$ 428,851
SCORE Plus Program	27	1,435	8,729,961	107,410,243	$ 2,048,288
Commercial Load Management	7	1,196	4,367	4,367	$ 202,382
TOTAL	**12,277**	**7,519**	**17,667,997**	**215,977,349**	**$ 5,566,077**

* Internal administration costs of $211,956 are recovered through base rates and included in the Total Program Expenses of EPE's Commission-approved 2022-2024 Plan.
** Numbers may not tie to EMV Report or foot, due to rounding.
***170,772 bulbs were sold at 17 participating retail locations.

Table 2 presents the 2023 Benefit-Cost Analysis by Program based on the net present value ("NPV") of the 2023 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 - 2023 Benefit-Cost Analysis by Program

Program	NPV of Benefits (a)	NPV of Expenses (b)	UCT (a ÷ b)
Educational			
Smart Students Program	$ 155,214	$ 291,878	0.53
Residential			
Residential Comprehensive Program	$ 669,900	$ 516,784	1.30
Residential Lighting Program	$ 825,568	$ 467,522	1.77
ENERGY STAR New Homes Program	$ 358,775	$ 373,251	0.96
Marketplace Program	$ 10,282	$ 158,479	0.06
Residential Load Management Program	$ 335,144	$ 305,930	1.10
Low Income			
EnergySaver Program	$ 384,818	$ 288,779	1.33
Energy$mart Program	$ 485,404	$ 454,603	1.07
Commercial			
Commercial Comprehensive Program	$ 613,337	$ 468,547	1.31
SCORE Plus Program	$ 2,625,948	$ 2,014,161	1.30
Commercial Load Management Program	$ 139,112	$ 226,143	0.62
PORTFOLIO UCT	**$ 6,603,499**	**$ 5,566,077**	**1.19**

*NPV is provided by EcoMetric Consulting, LLC in their independent evaluation results in Attachment A.

2023 Cumulative Program Goals and 2021-2025 Program Goals

Table 3 provides the annual and cumulative energy savings achieved from 2008 through 2023. 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. EPE's cumulative energy savings of 72,485,216 kWh through 2014 exceeded the 2014 savings requirement specified in the EUEA. EPE's cumulative energy savings of 163,517,159 through 2020 exceeded the 2020 savings target by approximately 55%.

By the end of 2023, EPE had achieved a total cumulative savings of 196,278,836 kWh. The 2023 cumulative savings includes all annual savings for program years 2008 through 2023, less the expired 2008 through 2010 kWh savings.

Table 3 - 2023 Cumulative Energy Savings

Year	Portfolio EUL	Annual kWh Savings	Annual Expired	Cumulative kWh Savings	EUEA Goal
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	12	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	
2022	12	7,743,502		183,780,747	
2010 Expired			(5,169,908)	178,610,839	
2023	12	17,667,997		196,278,836	
2024					
2025					78,872,865

* The 2025 statutory goal requires that EPE achieve savings of not less than 78,872,865 kWh or about 15,774,573 kWh of annual savings in 2021 through 2025.

The 2019 amendment to the EUEA requires that EPE achieve energy savings of not less than five percent (5%) of EPE's 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, on average, 15,774,573 kWh of annual savings in the years 2021 through 2025 to meet the 2025 statutory goal.

For the 2021-2025 reporting period, EPE's projects it will achieve 97.5% of the EUEA target, as

of the filing date of its Application in NMPRC Case No. 24-00154-UT.

Section II. Program Descriptions

Educational Program

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 students and improve 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. There is still a residual effect from the COVID pandemic that caused attrition with seasoned teachers leaving the profession and new teachers beginning. The program is building back rapport with the new teachers. In 2023, a total of 7,118 kits were provided to students and teachers with a net savings of 797,606 kWh.

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, solar attic fans, induction cooking, 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.

Appliance Recycling offered rebates for appliance recycling to remove older refrigerators, freezers, and window air conditioners from the grid. The rebates were paid directly to the customer. ARCA Recycling, Inc. administered and implemented the collection, recycling, and rebate process until they went out of business in August 2023.

In 2023, a total of 783 rebates were processed with a net savings of 842,131 kWh.

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 17 retail locations participated in this program. EPE promoted the Residential Lighting Program through social media, and point-of-purchase displays in stores. EPE and CLEAResult staff also supported the program by conducting

outreach events at various participating retailers.

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 the use of efficient LED lighting and remains cost effective. A total of 170,772 bulbs were sold and distributed through this program, with a net savings of 3,292,175 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, solar attic fans, induction cooking, pool pumps, 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 2023, 409 homes participated in this program and had a net savings of 413,850 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. Residential customers are informed of products and promotions through social media, direct email marketing, and the monthly El Paso Electric Customer Newsletter. In 2023, 103 participants had a net savings of 69,744 kwh.

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 Marketplace. EPE and Uplight, Inc., the program implementer, targeted customers through online advertisements, email, direct mail, and social media. There were 3,144 units that participated in the load management season with a net savings of 77,181 kWh and 2,812 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)
6/10/2023	4:00 PM	8:00 PM	4.0
6/13/2023	3:00 PM	5:00 PM	2.0
7/11/2023	3:00 PM	5:00 PM	2.0
7/18/2023	3:00 PM	5:00 PM	2.0
7/19/2023	3:00 PM	5:00 PM	2.0
7/20/2023	3:30 PM	5:30 PM	2.0
6	**Events in 2023**		**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, ceiling 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 2023, EPE continued to expand our efforts to help low-income customers by installing 77 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. El Paso Electric collaborates with a variety of community organizations, church groups, and low-income service providers, and continued to combine energy efficiency services with other utilities, when possible, to provide customers a more comprehensive whole-home approach to energy efficiency. EPE promoted this program through outreach utilizing referrals, advertising, and customer newsletters. EPE and EnergyWorks also targeted customers through educational events at various Community Senior Centers.

The results are shown in Table 5.

Table 5 - 2023 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)		153	153	202	324,031
Water Heating (Low Flow Showerheads, Aerators, Pipe Wrap, Water Heater Jackets)		109	139	1	21,318
LED Lighting		223	2,486	10	75,067
Small Energy Devices (Advanced Power Strips, Smart Thermostats)		90	96	1	8,763
Total	**132**	**575**	**2,874**	**214**	**429,179**

* 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 575 participants and had a net savings of 429,179 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 program had 37 participants and had a net savings of 852,016 kWh.

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.

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 - 2023 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	27,512	1.4%
Light Emitting Diode (LED) Fixtures	1,390,755	72.2%
Light Emitting Diode (LED) Tubes	492,269	25.5%
Linear Fluorescent	0	0.0%
Lighting Controls	16,402	0.9%
Total	**1,926,938**	**100.0%**

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

The Commercial Comprehensive Program had 57 participants and had a net savings of 2,159,788 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.

In 2023, the SCORE Plus Program had a total of 27 participants and had net energy savings of 8,729,961 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 2023 load management season had two participants with seven sites that had net savings of 4,367 kWh and a total demand reduction of 1,196 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)
6/9/2023	3:00 PM	5:00 PM	2.0
6/19/2023	5:00 PM	7:00 PM	2.0
6/28/2023	3:00 PM	5:00 PM	2.0
7/6/2023	3:00 PM	5:00 PM	2.0
7/7/2023	3:00 PM	5:00 PM	2.0
7/12/2023	3:00 PM	5:00 PM	2.0
7/13/2023	3:00 PM	5:00 PM	2.0
7/19/2023	3:00 PM	5:00 PM	2.0
7/20/2023	4:00 PM	6:00 PM	2.0
9	**Events in 2023**		**18.0**

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 2023 expenses by program. The Commission approved EPE's 2023 Program budget in accordance with 17.7.2.8(A) NMAC. All 2023 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 2023 program expenses were $5,566,077 of the approved $6,357,367 budget or about 88% percent of the budget.

Table 8 - 2023 Program Expenditures

Programs	Administration*	Marketing and R&D	M&V	Customer Incentives	Total Program Expenses
Educational					
Smart Students Program	$ 19,457	$ 4,185	$ 18,619	$ 272,422	$ 314,683
Residential					
Residential Comprehensive Progran	$ 162,728	$ 7,605	$ 20,573	$ 301,009	$ 491,915
Residential Lighting Program	$ 181,483	$ 7,220	$ 19,530	$ 285,745	$ 493,977
ENERGY STAR New Homes Program	$ 176,097	$ 4,978	$ 13,466	$ 197,025	$ 391,565
Marketplace Program	$ 137,286	$ 170	$ 460	$ 6,736	$ 144,653
Residential Load Management	$ 145,858	$ 3,125	$ 8,453	$ 123,675	$ 281,111
Low Income					
EnergySaver Program	$ 55,275	$ 5,422	$ 14,667	$ 214,595	$ 289,958
Energy$mart Program	$ 70,583	$ 9,429	$ 25,505	$ 373,178	$ 478,695
Commercial					
Commercial Comprehensive	$ 170,471	$ 5,969	$ 16,148	$ 236,263	$ 428,851
SCORE Plus Program	$ 1,053,970	$ 22,972	$ 62,141	$ 909,206	$ 2,048,288
Commercial Load Management	$ 150,090	$ 1,208	$ 3,268	$ 47,816	$ 202,382
TOTAL	**$ 2,323,296**	**$ 72,284**	**$ 202,828**	**$ 2,967,668**	**$ 5,566,077**

* Administration includes EPE's internal administration costs of $211,955.51 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 and County NMRT07	State University NMRT26	Total Participant Incentives
Educational						
Smart Students Program	$ 272,422	$ 0	$ 0	$ 0		$ 272,422
Residential						
Residential Comprehensive Program	$ 426,498	$ 0	$ 0	$ 0		$ 426,498
Residential Lighting Program	$ 446,819	$ 0	$ 0	$ 0		$ 446,819
ENERGY STAR New Homes Program	$ 359,049	$ 0	$ 0	$ 0		$ 359,049
Residential Marketplace	$ 131,736					
Residential Load Management	$ 206,395	$ 0	$ 0	$ 0		$ 206,395
Low Income						
EnergySaver Program	$ 238,803	$ 0	$ 0	$ 0		$ 238,803
Energy$mart Program	$ 417,108	$ 0	$ 0	$ 0		$ 417,108
Commercial						
Commercial Comprehensive	$ 0	$ 183,660	$ 52,602	$ 0		$ 236,263
SCORE Plus Program	$ 0	$ 193,846	$ 690,979	$ 21,106	$ 3,275	$ 905,931
Commercial Load Management	$ 0	$ 0	$ 0	$ 47,816		$ 47,816
TOTAL	**$ 2,498,830**	**$ 377,506**	**$ 743,581**	**$ 68,922**	**$ 3,275**	**$ 3,557,103**

EPE did not make any adjustments to expenditures in plan year 2023. Table 10 shows the budgeted amounts, the program expenditures, and the variances for each program during 2023. The variances in individual program costs from the budgeted amounts were primarily due to customer participation being lower or higher than projected. A Commercial Load Management Program participant elected to opt out of the EPE load management season due to equipment failure for the third consecutive year.

Table 10 - Budget Variances

Program	2023 Approved Budget	2023 Actual Expenses	Variance %
Educational			
Smart Students Program	$ 143,935	$ 314,683	119%
Residential			
Residential Comprehensive Program	$ 1,100,897	$ 491,915	-55%
Residential Lighting Program	$ 409,802	$ 493,977	21%
ENERGY STAR New Homes Program	$ 404,313	$ 391,565	-3%
Marketplace Program	$ 241,569	$ 144,653	-40%
Residential Load Management	$ 367,913	$ 281,111	-24%
Low Income			
EnergySaver Program	$ 860,499	$ 289,958	-66%
Energy$mart Program	$ 339,003	$ 478,695	41%
Commercial			
Commercial Comprehensive Program	$ 513,314	$ 428,851	-16%
SCORE Plus Program	$ 1,608,016	$ 2,048,288	27%
Commercial Load Management Program	$ 368,105	$ 202,382	-45%
TOTAL	**$ 6,357,367**	**$ 5,566,077**	**-12%**

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						
Smart Students Program	5,000	7,118	1,787,089	797,606	306	83
Residential Comprehensive Program	2,046	632	2,845,595	770,741	1,582	425
Residential Lighting Program	145,189	17	3,746,692	3,292,175	636	555
ENERGY STAR New Homes Program	490	409	510,271	413,850	238	196
Marketplace Program	10,910	103	947,495	69,744	143	4
Residential Load Management	4,797	3,144	443,859	77,181	3,676	2,812
EnergySaver Program	1,712*	575	1,823,689	429,179	806	214
Energy$mart Program	60	37	432,599	852,016	218	263
Commercial Comprehensive Program	225	57	2,298,176	2,159,788	325	319
SCORE Plus Program	102	27	6,630,633	8,729,961	1,039	1,435
Commercial Load Management	10	7	80,559	4,367	4,056	1,196
TOTAL	**170,541**	**12,126**	**21,546,657**	**17,596,607**	**13,026**	**7,501**

* NM EnergySaver Program Estimated Participants or Units = Home count. Homes may have multiple measures installed and thus counted more than once in this sum.

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	$ 143,935	$ 291,878	$ 146,730	$ 155,214
Residential				
Residential Comprehensive Program	$ 1,100,897	$ 516,784	$ 2,078,952	$ 669,900
Residential Lighting Program	$ 409,802	$ 467,522	$ 1,452,623	$ 825,568
ENERGY STAR New Homes Program	$ 404,313	$ 373,251	$ 413,372	$ 358,775
Marketplace Program	$ 241,569	$ 158,479	$ 309,195	$ 10,282
Residential Load Management	$ 367,913	$ 305,930	$ 443,814	$ 335,144
Low Income				
EnergySaver Program	$ 860,499	$ 288,779	$ 1,205,006	$ 384,818
Energy$mart Program	$ 339,003	$ 454,603	$ 389,566	$ 485,404
Commercial				
Commercial Comprehensive Program	$ 513,314	$ 468,547	$ 693,593	$ 613,337
SCORE Plus Program	$ 1,608,016	$ 2,014,161	$ 1,749,842	$ 2,625,948
Commercial Load Management	$ 368,105	$ 226,143	$ 428,708	$ 139,112
TOTAL	**$ 6,357,367**	**$ 5,566,077**	**$ 9,311,403**	**$ 6,603,499**

Cost Effectiveness Evaluation

Table 13 presents the UCT for each program for 2023. The UCT of the total portfolio of programs was 1.19. 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 2023 total portfolio of programs passed cost effectiveness.

Table 13 - Cost Effectiveness by Program

Program	UCT
Educational	
Smart Students Program	0.53
Residential	
Residential Comprehensive Program	1.30
Residential Lighting Program	1.77
ENERGY STAR New Homes Program	0.96
Marketplace Program	0.06
Residential Load Management	1.10
Low Income	
EnergySaver Program	1.33
Energy$mart Program	1.07
Commercial	
Commercial Comprehensive Program	1.31
SCORE Plus Program	1.30
Commercial Load Management	0.62
PORTFOLIO UCT	**1.19**

Self-Directed Program Participation

EPE did not receive any applications for customer self-directed programs in 2023.

Independent Measurement and Verification Report

The statewide independent evaluator, EcoMetric, was selected by the NMPRC. EPE contracted with EcoMetric to conduct the independent evaluation of its 2023 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 2023 Programs
- Deemed savings and other assumptions used by EcoMetric; and
- Description of the M&V process used by EcoMetric

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 2023 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	Annual Energy Savings (kWh)	Lifetime Energy Savings (kWh)	Estimated Useful Life	Annual Benefits
Educational				
Smart Students Program	797,606	7,529,397	9	$ 16,442
Residential				
Residential Comprehensive Program	842,131	14,432,275	17	$ 39,089
Residential Lighting Program	3,292,175	30,913,524	9	$ 87,920
ENERGY STAR New Homes Program	69,744	672,192	10	$ 1,067
Marketplace Program	413,850	8,696,271	21	$ 17,074
Residential Load Management	77,181	771,810	10	$ 33,514
Low Income				
EnergySaver Program	429,179	5,946,733	14	$ 27,772
Energy$mart Program	852,016	12,674,426	15	$ 32,630
Commercial				
Commercial Comprehensive Program	2,159,788	26,926,111	12	$ 49,197
SCORE Plus Program	8,729,961	107,410,243	12	$ 213,429
Commercial Load Management	4,367	4,367	1	$ 139,112
TOTAL	**17,667,997**	**215,977,349**		**$ 540,198**

Non-Energy Benefits

Table 15 shows the estimated emissions savings, and Table 16 shows the estimated water savings associated with the 2023 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 2023 tariff reconciliation based on the 2023 program expenditures plus the approved 2023 utility incentive, less EPE's internal administration costs, and less the cost recovery through EPE's EUERF from January through December 2023. The costs recovered through the EUERF are not recovered through EPE's base rates.

EPE's 2023 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 earned a utility incentive for its verified annual energy savings of 17.6 GWh.

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

Description	Total Program Expenses	6.675% Utility Incentive	Internal Admin Costs Recovered Through Base Rates	EUERF Recovery	(Underage)/ Overage
Beg. Bal. (PY2020-2022)					$ (2,171,030)
2023 Energy Efficiency Activity	$ 5,566,077	$ 371,536	$ 211,956	$ 5,471,863	$ (1,917,236)
Ending Balance					**$ (1,917,236)**

EPE's beginning balance originated from an underage of ($2,171,030) due to activities from Program Years 2020 to 2022. The total program expenses ($5,566,077 + $371,536 utility incentive = $5,937,612) exceeded the revenues collected ($211,956 + $5,471,863 = $5,683,819) in 2023, resulting in a cumulative underage amount of $1,917,236.

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

Table 18 - EPE Tariff Reconciliation

Month	Total Program Expenses	6.675% Utility Incentive	Internal Admin Costs Recovered Through Base Rates	EUERF Recovery	(Underage)/ Overage of Expenses
Beg. Bal. (PY2020-2022)					(2,171,029)
Jan 2023	$ 355,799	$ 23,750	$ 17,663	$ 423,820	(2,232,963)
Feb 2023	$ 240,570	$ 16,058	$ 17,663	$ 529,363	(2,523,360)
Mar 2023	$ 596,547	$ 39,819	$ 17,663	$ 192,685	(2,097,342)
Apr 2023	$ 149,118	$ 9,954	$ 17,663	$ 227,191	(2,183,124)
May 2023	$ 332,747	$ 22,211	$ 17,663	$ 293,709	(2,139,538)
Jun 2023	$ 216,509	$ 14,452	$ 17,663	$ 468,664	(2,394,904)
Jul 2023	$ 924,556	$ 61,714	$ 17,663	$ 667,017	(2,093,314)
Aug 2023	$ 175,087	$ 11,687	$ 17,663	$ 805,103	(2,729,307)
Sep 2023	$ 1,062,745	$ 70,938	$ 17,663	$ 741,776	(2,355,063)
Oct 2023	$ 500,510	$ 33,409	$ 17,663	$ 425,377	(2,264,183)
Nov 2023	$ 479,518	$ 32,008	$ 17,663	$ 369,804	(2,140,124)
Dec 2023	$ 532,369	$ 35,536	$ 17,663	$ 327,354	(1,917,236)
Total	**$ 5,566,077**	**$ 371,536**	**$ 211,956**	**$ 5,471,863**	

Estimated Program Expenditures Expected in 2024

Table 19 shows estimated program expenditures for 2024. EPE's Program Year 2024 budget of $6,510,060 was approved in NMPRC Case No. 21-00114-UT.

Table 19 - Estimated Program Expenditures Expected in 2024

2024 Program	Budget
Educational	
Smart Students Program	$134,880
Residential	
Residential Comprehensive Program	$ 1,093,570
Residential Lighting Program	$ 414,502
ENERGY STAR New Homes Program	$ 404,298
Marketplace Program	$ 240,869
Residential Load Management	$ 414,236
Low Income	
EnergySaver Program	$ 859,291
Energy$mart Program	$ 479,065
Commercial	
Commercial Comprehensive Program	$ 501,453
SCORE Plus Program	$ 1,599,804
Commercial Load Management	$ 368,091
TOTAL	**$ 6,510,060**

PY2023 EVALUATION OF EL PASO ELECTRIC ENERGY EFFICIENCY PROGRAMS

FINAL REPORT

Date: May 24, 2024

Prepared for: El Paso Electric

Prepared by: EcoMetric Consulting LLC

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EXECUTIVE SUMMARY

This report presents the independent evaluation results for the El Paso Electric (EPE) energy efficiency programs for program year 2023 (PY2023).

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 EcoMetric evaluation team consisted of the following firms:

- EcoMetric was the prime contractor and managed all evaluation tasks and deliverables;
- EcoMetric provided engineering capabilities and led the review of EPE's savings estimates;
- Evergreen Economics provided process evaluation capabilities;
- Evergreen Economics fielded all the phone surveys.
- Demand Side Analytics conducted the impact evaluation of the Commercial and Residential Load Management programs and Cost Effectiveness; and

1 NMSA §§ 62-17-1 et seq (SB 644). Per the New Mexico Public Regulation Commission Rule Pursuant to the requirements of the EUEA, the NMPRC issued its most recent Energy Efficiency Rule (17.7.2 NMAC) effective September 26, 2017, that sets forth the NMPRC's policy and requirements for energy efficiency and load management programs.

For PY2023, the following EPE programs were evaluated:

- Smart Students
- ENERGY STAR New Homes
- Residential Marketplace
- Energy$mart (LI)[2]
- Commercial Comprehensive
- SCORE Plus
- 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 SCORE Plus, ENERGY STAR New Homes, and Energy$mart (LI) programs. Secondary literature research was conducted for the Smart Students and Residential Marketplace programs.

A summary of the analysis methods for each of the PY2023 programs that were evaluated is included below.

Smart Students. This program provides educational information and kits of energy-saving measures to elementary and high school students. Measures included in the elementary school kit are prescriptive in nature and include LED bulbs, faucet aerators, and low-flow showerheads. Measures included in the high school kit are prescriptive in nature and include LED bulbs, WiFi-enabled LEDs, and advanced power strips. As a program with prescriptive measure savings, the evaluation of this program consisted of a deemed savings review of the measures distributed in the kits, with the installation rate determined from a survey of participating students. A secondary literature review was conducted to estimate net impacts.

2 The evaluation team only conducted process evaluation activities for this program.

ENERGY STAR New Homes. This program incentivizes homebuilders to construct homes that meet or exceed current ENERGY STAR standards. The program offers two paths: the Products path, which provides incentives for a minimum of three individual equipment upgrades; and the Performance path, which provides tiered rebate levels for new homes that exceed the 2018 International Energy Conservation Code (IECC) by at least 10%. The impact evaluation will include desk reviews for Performance projects, Products projects, and builder interviews to estimate net impacts.

Residential Marketplace. This program was launched in the spring of 2023. It features an online marketplace with residential energy efficient products including LEDs, smart thermostats, room air conditioners, air purifiers, advanced power strips, water fixtures, and kits. As a program with prescriptive measure savings, the evaluation of this program consisted of a deemed savings review of the measures purchased through the program. A secondary literature review was conducted to estimate net impacts.

Commercial Comprehensive. The measures eligible for the Commercial Comprehensive program are both prescriptive and custom. The evaluation of this program centered on either a deemed or custom 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 is the New Mexico TRM or another source.

SCORE Plus. The SCORE Plus program evaluation approach resembled the Commercial Comprehensive program. The approach included a deemed or custom savings review, phone survey or site-visit verification, and project desk reviews. Desk reviews conducted by engineers examined the savings assumptions and calculations specific to each sampled project. EcoMetric conducted phone surveys to verify that program-rebated measures are still installed and functional and to gather information to calculate a free ridership rate, as described in more detail in the Net Impacts section below.

Energy$mart (LI). The Energy$mart (LI) program provides weatherization and other efficiency improvements at no cost to low-income customers. Other measures provided include LEDs, thermostats, and water conservation measures for customers with electric water heaters. The evaluation team conducted telephone interviews with customers who participated in this program.

Residential Load Management. This program provides incentives to residential customers, allowing EPE to remotely adjust participating customers' internet-enabled smart thermostats during load management events. The impacts from this program will be calculated by comparing the actual energy use with estimated baseline usage during the load control events.

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 will be calculated by comparing the actual energy use with estimated baseline usage during the load control events.

Table 1 summarizes the PY2023 evaluation methods.

Table 1: Summary of PY2023 Evaluation Methods by Program

Sector	Program	Impact	Process	NTG
Residential	Smart Students	✓		✓
	ENERGY STAR New Homes	✓	✓	✓
	Residential Marketplace	✓		✓
	Residential Load Management	✓		
	Energy$mart (LI)		✓	✓
Commercial	Commercial Comprehensive	✓		
	SCORE Plus	✓	✓	✓
	Commercial Load Management	✓		

The results of the PY2023 impact evaluation are shown in Table 2 (kWh) and Table 3 (kW), with the programs evaluated in 2023 highlighted in gold.

*Table 2: PY2023 Savings Summary – kWh**

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Smart Students	7,118	675,369	1.1810	797,606	1.0000	797,606
ENERGY STAR New Homes	409	541,671	1.0419	564,367	0.7333	413,850
Residential Marketplace	103	100,050	0.9362	93,667	0.7446	69,744
Commercial Comprehensive	57	2,492,489	1.0624	2,648,097	0.8156	2,159,788
SCORE Plus	27	14,685,510	0.9756	14,327,853	0.6093	8,729,961
Commercial Load Management	7	4,367	1.0000	4,367	1.0000	4,367
Residential Load Management	3,144	77,181	1.0000	77,181	1.0000	77,181
Residential Comprehensive	632	1,397,789	1.0000	1,397,789	0.5514	770,741
Residential Lighting	17	5,486,958	1.0000	5,486,958	0.6000	3,292,175
NM Energy Saver (LI)	575	429,179	1.0000	429,179	1.0000	429,179
Energy$mart (LI) - Process only	37	852,016	1.0000	852,016	1.0000	852,016
Total	**12,107**	**26,742,579**		**26,679,080**		**17,596,608**

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

*Table 3: PY2023 Savings Summary – kW**

Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kW Savings	NTG Ratio	Realized Net kW Savings
Smart Students	7,118	53.46	1.5595	83.36	1.0000	83.36
ENERGY STAR New Homes	409	230.06	1.1622	267.38	0.7333	196.07
Residential Marketplace	103	4.76	1.0000	4.76	0.7446	3.55
Commercial Comprehensive	57	364.17	1.0733	390.86	0.8156	318.78
SCORE Plus	27	2,480.94	0.9493	2,355.20	0.6093	1,435.02
Commercial Load Management	7	1,196.00	1.0000	1,196.00	1.0000	1,196.00
Residential Load Management	3,144	2,812.00	1.0000	2,812.00	1.0000	2,812.00
Residential Comprehensive	632	770.81	1.0000	770.81	0.5514	425.02
Residential Lighting	17	925.33	1.0000	925.33	0.6000	555.20
NM Energy Saver (LI)	575	213.72	1.0000	213.72	1.0000	213.72
Energy$mart (LI) - Process only	37	262.73	1.0000	262.73	1.0000	262.73
Total	**12,107**	**9,314**		**9,282**		**7,501**

*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 PY2022 NTG ratios are being applied to the PY2023 results. The NTG ratios calculated in PY2023 will then be applied to the PY2024 results.

Table 4 summarizes the updates to the NTG ratios for PY2024, with the updated values shaded in gold.

Table 4: Net-to-Gross Ratio Updates for PY2024

Program		PY2023 NTG Ratio	PY2024 NTG Ratio
Smart Students		1.0000	**1.0000**
ENERGY STAR New Homes		0.7333	**0.7083**
Residential Marketplace	Lighting	0.6700	**0.6700**
	Non-Lighting	0.7550	**0.6900**
Commercial Comprehensive		0.8156	0.8156
SCORE Plus		0.6093	**0.7365**
Commercial Load Management		1.0000	1.0000
Residential Load Management		1.0000	1.0000
Residential Comprehensive		0.5514	0.5514
Residential Lighting		0.6000	0.6000
NM Energy Saver (LI)		1.0000	1.0000
Energy$mart (LI)		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.[3] The evaluation team conducted this test in a manner consistent with the California Energy Efficiency Policy Manual.[4] 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 1.35.

3 The Utility Cost Test is sometimes referred to as the Program Administrator Cost Test, or PACT.
4 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: PY2023 Cost Effectiveness

Program	Utility Cost Test (UCT)
Smart Students	0.57
ENERGY STAR New Homes	1.07
Residential Marketplace	0.08
Commercial Comprehensive	1.39
SCORE Plus	1.47
Commercial Load Management	0.70
Residential Load Management	1.51
Residential Comprehensive	1.14
Residential Lighting	1.70
NM Energy Saver (LI)	1.24
Energy$mart (LI)	4.34
Overall Portfolio	**1.35**

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

Factors affecting savings for Commercial Comprehensive projects include the use of fixture wattages that align with applicable DLC certificates. Additionally, the evaluation team adjusted lighting hours of use (HOU) for several projects. The NM TRM states "when sufficient information exists, using hours on an area-type basis is preferred to using building weighted average hours." If the Space Use is not present in the NM TRM, the evaluation team recommends utilizing the building weighted average hours across the entire project.

Lastly, the evaluation team adjusted savings for agricultural lighting projects based on various factors. Project number 23LGT28 was evaluated using IL TRM v.10 as the sole technical reference based on discussions during the time of the project. The other two projects were evaluated using the building

area methodology in IL TRM v.10, with inputs (i.e., HOU, etc.) from the 2023 NM TRM. The evaluation team modified lighted areas, Lighting Power Densities (LPD) for crops in the flowering cycle in project number 23LGT33, HOU, Coincidence Factors (CF), Waste Heat Factors (WHFs), and efficient fixture wattages.

Factors affecting savings for SCORE Plus program projects include the use of fixture wattages that align with applicable DLC certificates. Additionally, the kW RR in one project is affected by the deemed kW per HP savings value for HVAC VFDs for Cooling Water Pumps. The evaluation team utilized the deemed kW per HP from the 2023 NM TRM for the Las Cruces climate zone.

Lastly, the evaluation team adjusted savings for RBT-2961200, which was an agricultural lighting project. Based on discussions during the project timeframe, the evaluation team utilized IL TRM v.10 as the sole technical reference. Adjustments were based on several factors including modifications to lighted areas, LPDs, HOU, CFs, WHFs, and efficient fixture wattages.

Factors affecting savings for the ENERGY STAR New Homes program projects include the use of AHRI 210/240 - 2017 ratings and corresponding baselines for HVAC equipment manufactured before January 1, 2023 and AHRI 210/240 - 2023 ratings and corresponding baselines for HVAC equipment manufactured after January 1, 2023. Additionally, the evaluation team utilized HVAC equipment cooling capacities and EER efficient ratings exactly as specified in AHRI certificates.

Lastly, in one project, the ex ante calculation utilized a SEER2 value of 14.3 for a high efficiency split system air conditioner manufactured after January 1, 2023. The evaluation team utilized a SEER2 value of 13.8 as indicated in the NM TRM because the AHRI 210/240- 2023 cooling capacity of 56,000 Btu/h was more than 45,000 Btu/h.

Adjustments to savings based on the Smart Students and Residential Marketplace deemed savings reviews were primarily due to several factors.

Factors affecting savings in the Smart Students program include the use of only the Unspecified Application for Advanced Power Strips deemed kWh and kW values in the high school kits. The evaluation team utilized the deemed kWh and kW savings based on survey responses to the Application of the Advanced Power Strip (i.e., Home Entertainment, Home Office, or Unspecified).

Additionally, there were two survey questions related to the APS measure. One question asked if it was installed and the following asked where it was installed. More students provided an answer for the installed location than responded “yes” the measure was installed. The evaluation team recommends combining questions to avoid student confusion. The ex post calculated utilized weighted values and multiplied by the deemed savings for each installed Application type.

For both elementary and high school programs, the evaluation team utilized participant survey responses to calculate in-service-rates. The number of students who indicated a measure was installed was divided by the total number of responses (i.e., blank responses did not factor into this total). Lastly, the implementer applied a 67% net-to-gross ratio to LEDs in both the high school and elementary school kits. Net-to-gross ratios should be applied to realized gross savings and not expected gross savings. The net-to-gross ratio for the PY2023 Smart Students program overall is 1.000.

Factors affecting savings in Residential Marketplace program include an adjustment to the quantity of smart thermostats purchased through the program. The ex ante calculation claimed savings for 93 units and the ex post calculation utilized 83 units.

The process evaluation activities included phone surveys with ENERGY STAR New Homes, Energy$mart (LI), and SCORE Plus participants. Secondary literature reviews were conducted for both the Smart Students and Residential Marketplace programs. For the Smart Students program, student, parent, and teacher survey data was also analyzed and summarized for this evaluation. Based on the data collection and analysis 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

This section describes the evaluation methods used to evaluate El Paso Electric's (EPE) 2023 energy efficiency programs. Table 6 below identifies the tasks EcoMetric plans to complete at the program level.

Table 6: PY2023 Program Evaluation Summary

Sector	Program	Impact	Process	NTG
Residential	Smart Students	✓		✓
	ENERGY STAR New Homes	✓	✓	✓
	Residential Marketplace	✓		✓
	Residential Load Management	✓		
	Energy$mart (LI)		✓	✓
Commercial	Commercial Comprehensive	✓		
	SCORE Plus	✓	✓	✓
	Commercial Load Management	✓		

EcoMetric completed the cost-effectiveness analysis for each program in the portfolio. The portfolio evaluation included a combination of the following components listed below:

- Gross and net impacts for kWh and kW
- Process evaluation
- Cost-effectiveness analysis
- Assisting EPE as needed in providing real-time feedback on programs
- Coordinating with the New Mexico PRC on evaluation activities

The evaluation report still summarizes programs that were not evaluated in 2023. For any program that was not evaluated in 2023, EcoMetric applied a realization rate of 100% for that program as well

as a net-to-gross ratio that was specified in the 2022 evaluation report. These programs have the following elements compiled and reported for PY2023:

- Gross impacts (kWh, kW) using EPE's ex ante values for savings
- Net impacts calculated using the existing ex ante net-to-gross ratio
- Cost-effectiveness calculations using the ex ante net impact values

1.1 SUMMARY OF EVALUATION METHODS BY PROGRAM

Different programs require leveraging different techniques for program evaluation. This section summarizes the approaches utilized during the PY2023 evaluation for each program selected for evaluation. Table 7 below summarizes the evaluation methods utilized for each of the programs in the PY2023 evaluation.

Table 7: Summary of PY2023 Evaluation Methods by Program

Program	Prescriptive	Custom	Load Management
Smart Students	✓		
ENERGY STAR New Homes	✓		
Residential Marketplace	✓		
Commercial Comprehensive	✓	✓	
SCORE Plus	✓	✓	
Residential Load Management			✓
Commercial Load Management			✓

Smart Students. This program provides educational information and kits of energy-saving measures to elementary and high school students. Measures included in the elementary school kit are prescriptive in nature and include LED bulbs, faucet aerators, and low-flow showerheads. Measures included in the high school kit are prescriptive in nature and include LED bulbs, WiFi-enabled LEDs, and advanced power strips. As a program with prescriptive measure savings, the evaluation of this program consisted of a deemed savings review of the measures distributed in the kits, with the installation rate

determined from a survey of participating students. A secondary literature review was conducted to estimate net impacts.

ENERGY STAR New Homes. This program incentivizes homebuilders to construct homes that meet or exceed current ENERGY STAR standards. The program offers two paths: the Products path, which provides incentives for a minimum of three individual equipment upgrades; and the Performance path, which provides tiered rebate levels for new homes that exceed the 2018 International Energy Conservation Code (IECC) by at least 10%. The impact evaluation will include desk reviews for Performance projects, Products projects, and builder interviews to estimate net impacts.

Residential Marketplace. This program was launched in the spring of 2023. It features an online marketplace with residential energy efficient products including LEDs, smart thermostats, room air conditioners, air purifiers, advanced power strips, water fixtures, and kits. As a program with prescriptive measure savings, the evaluation of this program consisted of a deemed savings review of the measures purchased through the program. A secondary literature review was conducted to estimate net impacts.

Commercial Comprehensive. The measures eligible for the Commercial Comprehensive program are both prescriptive and custom. The evaluation of this program centered on a deemed or custom 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 is the New Mexico TRM or another source.

SCORE Plus. The SCORE Plus program evaluation approach resembled the Commercial Comprehensive program. The approach included a deemed or custom savings review, phone survey or site-visit verification, and project desk reviews. Desk reviews conducted by engineers examined the savings assumptions and calculations specific to each sampled project. EcoMetric conducted phone surveys to verify that program-rebated measures are still installed and functional and to gather information to calculate a free ridership rate, as described in more detail in the Net Impacts section below.

Energy$mart (LI). The Energy$mart (LI) program provides weatherization and other efficiency improvements at no cost to low-income customers. Other measures provided include LEDs, thermostats, and water conservation measures for customers with electric water heaters. The evaluation team conducted telephone interviews with customers who participated in this program.

Residential Load Management. This program provides incentives to residential customers, allowing EPE to remotely adjust participating customers' internet-enabled smart thermostats during load

management events. The impacts from this program will be calculated by comparing the actual energy use with estimated baseline usage during the load control events.

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 will be 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.

1.2 PHONE SURVEYS

Phone surveys were fielded in February 2024 for participants in the ENERGY STAR New Homes, Energy$mart (LI), 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. Table 8 shows the distribution of completed surveys.

Table 8: EPE Phone Survey Summary

Program	Customers with Valid Contact Info	Target # of Participants	Completed Surveys
ENERGY STAR New Homes	11	11	5
Energy$mart (LI)	37	15	4
SCORE Plus	14	14	4
Total	**62**	**40**	**13**

The final survey instruments for the ENERGY STAR New Homes, Energy$mart (LI), and SCORE Plus programs are included in Appendix A, Appendix B, and Appendix C.

1.3 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 Commercial Comprehensive, SCORE Plus, and ENERGY STAR New Homes programs. The goal of the desk reviews was to verify equipment installation, operational parameters, and estimated savings.

For PY2023, deemed savings reviews were completed for the Smart Students and Residential Marketplace 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.

1.4 ONSITE INSPECTIONS

In support of the engineering desk reviews, the evaluation team completed two onsite inspections and one phone verification for the Commercial Comprehensive projects and two onsite inspections for the SCORE Plus projects. 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.

1.5 LOAD MANAGEMENT IMPACT ESTIMATION

1.5.1 COMMERCIAL LOAD MANAGEMENT

The demand response (DR) performance calculation centers on the baseline, which is an estimate of what load would have been in the participating facilities on event days if DR 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 day, the method was as follows:

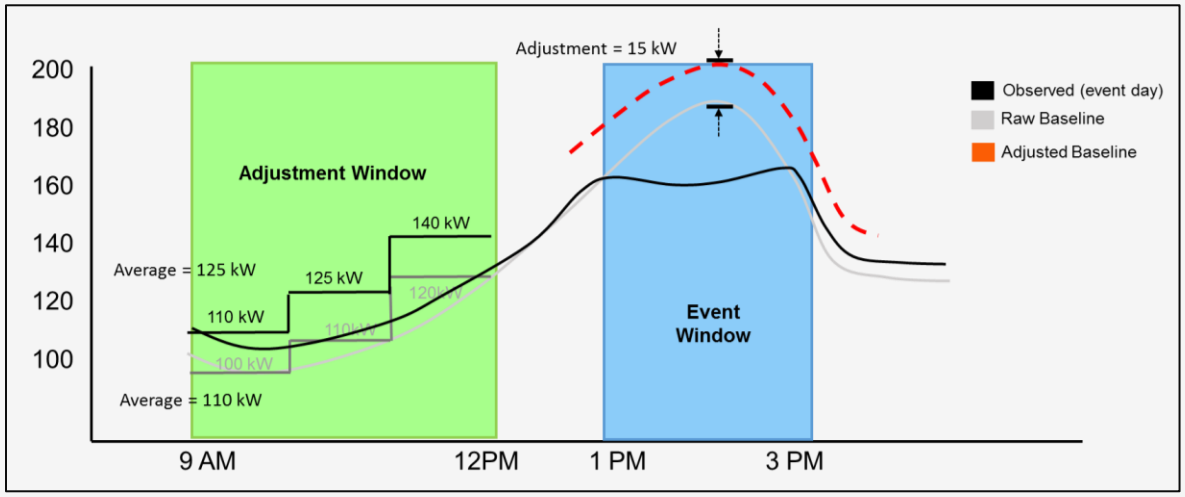
- Select the last ten non-event, non-holiday weekdays.
- Using 15-minute interval load data, select the eight days (out of ten) with the highest average load during the event window.
- For each 15-minute interval, calculate the average load of the eight selected baseline days. This is known as the "Raw 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 load on the event day during the Adjustment Window.
- Calculate the average load on the baseline days during the Adjustment Window.
- The Adjustment Factor is defined as the difference of the averages calculated above (event day average – baseline day average), 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. This is 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



1.5.2 RESIDENTIAL LOAD MANAGEMENT

The evaluation relied on two key data streams: hourly thermostat telemetry data and hourly weather data. The thermostat telemetry data is hourly interval data with cooling runtime (in minutes) for every device in the program. Several other fields, such as thermostat status, are included in the telemetry data. The weather data is used in estimating counterfactual load on DR event days. Both streams are described in greater detail below.

1.5.2.1 Estimating the Counterfactual

For a given event hour, the DR impact is the difference between actual load and counterfactual load, where counterfactual load represents what load would have been absent the DR event. Actual load can be measured via the telemetry data (and a connected load assumption), while the counterfactual load must be estimated. This step – estimating the counterfactual – is critical in developing an unbiased DR impact estimate. Our team tested out nine different regression-based techniques for estimating the counterfactual. The explanatory variables included in the nine regression models are shown in Table 9.

To determine which of the nine model specifications produces the least amount of bias, we used an out-of-sample testing technique known as cross validation. At a high level, this technique entails

splitting the non-event day telemetry data into testing and training data sets.[5] The regression models are fit using the training data set, and then the models are used to estimate load in the testing data set. Predicted load in the testing data set is then compared with actual load. "Bias" can be measured in many ways but fundamentally, it's a function of the difference between actual load and predicted load. Our team found that Model 6 produced the least amount of bias (as measured by root mean squared error) when estimating non-event day load. As such, this was the model we used to estimate DR counterfactuals.

Table 9: Details on Regression Models

Model Number	Explanatory Variables[1]
1	mean15, temperature*dewpoint, maximum daily temperature, maximum daily dewpoint
2	mean15, maximum daily temperature, maximum daily dewpoint
3	maximum daily temperature, temperature*dewpoint
4	mean15, temperature
5	mean15, temperature*dewpoint, pre_event_kw
6	temperature*dewpoint, pre_event_kw
7	mean15, temperature*dewpoint, maximum daily temperature, maximum daily dewpoint, pre_event_kw
8	mean15, temperature*dewpoint, maximum daily temperature, maximum daily dewpoint, pre_event_kw, day of week
9	mean15, temperature*dewpoint, pre_event_kw, day of week

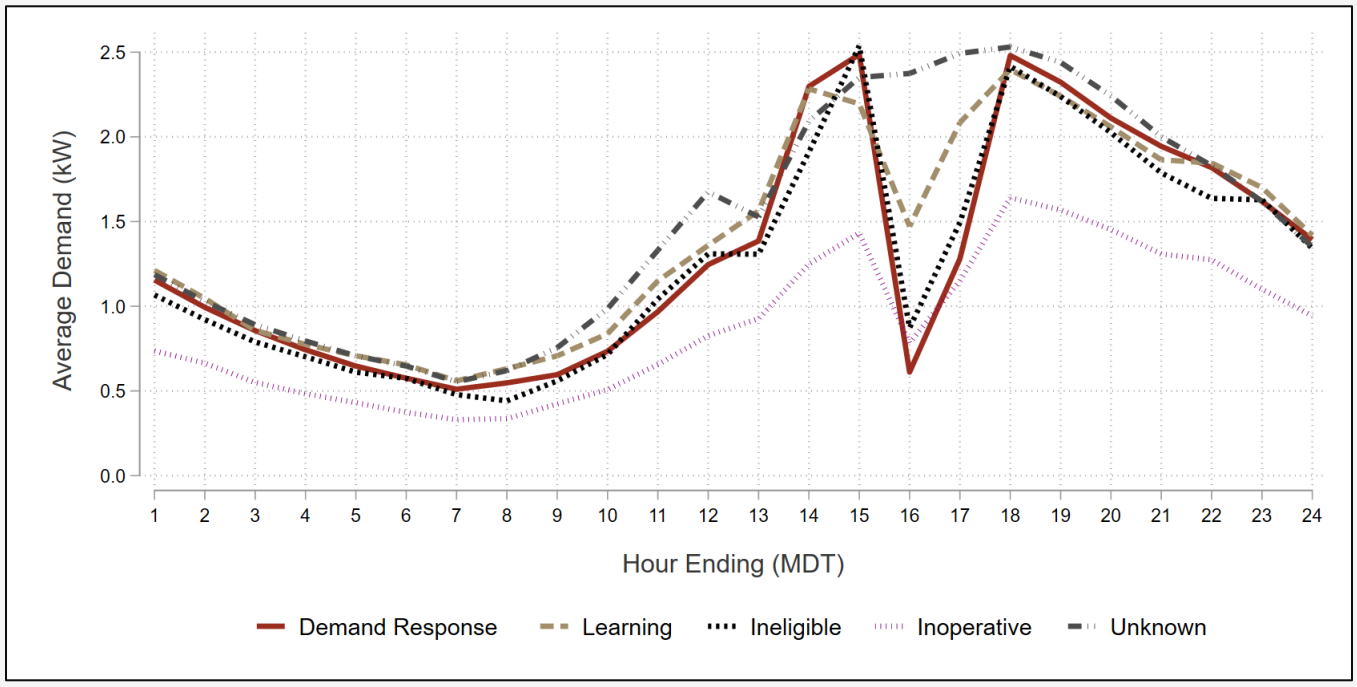
[1] The variable "mean15" represents the average temperature between midnight and 3:00 PM. The variable "pre_event_kw" represents device-specific kW consumption between 11:00 AM and 12:00 PM. Several models include an interaction term, represented by the "*" symbol. For example, Model 1 includes an interaction between temperature and dewpoint as an explanatory variable.

5 Event day data is not included in the out-of-sample testing procedure. Additionally, we did not include records from weekends, holidays, or days where the average outdoor temperature was less than 75°F.

1.5.2.2 Aggregating Impacts

During the 2023 DR season, EPE and Uplight utilized a full dispatch model where all devices were curtailed on event days. We were able to use a "device status" field in the telemetry data to track which devices actually received the curtailment dispatch. On event days, devices were set to the "Demand Response" status to receive curtailment. On non-event days, devices were uncontrolled and allowed to operate based on customer preferences, indicated by the "Learning" status. Devices could also fall under the categories of "Ineligible," "Inoperative," and "Unknown" on any given day throughout the program. As seen in Figure 2, 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 2: Average Load by Status Over a Typical Event Day



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 2023 season and the average proportion of devices that were not missing AC runtime data during the 2023 events. This product was our estimate of the aggregate program impact.

1.6 NET IMPACT ANALYSIS

1.6.1 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.[6] For the EPE programs, questions regarding free ridership were divided into several primary components:

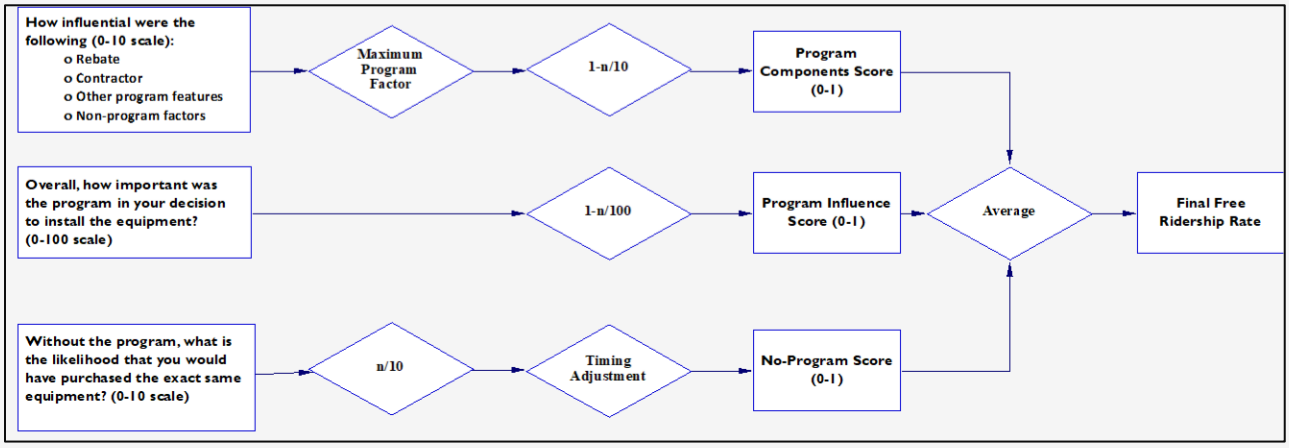
6 The full Illinois TRM can be found at http://www.ilsag.info/il_trm_version_6.html.

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

Figure 3: Self-Report Free Ridership Scoring Algorithm[7]



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

1.6.1.1 Program Component Questions

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

The type of questions 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)

7 Adapted by Evergreen Economics from the 2017 Illinois TRM.

- Previous participation in a utility efficiency program

As shown at the top of Figure 3, the question with the highest value response (i.e., the program factor that had the greatest influence on the decision to install a high efficiency measure) was the one that was used in the scoring algorithm as the Program Component score.

1.6.1.2 Program Influence Question

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

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

1.6.1.3 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 3. The timing adjustment was made based on whether or not the respondent would have delayed their equipment purchase if the rebate had not been available. If the purchase would have been delayed by one year or more, then the No-Program score was set to zero, thereby minimizing the level of free ridership for this algorithm component only.

1.6.1.4 Free Ridership and NTG Calculation

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

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

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

Since 2021, updates to program NTG ratios have been applied prospectively. As a result, the NTG ratios for Commercial Comprehensive, SCORE Plus, and Residential Lighting developed in the PY2022 evaluation are being applied to the PY2023 results. The NTG ratios calculated using the PY2023 data will then be applied to the PY2024 results.

1.6.1.5 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.):

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

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

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

1.7 COST EFFECTIVENESS

The New Mexico Efficient Use of Energy Act (EUEA) requires that utilities include in their publicly available annual reports "the most recent measurement and verification report of the independent program evaluator, which includes documentation, at both the portfolio and individual program levels of expenditures, savings, and cost-effectiveness of all energy efficiency measures and programs and load management measures and programs, expenditures, savings, and cost-effectiveness of all self-direct programs, and all assumptions used by the evaluator." [8] The Utility Cost Test (UCT) is the method used for cost-effectiveness testing. In the UCT, the benefits of a program are the present value of the net energy savings, and the costs are the present value of the program's administrative costs plus incentives paid to customers.

In preparation for the cost-effectiveness analysis, EcoMetric requested key assumptions and inputs from EPE, including:

- **Avoided cost of energy** – time differentiated production 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. Used to monetize peak demand impacts.
- **Discount rate** – used to calculate the net present value of future savings.
- **Line loss factors** – used to adjust avoided cost for line losses.
- **Administrative costs** – all non-incentive expenditures associated with program delivery.

8 https://www.srca.nm.gov/parts/title17/17.007.0002.html, Section 17.7.2.14 - D1

The verified savings values will be gathered as part of the primary impact evaluation analysis effort and used to calculate benefits for each program. We will compile incentive payments from program tracking data for use in calculating UCT costs.

Section 17.7.2.9.B(4) of the New Mexico Administrative Code allows utilities to claim utility system economic benefits for low-income programs equal to 20 percent of the calculated energy benefits.[9] We applied the 20 percent adder to the benefits calculated for the Energy Saver and Energy$mart programs.

9 Available at https://www.srca.nm.gov/parts/title17/17.007.0002.html.

2 IMPACT EVALUATION RESULTS

The results of the PY2023 impact evaluation are shown in Table 10 (kWh) and Table 11 (kW), with the programs evaluated in 2023 highlighted in gold. As noted previously, each program is required to be evaluated a minimum of once every three years. For PY2023, the evaluated programs[10] covered 70 percent of the total ex ante kWh savings and 77 percent of the total ex ante kW savings.

*Table 10: PY2023 Savings Summary – kWh**

Program	# of Projects	Expected Gross kWh Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Smart Students	7,118	675,369	1.1810	797,606	1.0000	797,606
ENERGY STAR New Homes	409	541,671	1.0419	564,367	0.7333	413,850
Residential Marketplace	103	100,050	0.9362	93,667	0.7446	69,744
Commercial Comprehensive	57	2,492,489	1.0624	2,648,097	0.8156	2,159,788
SCORE Plus	27	14,685,510	0.9756	14,327,853	0.6093	8,729,961
Commercial Load Management	7	4,367	1.0000	4,367	1.0000	4,367
Residential Load Management	3,144	77,181	1.0000	77,181	1.0000	77,181
Residential Comprehensive	632	1,397,789	1.0000	1,397,789	0.5514	770,741
Residential Lighting	17	5,486,958	1.0000	5,486,958	0.6000	3,292,175
NM Energy Saver (LI)	575	429,179	1.0000	429,179	1.0000	429,179

10 The percentages exclude the Energy$mart (LI) program because the evaluation team only conducted process evaluation activities for this program.

Energy$mart (LI) - Process only	37	852,016	1.0000	852,016	1.0000	852,016
Total	**12,107**	**26,742,579**		**26,679,080**		**17,596,608**

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

*Table 11: PY2023 Savings Summary – kW**

Program	# of Projects	Expected Gross kW Savings	Engineering Adjustment Factor	Realized Gross kWh Savings	NTG Ratio	Realized Net kWh Savings
Smart Students	7,118	53.46	1.5595	83.36	1.0000	83.36
ENERGY STAR New Homes	409	230.06	1.1622	267.38	0.7333	196.07
Residential Marketplace	103	4.76	1.0000	4.76	0.7446	3.55
Commercial Comprehensive	57	364.17	1.0733	390.86	0.8156	318.78
SCORE Plus	27	2,480.94	0.9493	2,355.20	0.6093	1,435.02
Commercial Load Management	7	1,196.00	1.0000	1,196.00	1.0000	1,196.00
Residential Load Management	3,144	2,812.00	1.0000	2,812.00	1.0000	2,812.00
Residential Comprehensive	632	770.81	1.0000	770.81	0.5514	425.02
Residential Lighting	17	925.33	1.0000	925.33	0.6000	555.20
NM Energy Saver (LI)	575	213.72	1.0000	213.72	1.0000	213.72
Energy$mart (LI) - Process only	37	262.73	1.0000	262.73	1.0000	262.73
Total	**12,107**	**9,314**		**9,282**		**7,501**

*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 COMMERCIAL COMPREHENSIVE PROGRAM

3.1 COMMERCIAL COMPREHENSIVE GROSS IMPACTS

The ex ante PY2023 impacts for the Commercial Comprehensive program are summarized in Table 12. In total, the Commercial Comprehensive program accounted for 9 percent of the ex ante energy impacts in EPE's overall portfolio.

Table 12: PY2023 Commercial Comprehensive Ex Ante Savings Summary

Program	#of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
Commercial Comprehensive	57	2,492,489	364.17

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 three measure types so that no single measure would dominate the desk reviews. The final sample design is shown in Table 13. The resulting sample achieved a relative precision of 90/26.2 overall and 90/1.8 without the Agricultural Lighting measure group.

Table 13: Commercial Comprehensive Desk Review Sample

Measure Group	#of Projects	Population Total kWh Savings	% of Total kWh Savings	Population Total kW Savings	% of Total kW Savings	Count of Sampled Projects
Agricultural Lighting	3	946,900	38%	148.49	41%	3
Lighting	38	980,038	39%	126.75	35%	7
Other	16	565,551	23%	88.93	24%	6
Total	**57**	**2,492,489**	**100%**	**364.17**	**100%**	**16**

As discussed in the Evaluation Methods section, the evaluation team determined gross realized impacts for the Commercial 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 several projects, which impacted the realization rates.

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

The evaluation team adjusted savings for two out of three agricultural lighting projects based on several factors. Project number 23LGT28 was evaluated using IL TRM v.10 as the sole technical reference based on discussions during the time of the project. The other two projects were evaluated using the building area methodology in IL TRM v.10, with inputs (i.e., LPD, HOU, and CFs) from the 2023 NM TRM.

- The following findings and recommendations apply to project number 23LGT28:
    - **Finding 1**: The ex ante calculation utilized a total area of 1,920 square feet, which includes spaces the grow lights do not operate (e.g., storage space, walkways, etc.). The evaluation team conducted a phone interview with the customer to confirm the lighted area. Based on this interview, the ex post calculation utilized the verified total area of 709 square feet, which is the area of the racks where the crops are located. The verified area was determined by taking the sum of the lighted area for the flowering crops (325 square feet) and the vegetative crops (384 square feet).
      Recommendation 1: Utilize the square footage of the grow areas for which the agricultural lighting fixtures operate.
    - **Finding 2**: The ex ante calculation used one lighting power density (LPD) value for the total area of the project, 36.0 W/ft^2, for a facility with grow lights for crops in both the flowering cycle and vegetative cycle.
      Recommendation 2A: Utilize an LPD of 40.0 W/ft^2 for areas with crops in the vegetative cycle. This LPD is derived from baseline technology wattage of 640 W per 16 ft^2.[11]

11 IL TRM v.10.

Recommendation 2B: Use an LPD of 46.824 W/ft^2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft^2 for medical cannabis and 576 W per 16 ft^2 for recreational cannabis.[12] The LPD was weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.

- **Finding 3**: The ex ante calculation used HOU and CFs for only the flowering crop type. The project involved both flowering and vegetative crops. Vegetative crops require more HOU and subsequently have higher CFs than flowering crops according to the IL TRM.
  Recommendation 3: Utilize HOUs and CFs based on crop type (i.e., flowering, or vegetative) per the IL TRM v.10.
- **Finding 4**: The ex ante calculation swapped the waste heat factors.
  Recommendation 4: The evaluation team used a WHF_{demand} of 1.22 and a WHF_{energy} of 1.21. This modification increased demand savings (kW) and decreased energy savings (kWh).

- **Finding 5**: In project number 23LGT33, the ex ante calculation used an LPD of 46.824 W/ft^2 for flowering crops, which is based on IL TRM v.10. The evaluation team applied an LPD of 68.75 W/ft^2 based on the 2023 NM TRM. The implementer applied appropriate LPDs to crops in the vegetative cycle and crops in the propagation cycle based on the 2023 NM TRM.
  Recommendation 5: Use an LPD of 68.75 W/ft^2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft^2 for both medical cannabis and recreational cannabis based on the 2023 NM TRM.
- **Finding 6**: The evaluation team adjusted installed fixture wattages for all three agricultural lighting projects to align with the applicable DLC certificates.
  Recommendation 6: Use the tested fixture wattages as provided by the DLC-approved product database.

12 Ibid.

- **Finding 7**: The evaluation team adjusted lighting hours of use (HOU) for four projects. The NM TRM states "when sufficient information exists, using hours on an area-type basis is preferred to using building weighted average hours." If the Space Use is not present in the NM TRM, the evaluation team recommends utilizing the building weighted average hours across the entire project. In this case, the TRM does not provide a Space Use representative of restrooms, for a small retail facility or a single-story large retail facility.
  Recommendation 7: Use either the building weighted average HOU or the area type HOU. It is preferable to use the latter method for HOU because more granular energy savings can be calculated. If no specific area type exists in the NM TRM, the evaluation team recommends utilizing the area type most representative of this space, instead of using building weighted average hours for the space.
- **Finding 8**: The evaluation team adjusted installed fixture wattages in six projects to align with the applicable DLC certificates.
  Recommendation 8: Use the fixture wattages as provided by the DLC-approved product database.

Table 14 shows the results of the desk reviews and how the resulting engineering adjustments were used to calculate realized savings. For the Commercial Comprehensive program overall, these adjustments resulted in average engineering adjustment factors of 1.0624 for kWh and 1.0733 for kW.

Table 14: PY2023 Commercial Comprehensive Gross Impact Summary

Commercial Comprehensive	#of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	57	2,492,489	1.0624	2,648,097
kW Savings	57	364.17	1.0733	390.86

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

3.2 COMMERCIAL COMPREHENSIVE NET IMPACTS

The NTG ratio of 0.8156 calculated with the PY2022 survey results were applied to the PY2023 net impacts. No process evaluation or NTG evaluation activities were conducted in PY2023, thus the NTG ratio from PY2022 will also be applied to PY2024.

Table 15 summarizes the PY2023 net impact calculations for the Commercial Comprehensive program using the NTG ratio described above. Net realized savings for the program overall are 2,159,788 kWh, and net realized demand savings are 318.78 kW.

Table 15: PY2023 Commercial Comprehensive Net Impact Summary

Commercial Comprehensive	#of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	57	2,648,097	0.8156	2,159,788
kW Savings	57	390.86	0.8156	318.78

4 SCORE PLUS PROGRAM

4.1 SCORE PLUS GROSS IMPACTS

The ex ante PY2023 impacts for the SCORE Plus program are summarized in Table 16. In total, the SCORE Plus program accounted for 55 percent of the ex ante energy impacts in EPE's overall portfolio.

Table 16: PY2023 SCORE Plus Ex Ante Savings Summary

Program	#of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
SCORE Plus	27	14,685,510	2,480.94

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 three measure types so that no single measure would dominate the desk reviews. The final sample design is shown in Table 17. The resulting sample achieved a relative precision of 90/2.9 overall.

Table 17: PY2023 SCORE Plus Desk Review Sample

Measure Group	#of Projects	Population Total kWh Savings	% of Total kWh Savings	Population Total kW Savings	% of Total kW Savings	Count of Sampled Projects
Agricultural Lighting	2	12,346,551	84%	2,215.83	89%	1
Lighting	12	1,254,408	9%	107.27	4%	5
Other	13	1,084,551	7%	157.84	6%	6
Total	**27**	**14,685,510**	**100%**	**2,480.94**	**100%**	**12**

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 adjusted several projects, which impacted the realization rates.

The evaluation team adjusted savings for the one agricultural lighting project based on several factors. This project was evaluated using IL TRM v.10 as the sole technical reference based on discussions during the time of the project.

- **Finding 1**: The ex ante calculation utilized a total area of 59,620 square feet, whereas the ex post calculation utilized the verified total area of 56,250 square feet. The evaluation team calculated this area by taking the sum of the lighted area for the flowering crops (45,000 square feet) and the lighted area for the vegetative crops (11,250 square feet).
  Recommendation 1: Utilize the square footage of the grow areas for which the agricultural lighting fixtures operate.
- **Finding 2**: The ex ante calculation used one lighting power density (LPD) value for the total area of the project, 46.824 W/ft^2. The evaluation team applied LPDs to areas based on the crop type (e.g., flowering, vegetative, etc.).
  Recommendation 2A: Utilize an LPD of 40.0 W/ft^2 for areas with crops in the vegetative cycle. This LPD is derived from baseline technology wattage of 640 W per 16 ft^2.[13]
  Recommendation 2B: Use an LPD of 46.824 W/ft^2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft^2 for medical cannabis and 576 W per 16 ft^2 for recreational cannabis.[14] The LPD was weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.
- **Finding 3**: The ex ante calculation used HOU and CFs for the flowering crop type.
  Recommendation 3: The evaluation team utilized HOUs and CFs based on crop type (i.e., flowering or vegetative) per the IL TRM v.10.

13 IL TRM v.10.
14 Ibid.

- **Finding 4**: The ex ante calculation swapped the waste heat factors.
  Recommendation 4: The evaluation team used a WHF $_{demand}$ of 1.22 and a WHF $_{energy}$ of 1.21. This modification increased demand savings (kW) and decreased energy savings (kWh).
- **Finding 5**: The evaluation team adjusted installed fixture wattages to align with the applicable DLC certificates.
  Recommendation 5: Use the tested fixture wattages as provided by the DLC-approved product database.
- **Finding 6**: In one project, the kW RR is affected by the deemed kW per HP savings value for HVAC VFDs for Cooling Water Pumps. The project included two 10 HP and two 20 HP Cooling Water Pumps. The ex ante calculation utilized 0.259 kW per HP, which is from an older version of the NM TRM. The ex post calculation utilized 0.185 kW per HP, which is in both the 2021 and 2023 NM TRMs for the Las Cruces climate zone.
  Recommendation 6: Utilize deemed values from the 2023 NM TRM.
- **Finding 7**: The evaluation team adjusted installed fixture wattages in one project to align with the applicable DLC certificates.
  Recommendation 7: Use the fixture wattages as provided by the DLC-approved product database.

Table 18 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 0.9756 for kWh and 0.9493 for kW.

Table 18: PY2023 SCORE Plus Gross Impact Summary

SCORE Plus	#of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	27	14,685,510	0.9756	14,327,853
kW Savings	27	2,480.94	0.9493	2355.20

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

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 PY2022

evaluation. As noted previously, due to small sample sizes, the survey results from the PY2019 through PY2022 evaluations were averaged to get an updated NTG ratio of 0.6088. This new value is being applied to the PY2023 SCORE Plus program net impact results. The NTG ratio calculated using the PY2023 survey results will be applied to the PY2024 impacts. Table 19 summarizes the PY2023 net impact calculations for the SCORE Plus program using the NTG ratio described above. Net realized savings for the program overall are 10,431,440 kWh, and net realized demand savings are 1,745.64 kW.

4.2.1 NET-TO-GROSS

For the net impact free ridership analysis, the evaluation team completed four interviews out of the 14 customers who had valid contact information and participated in the PY2023 SCORE Plus program. Based on the self-approach described earlier, we calculated a free ridership rate of 0.2635 that resulted in an overall net-to-gross ratio of 0.7365.

The new value of 0.7365 will be applied to the program beginning in PY2024.

Table 19: PY2023 SCORE Plus Net Impact Summary

SCORE Plus	#of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	27	14,327,853	0.6093	8,729,961
kW Savings	27	2,355.20	0.6093	1435.02

4.3 PROCESS EVALUATION

4.3.1 PARTICIPANT INTERVIEWS

The evaluation team completed four interviews out of 14 project contacts who had valid contact information and interacted with the PY2023 SCORE Plus program. For this evaluation round, the interviews covered the following topics:

- Participant background and their relationship to the project;
- Participation in 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 quantitative results are featured to provide further context on the frequency of the types of responses.

4.3.2 PROJECT BACKGROUND

The project contacts we interviewed completed a variety of retrofit and new construction projects. While participants had varying levels of interaction with the SCORE Plus program, all four 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 decision-making authority and included a director for energy management and construction, a plant engineer, an energy engineer, and a co-owner of the business.

Business types included schools, businesses involved in agriculture and manufacturing, and government agencies. Three of the four participants completed some type of lighting measure in their SCORE Plus projects—including lighting fixtures and LEDs—while two of the four completed some type of HVAC measure in their SCORE Plus projects.

All four participants stated that they used contractors to complete their projects through the SCORE Plus program, although one stated that they are the general contractor.

In terms of the overall opinion on the completed projects, all program participants we interviewed stated that they had almost no issues during the process and that the equipment was installed to their satisfaction and was functioning as expected. One program participant we interviewed had to change some piping that was not initially installed correctly when installing the HVAC units, but that was corrected. Another interview participant had two faulty lights that needed to be replaced. One interview participant needed linear light kits that were Build America, Buy America Act (BABAA) compliant, and upon inspection found that the lamps were manufactured in China. Since they were considered to be non-BABAA compliant, and other options were more expensive, they completed a waiver to keep the lamps in place.

4.3.3 PARTICIPATION IN AND ROLE OF THE EPE PROGRAM

The evaluation team asked participants 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. All four of the program participants we interviewed had prior involvement or connection to the EPE program.

Two of the participants expressed frequent interaction with EPE or the implementer. These contacts cited EPE's responsiveness, involvement, and helpfulness. Two of the participants felt that it was difficult, or that it took longer than they wanted to get a response from EPE. One of these stated that they had good communication with EPE when they interacted, but it was the amount of time it took for EPE to get back to them that was the concern.

Most of the participants shared that the SCORE Plus program influenced their choices. For example, one participant we interviewed wanted to build the best of the best to maximize energy savings. They mentioned that the program was the driving force and was only considering equipment that had incentives. Another participant changed what they were going to install based on feedback from EPE or CLEAResult, the program implementer.

A few of the participants—those whose projects were retrofits—discussed the estimated remaining life of equipment if it had not been replaced using SCORE Plus rebates. Two of the program participants we interviewed stated that the equipment would have been replaced regardless of the SCORE Plus program. One interview participant mentioned it was important to replace any units that were no longer under warranty. The other participant we interviewed estimated there was a lot of life left in their lighting, but it was important to gain the energy efficiency improvements along with improved security gained by replacing outside lighting.

4.3.4 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.

Program participants we interviewed were asked to rate the level of importance for program and non-program factors on a scale of 0 to 10. 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; and

- 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 just as influential as 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. Two out of the four 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 appreciation for the rebate program, but it seems that their decision-making and energy efficiency upgrades depended on more than just the program. This may indicate that the rebate program is serving as a nudge toward certain types of upgrades, but not as the entire basis for project decisions, indicating some level of free ridership.

4.3.5 PROGRAM SATISFACTION

The evaluation team asked the program participants we interviewed 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 was 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 EPE as a whole and the rebate program specifically, including the effort required to participate in the program, the project application process, their interactions with EPE, and EPE as an energy provider. One interview participant did feel that while overall they had a high level of satisfaction with EPE and the program, they were unsatisfied with the response times in communication and the amount of time it took to receive their incentive check.

Overall, there was a high level of satisfaction from the majority of participants. Most of the participants rated their level of satisfaction as a 5 for any of the factors provided. However, one participant we interviewed rated a few of the factors as a 3 and one factor as a 1. The low score was mainly for the time it took to get a response from EPE and the amount of time it took to receive their incentive check.

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 improving the response time around the rebates but aside from that, the general feeling shared among the participants was that the program was very helpful with getting them the information they needed throughout the process.

5 ENERGY STAR NEW HOMES PROGRAM

5.1 ENERGY STAR NEW HOMES GROSS IMPACTS

The ex ante PY2023 impacts for the ENERGY STAR New Homes program are summarized in Table 20. In total, the ENERGY STAR New Homes program accounted for 2 percent of the ex ante energy impacts in EPE's overall portfolio.

Table 20: PY2023 ENERGY STAR New Homes Ex Ante Savings Summary

Subprogram	#of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
Prescriptive	220	169,611	70.86
Performance	189	372,060	159.20
Total	**409**	**541,671**	**230.06**

The majority of the gross impact evaluation activities were devoted to engineering desk reviews of a sample of projects. The sample was stratified into Performance projects and Prescriptive projects. In the first wave, a random sample was taken for each project type. The second wave utilized a random sample of five additional Prescriptive projects. Overall, the sampling strategy ensured that a mix of each project type would be included in the desk reviews. The final sample design is shown in Table 21. The resulting sample achieved a relative precision of 90/8.1 overall.

Table 21: PY2023 ENERGY STAR New Homes Desk Review Sample

Measure Group	#of Projects	Population Total kWh Savings	% of Total kWh Savings	Population Total kW Savings	% of Total kW Savings	Count of Sampled Projects
Prescriptive	220	169,611	31%	70.86	31%	10
Performance	189	372,060	69%	159.20	69%	5
Total	**409**	**541,671**	**100%**	**230.06**	**100%**	**15**

As discussed in the Evaluation Methods section, the evaluation team determined gross realized impacts for the ENERGY STAR New Homes program by performing engineering desk reviews on the sample of projects. EPE developed Excel-based calculators to estimate savings for Prescriptive 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 adjusted multiple Prescriptive/Products Path projects that impact energy savings.

- **Finding 1**: The evaluation team utilized HVAC equipment cooling capacities as specified in AHRI certificates. For example, HVAC equipment with a cooling capacity of 57,000 Btu/h corresponds to 4.75 tons. The ex post calculation utilized a value of 4.75 tons in savings calculations, whereas the ex ante calculation used a value of 5.0 tons.
  Recommendation 1: Use the HVAC equipment capacity as provided by the AHRI certificate.
- **Finding 2**: Ex ante HVAC calculations converted $SEER_{efficient}$ to $EER_{efficient}$ for peak demand savings. The ex post calculation utilized the $EER_{efficient}$ rating per the AHRI certificate as indicated by the NM TRM to calculate the peak demand savings.
  Recommendation 2: Use the HVAC equipment $EER_{efficient}$ rating as provided by the AHRI certificate for calculating peak demand savings.
- **Finding 3:** For HVAC equipment manufactured ***before*** January 1, 2023, the evaluation team utilized SEER, EER, and HSPF baselines and efficient ratings in the HVAC savings calculations per the 2023 NM TRM.
  Recommendation 3: The evaluation team recommends using AHRI 210/240 - 2017[15, 16] ratings and corresponding baselines for HVAC equipment manufactured ***before*** January 1, 2023 per the 2023 NM TRM. The year of manufacture is indicated by equipment serial number.
- **Finding 4**: For HVAC equipment manufactured ***after*** January 1, 2023, the evaluation team utilized SEER2, EER2, and HSPF2[17] baselines and efficient ratings in the HVAC savings calculations per the 2023 NM TRM.

15 https://www.ahrinet.org/system/files/2023-09/AHRI_Standard_210-240_2017_add1.pdf.
16 If AHRI 210/240 – 2017 ratings are not available, then utilize AHRI 210/240 – 2023 ratings.
17 The evaluation sample did not include any Heat Pumps manufactured after January 1, 2023. HSPF2 was added to this finding for consistency and clarity.

Recommendation 4: The evaluation team recommends using AHRI 210/240 - 2023[18] ratings and corresponding baselines for HVAC equipment manufactured ***after*** January 1, 2023 per the 2023 NM TRM. The year of manufacture is indicated by equipment serial number.

- **Finding 5:** In one project, the ex ante calculation utilized a SEER2 value of 14.3 for a high efficiency split system air conditioner manufactured after January 1, 2023. This value is for a system with a cooling capacity less than 45,000 Btu/h. The evaluation team utilized a SEER2 value of 13.8 because the AHRI 210/240- 2023 cooling capacity of 56,000 Btu/h is more than 45,000 Btu/h.

  Recommendation 5: Select baseline efficiency values for split system air conditioners based on the cooling capacity, as indicated by the NM TRM.

Table 22 shows the results of the desk reviews and how the resulting engineering adjustments were used to calculate realized savings. For the ENERGY STAR New Homes program overall, these adjustments resulted in average engineering adjustment factors of 1.0419 for kWh and 1.1622 for kW.

Table 22: PY2023 ENERGY STAR New Homes Gross Impact Summary

ENERGY STAR New Homes	#of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	409	541,671	1.0419	564,367
kW Savings	409	230.06	1.1622	267.38

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

18 https://www.ahrinet.org/system/files/2023-09/AHRI%20Standard%20210.240-2023%20%282020%29.pdf

5.2 ENERGY STAR NEW HOMES NET IMPACTS

5.2.1 NET-TO-GROSS

The evaluation team completed interviews with five out of eleven customers for the net impact free ridership analysis. Only one respondent provided the complete responses necessary to calculate free-ridership rate. Based on the self-approach described earlier, the evaluation team calculated a free ridership rate of 0.3167, which resulted in an overall net-to-gross ratio of 0.6833.

The current net-to-gross ratio is 0.7333 for this program, which was calculated by the evaluation team in PY2022. Given that the new value of 0.6833 is based on one response, we have averaged the two values to get a final net-to-gross ratio of 0.7083 for this program. This new value will be applied to the program beginning in PY2024.

Table 23: PY2023 ENERGY STAR New Homes Net Impact Summary

ENERGY Star New Homes	#of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	409	564,367	0.7333	413,850
kW Savings	409	267.38	0.7333	196.07

5.3 PROCESS EVALUATION/PARTICIPANT INTERVIEWS

The evaluation team conducted interviews with five out of eleven new home builders with valid contact information. All 5 interviewees interacted with the PY2023 ENERGY STAR program. Interviews covered the following topics:

- Builder background;
- Program awareness and engagement;
- Program process and market response; 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 the frequency of types of responses.

5.4 BUILDER BACKGROUND

All five builders confirmed participation in the ENERGY STAR New Homes program. Builders completed a variety of new construction projects that received rebates for the installation of efficient equipment.

Four builders participated in the ENERGY STAR New Homes program via the Performance path, and one builder participated via the Prescriptive path. Three of the five builders construct approximately 20 to 30 houses a year.

5.5 PROGRAM AWARENESS AND ENGAGEMENT

The evaluation team asked the builders to describe how they first learned about the ENERGY STAR New Homes program, as well as to elaborate on their experience with the program process. Four of the five builders had prior involvement or connection to the EPE program. One builder received an invitation to participate from the Las Cruces Home Builders Association.

All five builders felt there were no barriers to program participation. All builders also said the program has been easy to work with, and their representatives were helpful. Three of the five builders said that the incentives used to be better, but it was still worth participating in the program. Four of the builders felt that EPE is very clear on which equipment or services are eligible for rebates, and one wanted more clarity on what is eligible.

All five builders appreciated the marketability value of program participation, allowing them to differentiate themselves from every other builder, and to provide a more energy efficient home for their customers. One builder mentioned having higher customer confidence by participating in the program, and higher customer satisfaction once their customers receive their first utility bill. Another builder expressed that program participation allows him to offer above average homes in terms of quality and energy efficiency, resulting in increased business.

There was no consensus among builders about program influence on the decision of what equipment to install. Three claimed incentives were the main influence for equipment selection. The other two builders selected equipment based on factors such as equipment quality or cost. These two builders appreciated both the freedom to select equipment of their choosing and the incentives. One builder additionally requested more frequent follow ups and check-ins with EPE.

5.6 PROGRAM PROCESS AND MARKET RESPONSE

The evaluation team asked the builders a series of questions about participation in the ENERGY STAR New Homes program. The four builders who participated via the Performance path had an easier time

with the administrative process and associated paperwork required. This was due to the use of a third-party rater service that assists with paperwork. The one builder who participated via the Prescriptive path mentioned that compiling the required paperwork was time consuming and tedious.

Four of the builders discussed that their customers are not familiar with the rebates, and two of them do not bring it up to customers in their discussions. All five of the builders highlight and discuss the energy efficiency upgrades made to their houses as part of the program, and all expressed the value that these energy efficiency improvements bring to their sales and marketing messages to their customers. The four builders who follow the performance path appreciated that they could share with customers that a third party performs an audit of the home and assigns a performance Home Energy Rating System (HERS) rating that they can use in their discussions with customers.

One builder suggested to do away with the prescriptive path unless it was for the whole house, rather than just allowing for two upgrades. They expressed that was a way for other builders to say they are building an energy efficient house while circumventing building a truly energy efficient house. Their suggestion was to do prescriptive for the whole house, or the performance path for the whole house if the goal is to have the builders make more energy efficient homes.

All five builders want the program and the incentives to continue, while also expressing concern about the incentive values dropping over time and their costs going up. They also brought up changes in building codes, incentive amounts, and their increased costs as reasons that could potentially affect their future participation in the program. One of the builders expressed that there is a challenge in finding HERS raters. They requested that if there was a way EPE would help to get more raters available, it would help improve their workflow.

All the builders expressed a strong desire for the continuation of the program and its incentives. However, they voiced concerns over the potential decrease in incentive values coupled with their rising costs. Additionally, they highlighted changes in building codes and adjustments in incentive amounts as significant factors that could influence their future engagement with the program.

5.7 PROGRAM SATISFACTION

The evaluation team asked the builders to quantify their level of satisfaction with the program. Builders were asked to rate their satisfaction on a scale of 1 to 5, with 1 being “not at all satisfied” and 5 being “very satisfied.” Builders could also indicate if they were particularly satisfied or dissatisfied with anything specific. They could also indicate if their customers were satisfied.

Overall, the builders expressed a high level of satisfaction with the program. Two of the builders rated the program a 5 (“very satisfied”), and the remaining three rated it as a 4 (“somewhat satisfied”). When it came to their customers' perspectives, three of the builders rated the program a 5 (“very satisfied”), and one rated the program as a 4 (“somewhat satisfied”).

Given the relatively high level of satisfaction, the builders did not share many direct suggestions for improving the ENERGY STAR New Homes program. One builder suggested that there should be more incentives for spray foam. As building codes get more stringent, there gets to be a point where incentives will need to increase. One other builder wants to continue to have gas run to their subdivisions. One builder requested that an incentive be included for reflective roof coating, since it is a significant efficiency savings but is also expensive and could benefit from including it in the program. Aside from that, the general feeling shared among the builders was that the program is beneficial, and their program representatives have been helpful with getting them the information they needed throughout the process. One builder requested more clarity in the materials on the process and to make it easier for customers to understand.

6 RESIDENTIAL MARKETPLACE

6.1 RESIDENTIAL MARKETPLACE GROSS IMPACTS

The ex ante PY2023 impacts for the Residential Marketplace program are summarized in Table 24. In total, the Residential Marketplace program accounted for less than 1 percent of the ex ante energy impacts in EPE's overall portfolio.

Table 24: PY2023 Residential Marketplace Ex Ante Savings Summary

Program	#of Projects	Expected Gross kWh Savings	Expected Gross kW Savings
Residential Marketplace	103	100,050	4.76

As discussed in the Evaluation Methods section, the evaluation team determined gross realized impacts for the Residential Marketplace program by performing a deemed savings review of the measures purchased through the program. EPE developed an Excel-based calculator to estimate savings for lighting, smart thermostats, room air conditioners, air purifiers, advanced power strips, water fixtures, and kits projects. The factors and assumptions used in these calculators were reviewed by the evaluation team and compared to the New Mexico TRM. The Texas TRM was used for measures that were not in the New Mexico TRM, including air purifiers and TSVs. The EPE Excel-based calculators appear to be in alignment with the New Mexico and Texas TRMs. For the projects that received engineering desk reviews, the evaluation team made updates to projects with smart thermostat measures, which impact the kWh realization rate.

- **Finding 1:** The evaluation team adjusted the quantity of smart thermostats purchased through the program. The ex ante calculation claimed savings for 93 units and the ex post calculation utilized 83 units. Five customers returned equipment, and two rows were created in the program tracking data: one for the purchase and one for the return.
  Recommendation 1: When customers return smart thermostats, zero out savings for both the purchase line items and the return line items.

Table 25 shows the results of the desk reviews and how the resulting engineering adjustments were used to calculate realized savings. For the Residential Marketplace program overall, these adjustments resulted in average engineering adjustment factors of 0.9362 for kWh and 1.0000 for kW.

Table 25: PY2023 Residential Marketplace Gross Impact Summary

Residential Marketplace	#of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	103	100,050	0.9362	93,667
kW Savings	103	4.76	1.0000	4.76

6.2 RESIDENTIAL MARKETPLACE NET IMPACTS

6.2.1 NET-TO-GROSS

The current net-to-gross ratio is 0.7466 for this program. This value was weighted using PY2023 verified savings and the planned NTG factors[19] of 0.6700 for lighting measures and 0.7550 for non-lighting measures. Based on a secondary literature review as described in more detail in the following sections, the NTG factor for lighting measures remains unchanged. For non-lighting measures, the NTG factor of 0.6900 was calculated. These new values will be weighted and applied to the program beginning in PY2024.

Table 26: PY2023 Residential Marketplace Net Impact Summary

Residential Marketplace	#of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	103	93,667	0.7446	69,744
kW Savings	103	4.76	0.7446	3.55

19 Evergreen communication to EPE 7.2.21.

6.2.2 SIMILAR PROGRAMS AND NET-TO-GROSS RATIOS

The evaluation team conducted a review of similar marketplace programs in jurisdictions throughout the country. We then leveraged the measured free-ridership and net-to-gross ratios from those studies to develop PY2023 NTG ratios for the EPE Residential Marketplace LED and Non-LED measures.

The marketplace evaluations found that the free-ridership rates ranged from 0.14 to 0.44 across all the programs reviewed. The differences were even more pronounced between LED and non-LED measures, as explored below.

6.2.3 SUMMARY OF EVALUATIONS OF SIMILAR PROGRAMS

The evaluation team identified three marketplace programs that delineate lighting and non-lighting measures, such as the EPE Marketplace program, as seen below.

6.2.3.1 New York State Electric and Gas Corporation and Rochester Gas and Electric's Online Marketplace Platform

A 2021 evaluation of New York State Electric and Gas Corporation (NYSEG) and Rochester Gas and Electric's (RG&E's) Online Marketplace Platform (OMP) collected survey data from 244 participants. They estimated the program free-ridership rate to be 0.37, with different free-ridership rates for lighting and non-lighting measures (Table 27).[20]

20 DNV. 2021. *Process Evaluation of Online Marketplace, Appliance Recycling, Residential Rebates, and ESRPP Programs*. Prepared for NYSEG/RG&E. https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B34D912BE-4D2D-4096-B1CA-0E0809CA3C69%7D

Table 27: Free-Ridership Rates by OMP Products (NYSEG and RG&E)

Measure	Free-Ridership
Non-Lighting Measures	
Wi-Fi thermostats	0.37
Smart thermostats	0.43
Low-flow showerheads	0.26
Faucet aerators	0.32
Connected home	0.3
APS tier 1	0.31
APS tier 2	0.23
Lighting Measures	
LEDs	0.32
Holiday lights	0.33

The average free-ridership rate for non-lighting measures was 0.32, while the average free-ridership rate for lighting measures was also 0.32. Wi-Fi thermostats have the highest free-ridership rate at 0.43.

6.2.3.2 Northern Indiana Public Service Company's Residential Online Marketplace

A 2022 evaluation of Northern Indiana Public Service Company's (NIPSCO) Residential Online Marketplace program used primary survey data to find free-ridership rates for lighting and non-lighting measures (Table 28).[21]

21 Illume Advising. 2022. *2021 DSM Portfolio Evaluation Report.* https://www.nipsco.com/docs/librariesprovider11/energy-efficiency/2021-dsm-portfolio-evaluation-report.pdf. Prepared for NIPSCO.

Table 28: Residential Online Marketplace Program Free-Ridership Rates by Surveyed Measures (NIPSCO)

Measure	Free-ridership
Non-Lighting Measures	
Wi-Fi thermostats	0.15
Showerheads	0.27
Bathroom faucet aerators	0.17
Smart strips	0.25
Lighting Measures	
Desk lamps	0.44
Reflector LEDs	0.50
Smart LEDs	0.37
LED globes	0.24
LED night lights	0.37

Non-lighting measures had an average free-ridership rate of 0.21, while lighting measures had an average free-ridership rate of 0.38. Across lighting and non-lighting measures, the free-ridership rate was 0.31, similar to the average free-ridership rate from the NYSEG/RG&E evaluation previously discussed.

6.2.3.3 Focus on Energy's Online Marketplace Program

A 2022 evaluation of Focus on Energy's Online Marketplace program, using participant surveys to calculate measure-level free-ridership, found free-ridership rates for the surveyed measures (Table 29).[22]

Table 29: Online Marketplace Free-Ridership Rates by Surveyed Measures (Focus on Energy)

Measure	Free-ridership
Non-Lighting Measures	
Advanced power strips	0.17
Faucet aerators	0.19
Pipe wraps	0.15
Showerheads	0.21
Smart thermostats	0.17
Lighting Measures	
LEDs, omnidirectional	0.23
LEDs, reflectors	0.18
LEDs, 3-way	0.24
LEDs, decorative	0.14
LEDs, globe	0.21

22 Cadmus. 2022. *Focus on Energy Calendar Year 2021 Evaluation Report: Volume II Program Evaluations.* https://s3.us-east-1.amazonaws.com/focusonenergy/staging/inline-files/Eval-Rep-CY-2021-Vol-02.pdfv

Non-lighting measures had an average free-ridership rate of 0.18, and the average for lighting measures was 0.2, for an overall average of 0.19. This rate for Focus on Energy's Online Marketplace program was the lowest rate among the programs this evaluation team reviewed.

To reduce high free-ridership of LEDs, the evaluation team recommended focusing on non-reflector styles and targeting retailers such as grocery and dollar stores where LED uptake is slower, as these strategies can enhance the program's impact and address areas with less LED market penetration.

We also identified two evaluations that established free-ridership rates between 0.263 and 0.41, but they did not delineate between lighting and non-lighting measures. A 2023 evaluation of CenterPoint Energy's Standard and Online Marketplace channels analyzed survey data from 1,702 participants, determining free-ridership to be 0.41.[23] A 2019 evaluation of the Ameren Illinois Online Store found a free-ridership rate of 0.26.[24] The study gathered primary data from a web survey of 908 participants, with supplemental telephone interviews.

6.2.4 CALCULATING FREE-RIDERSHIP FOR THE EPE RESIDENTIAL MARKETPLACE PROGRAM

We averaged the lighting and non-lighting free-ridership rates from the reviewed evaluation to develop EPE Residential Marketplace net-to-gross ratios (NTG) for both. We included the CenterPoint and Ameren free-ridership rates in the calculation of the average free-ridership rates for lighting and non-lighting measures. CenterPoint and Ameren's online marketplaces include both lighting and non-

23 Cadmus. 2023. *2022 CenterPoint Energy Demand-Side Management Portfolio Electric Evaluation Key Findings, Conclusions, and Recommendations Memo*. https://midwest.centerpointenergy.com/assets/downloads/planning/irp/IRP-2022-vectren-electric-dsm-evaluation.pdf

24 Opinion Dynamics. 2020. *Ameren Illinois Online Store NTG Results*. https://www.ilsag.info/wp-content/uploads/AIC-2019-Standard-Initiative-Online-Store-NTGR-Memo-FINAL-2020-08-24.pdf

lighting measures, indicating their evaluated free-ridership rates include both. The PY2023 EPE Residential Lighting free-ridership rate is also included.

Marketplace Program	Lighting Free-Ridership	Non-Lighting Free-Ridership	Average Free-Ridership
NYSEG and RG&E	0.32	0.32	0.32
Northern Indiana Public Service Company	0.21	0.38	0.30
Focus on Energy	0.18	0.2	0.19
CenterPoint Energy	0.41	0.41	0.41
Ameren Illinois	0.26	0.26	0.26
Previous EPE Res. Lighting Free-Ridership	0.40	-	-
Average	0.33	0.31	0.30

We calculated average free-ridership rates of 0.33 and 0.31, respectively, for lighting and non-lighting measures, as well as net-to-gross ratios of 0.6900 for non-lighting EPE Marketplace measures and 0.6700 for lighting measures.[25]

25 The previous net-to-gross ratios for this program were 0.7550 for non-lighting measures (a slight decrease) and 0.6700 for lighting measures (unchanged).

7 SMART STUDENTS

7.1 SMART STUDENTS GROSS IMPACTS

The ex ante PY2023 impacts for the Smart Students program are summarized in Table 30. In total, the Smart Students program accounted for 3 percent of the ex ante energy impacts in EPE's overall portfolio.

Table 30: PY2023 Smart Students Ex Ante Savings Summary

Program	Total # of Students	Expected Gross kWh Savings	Expected Gross kW Savings
Smart Students	7,118	675,369	53.46

Gross impact evaluation activities were devoted to a deemed savings review for various measures throughout the entire program. These calculations were reviewed to ensure that they conform to the New Mexico TRM or some other reliable source.

As discussed in the Evaluation Methods section, the evaluation team determined gross realized impacts for the Smart Students program by performing a deemed savings review for various measures throughout the entire program. EPE has developed Excel-based calculators to estimate savings for all measures. 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. The evaluation team made updates to projects with advanced power strip (APS) measures and in-service-rates, which impact realization rates.

- **Finding 1**: For the high school program, the ex ante savings for Advanced Power Strips utilized deemed kWh and kW values for an Unspecified Application.
  Recommendation 1: Utilize the deemed kWh and kW savings based on the Application of the Advanced Power Strip (i.e., Home Entertainment, Home Office, or Unspecified) as indicated in the NM TRM.
- **Finding 2**: For the high school program, two survey questions regarding the installation of advanced power strips were posed to students. The first asked if the APS was installed and 113 students answered "yes." The second question was a follow up to the first only if students answered "yes," and asked where the APS was installed. There were 128 responses to this

second question and 29 blank answers.
Recommendation 2: A total of 113 students answered "yes" to the first question, thus only 113 students should have answered the second question. The evaluation team recommends combining questions to avoid student confusion. The ex post calculation multiplied the percent of responses to each location from the second question with the 113 students who answered "yes" to the first question. This weighted number was then multiplied by the deemed savings for each installed location.

- **Finding 3**: For both elementary and high school programs, the ex ante savings utilized in-service-rates based on "data reported from program participants."
  Recommendation 3: The evaluation team utilized participant survey responses to calculate in-service-rates. The number of students who indicated a measure was installed was divided by the total number of responses (i.e., blank responses did not factor into this total).
- **Finding 4**: The implementer applied a 67% net-to-gross ratio to LEDs in both the high school and elementary school kits.
  Recommendation 4: Net-to-gross ratios are applied to realized gross savings and not expected gross savings. The net-to-gross ratio for the PY2023 Smart Students program is 1.000.

Table 31 shows the results of the deemed savings review and how the resulting engineering adjustments were used to calculate realized savings. For the Smart Students program overall, these adjustments resulted in average engineering adjustment factors 1.1810 for kWh and 1.5595 for kW.

Table 31: PY2023 Smart Students Gross Impact Summary

Smart Students	#of Projects	Expected Gross Savings	Engineering Adjustment Factor	Realized Gross Savings
kWh Savings	7,118	675,369	1.1810	797,606
kW Savings	7,118	53.46	1.5595	83.36

7.2 SMART STUDENTS NET IMPACTS

The planned NTG ratio of 1.0000 from the Evergreen 2020 EMV Report remains unchanged.

Table 32: PY2023 Smart Students Net Impact Summary

Smart Students	#of Projects	Realized Gross Savings	NTG Ratio	Realized Net Savings
kWh Savings	7,118	797,606	1.0000	797,606
kW Savings	7,118	83.36	1.0000	83.36

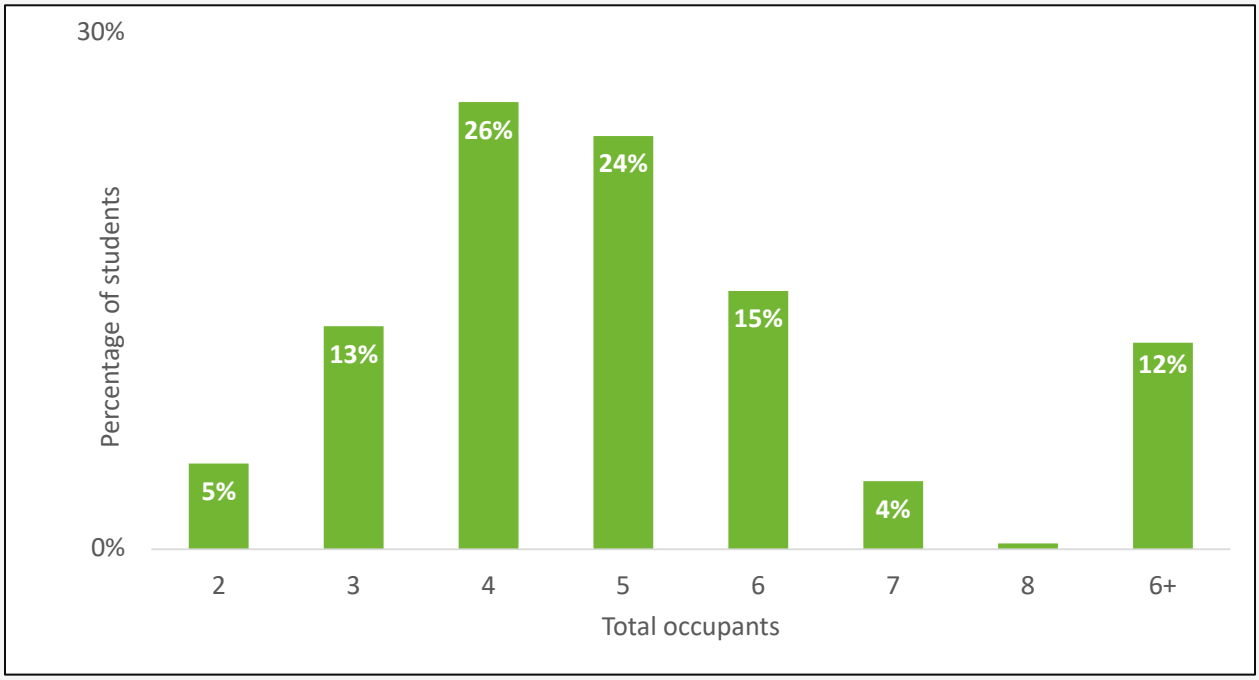
7.3 EPE SMART STUDENTS PROGRAM LITERATURE AND SURVEY REVIEW

EPE provided the evaluation team with data from the student, parent, and teacher surveys that were distributed along with the kits as part of the program. The evaluation team conducted analysis on these data to assess satisfaction and feedback associated with the program. We also reviewed previous evaluations of similar programs to supplement our analysis.

7.3.1 HOME CHECK-UP STUDENT SURVEYS

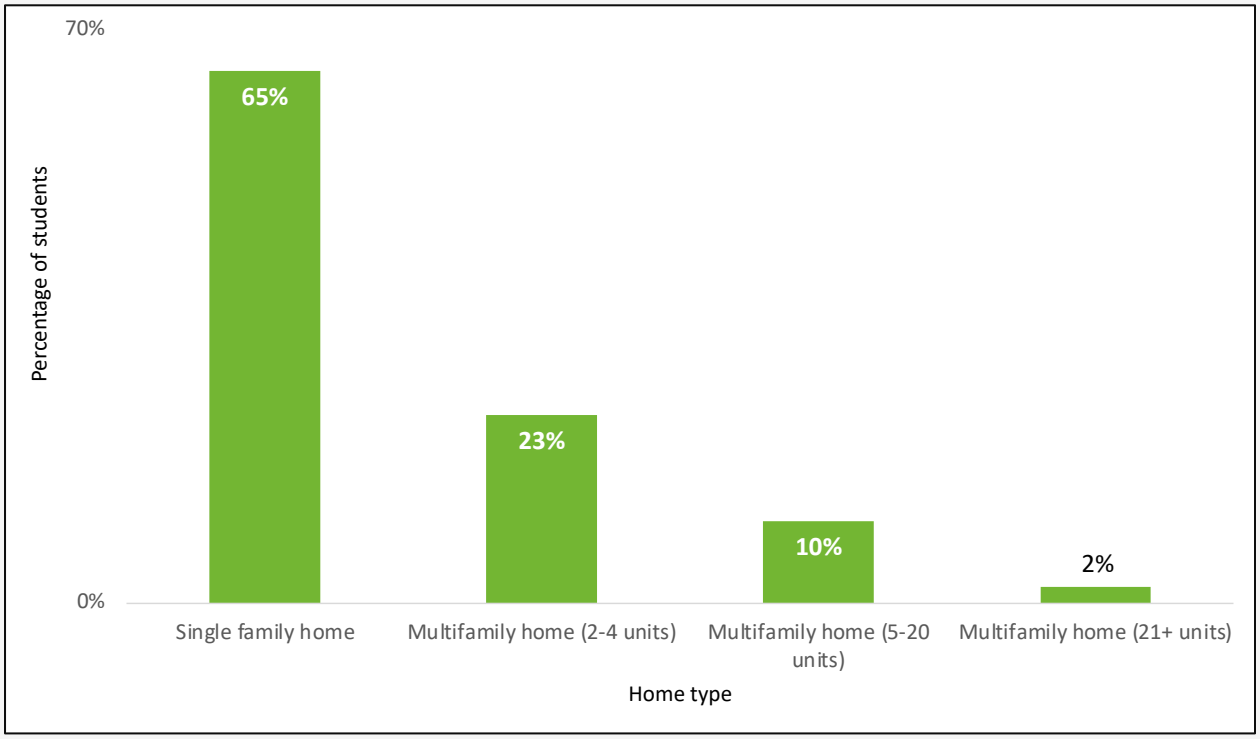
The high school and elementary students were asked a series of "Home Check-Up" questions related to household demographics and features. Students were first asked how many children and adults live in their home. Figure 4 shows that the majority of students come from households with four to six total occupants, comprising a cumulative 65 percent. The percentage declines with larger household sizes as evidenced by less than 5 percent comprising the seven and eight-person households. The “6+” category, representing 12 percent of students, reflects the categorical grouping of students who reported “5+” adults and/or “5+” children, underlining the presence of larger families.

Figure 4: Total Household Occupants (n = 720)



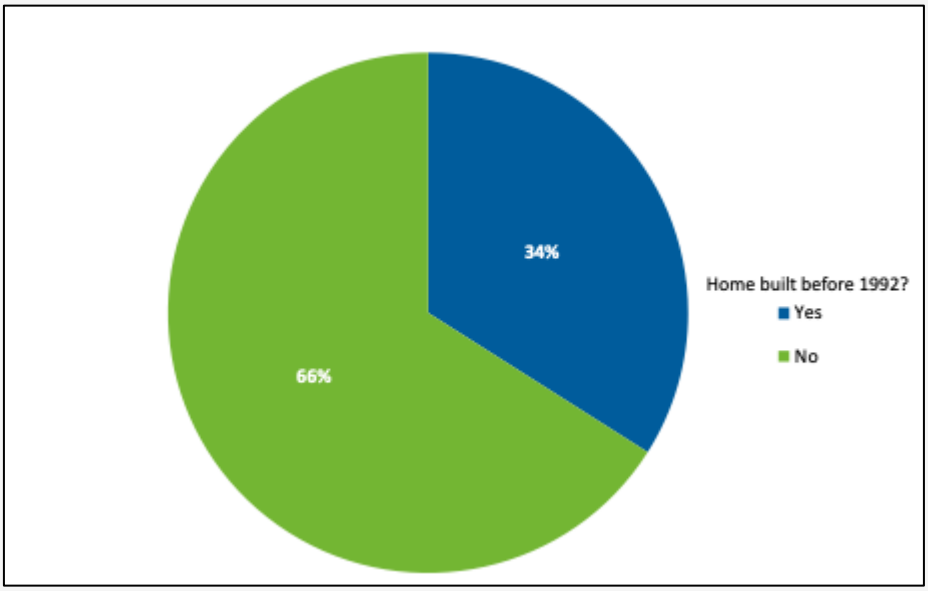
The students were also asked about the type of home they live in. Figure 5 shows that approximately two-thirds of the families live in single family homes, while the rest live in multifamily homes, which are traditionally more difficult to reach with efficiency programs.

Figure 5: Home Type (n = 708)



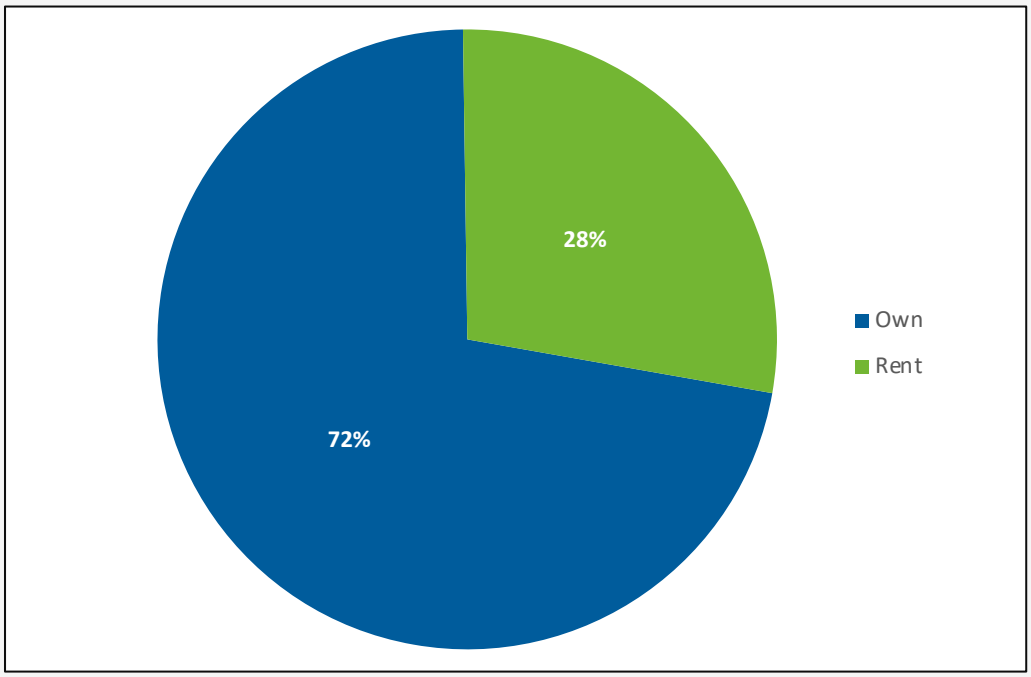
The students were surveyed on whether their home was built before 1992. Figure 6 shows that 34 percent of the students said that their home was built before 1992, with the remaining students stating otherwise.

Figure 6: Home Age (n = 700)



The students were also asked if their family owned or rented the house in which they live. Figure 7 shows that 72 percent of the students' families own their homes compared to 28 percent that rent.

Figure 7: Home Ownership Type (n = 714)



7.3.2 ELEMENTARY SCHOOL PROGRAM QUIZZES

Pre- and post-program quizzes were conducted among the elementary students to gauge the effectiveness of the program in enhancing their understanding of energy efficiency and conservation. The pre- and post- program surveys, results and questions shown in Figure 8, Figure 9, and Figure 10, exhibited a significant improvement in correct responses, increasing by 20 percent or more, for most of the questions.

Particularly remarkable are the responses to questions 5 and 9 (Figure 9 and Figure 10 respectively), which ask about the correct term for stored energy, "potential energy", within and the term for an item that continues to use electricity even when its switch is in the “off” position, a phantom load. Here, there was a 38 and 36 percentage point increase in correct responses respectively. The overall outcomes suggest the program raised students' knowledge of energy and energy-efficiency.

Figure 8: Percentage of Correct Responses to Pre- vs Post-Program Quiz (Questions 1 to 3)

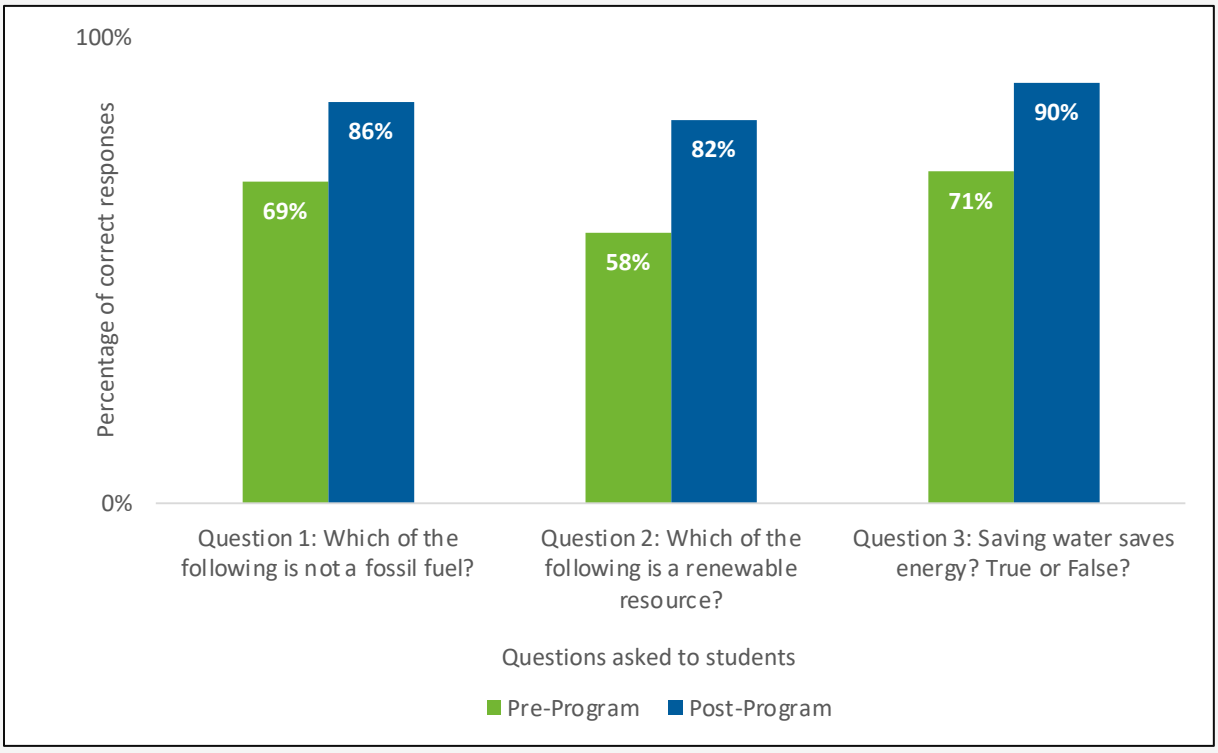


Figure 9: Percentage of Correct Responses to Pre- vs Post-Program Quiz (Questions 4 to 6)

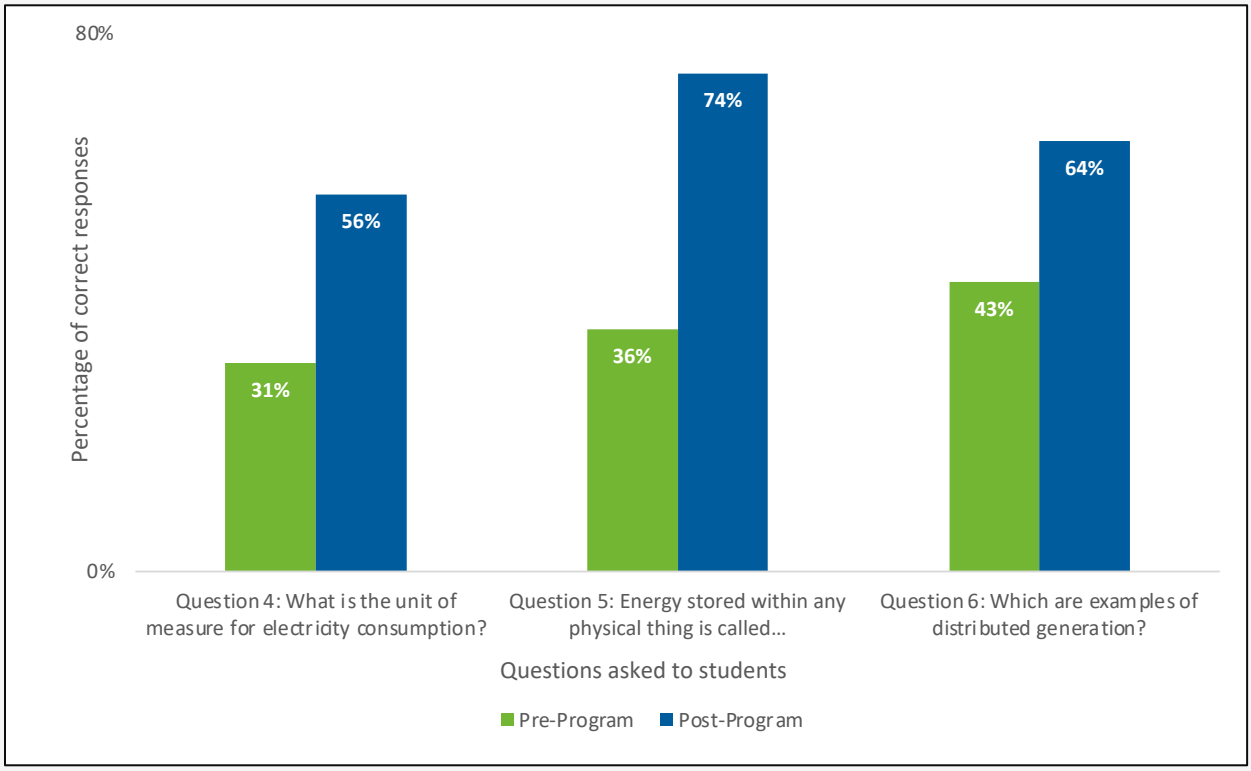
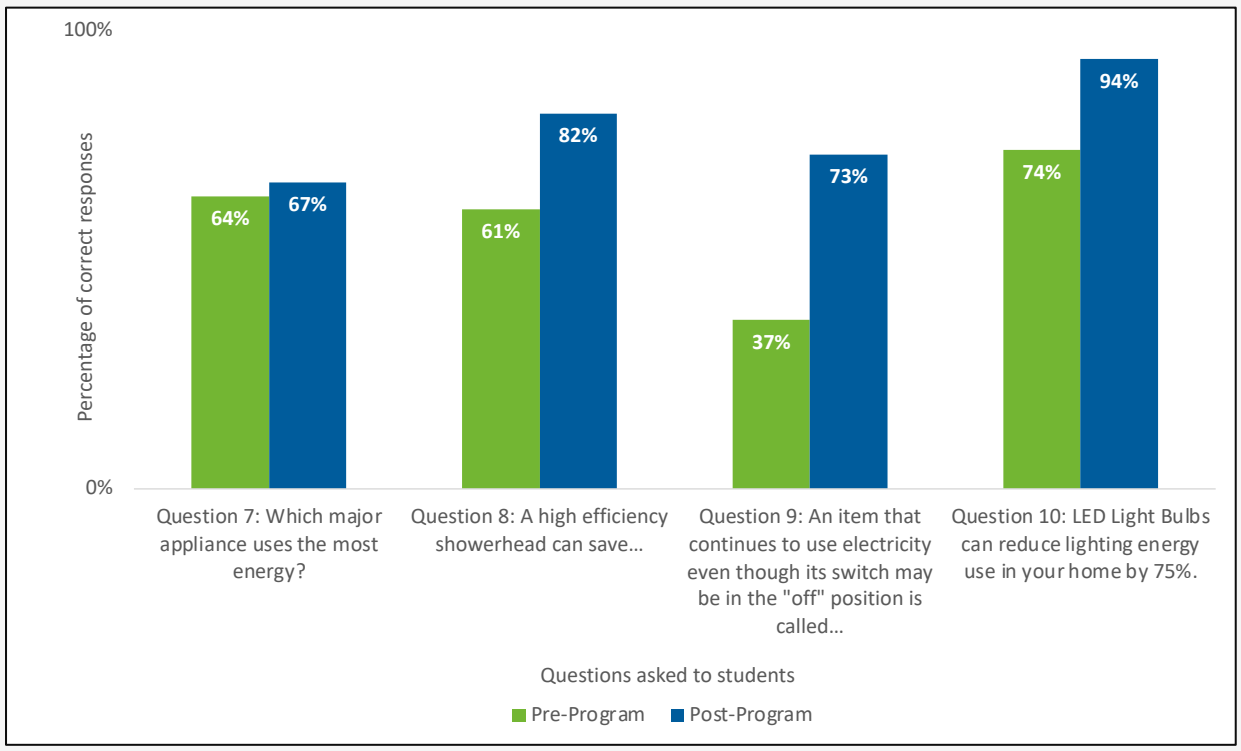


Figure 10: Percentage of Correct Responses to Pre- vs Post-Program Quiz (Questions 7 to 10)



7.3.3 HOME ACTIVITIES STUDENT SURVEYS

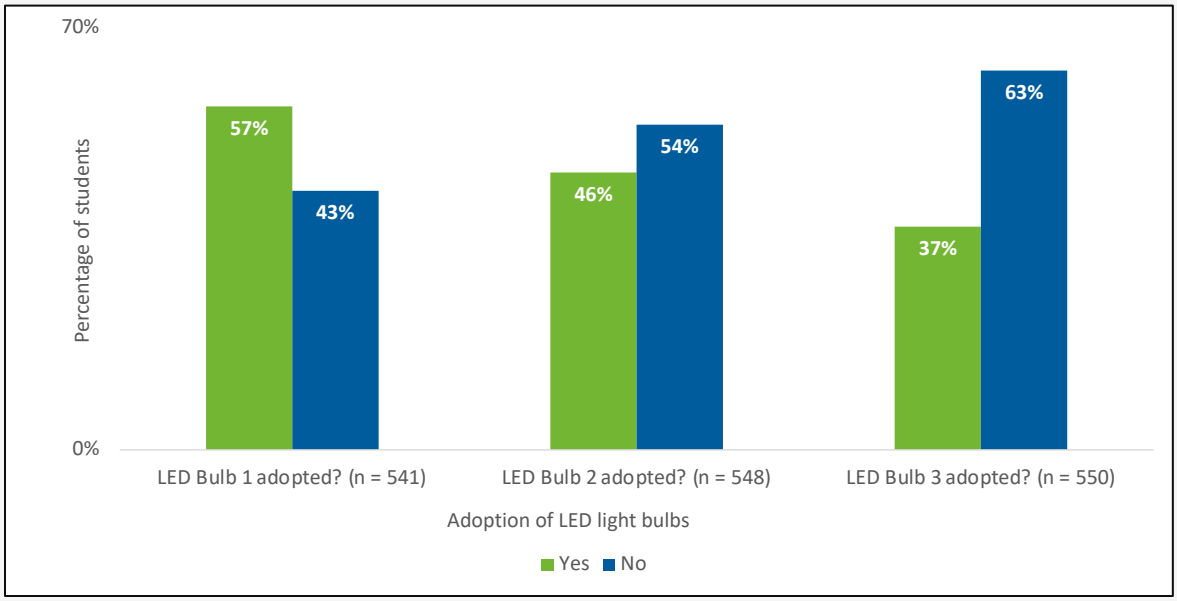
Both elementary and high school students were asked about the installation of the energy-efficient measures and implementation of the suggested behaviors included in the student kits. The section below describes these results.

7.3.3.1 Elementary School Students

The elementary school students were asked if their family installed the high-efficiency showerheads and aerators. A slight majority of 53 percent reported not adopting the high-efficiency showerheads, compared to the 47 percent that did. Similarly, when asked about the adoption of the aerators, 51 percent reported not adopting the aerators.

Regarding the installation of energy-efficient LED bulbs in their households, the responses among the elementary school students highlighted varying levels of adoption across different numbers of LED bulbs. For the first LED bulb, an majority of 57 percent indicated that their families had adopted them (Figure 11). However, the adoption of the second LED bulb saw a reversal, with 46 percent of students reporting adoption compared to the 54 percent not doing so. The adoption of the third LED bulb exhibited a more significant reversal, with 63 percent of families not installing these bulbs.

Figure 11: LED Bulb Adoption among Elementary School Students



The elementary school students were also asked if their families raised the temperature on their refrigerator. Out of the 549 students who responded to this question, 70 percent stated that they did not.

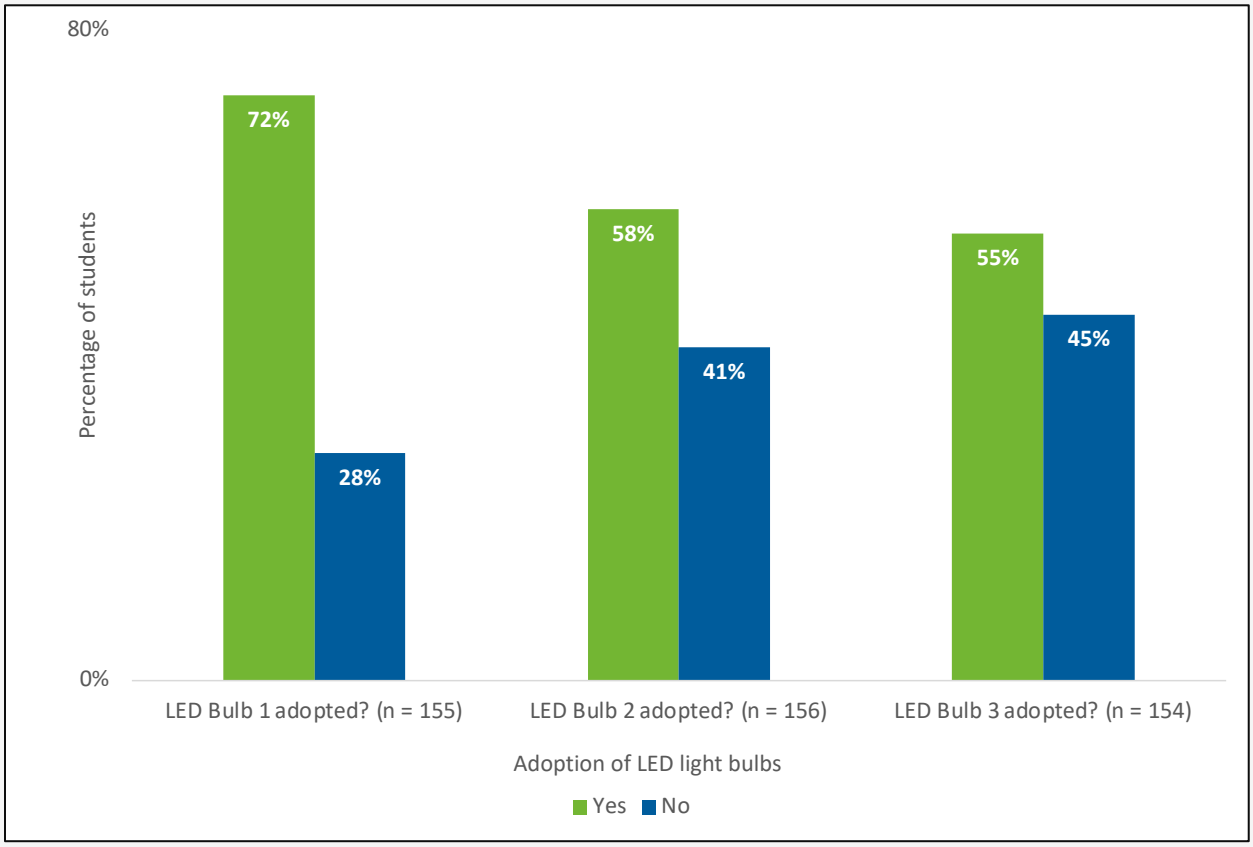
The elementary school students were asked by how much their families turned down the thermostat in winter for heating, and by how much they turned it up in the summer for cooling. Of the 549 and 548 respondents respectively, many reported that they did not adjust their thermostat (48% for winter and 42% for summer, respectively). Among those who did make adjustments, the most common change was by 3 to 4 degrees (21% for heating in the winter and 25% for cooling in the summer).

The elementary school students were also asked if their families lowered the settings of their water heater. Sixty-eight percent stated that they did not, compared to the 32 percent that did.

7.3.3.2 High School Students

The high school students were asked about installation of the LED bulbs. The high school students' families installed more of the first, second, and third LED bulbs. Although, similar to the elementary school homes, the percentage of bulbs installed decreases with each bulb, as seen by the drop in adoption from 72 percent to 55 percent (Figure 12). Nevertheless, the percentage of students whose families did adopt the bulbs is greater than those whose families did not, suggesting a more robust acceptance of energy-saving technology in their homes. When asked about the adoption of the Wi-Fi-connected LED light bulb 60 percent stated that their families installed the bulb.

Figure 12: LED Bulb Adoption among High School Students

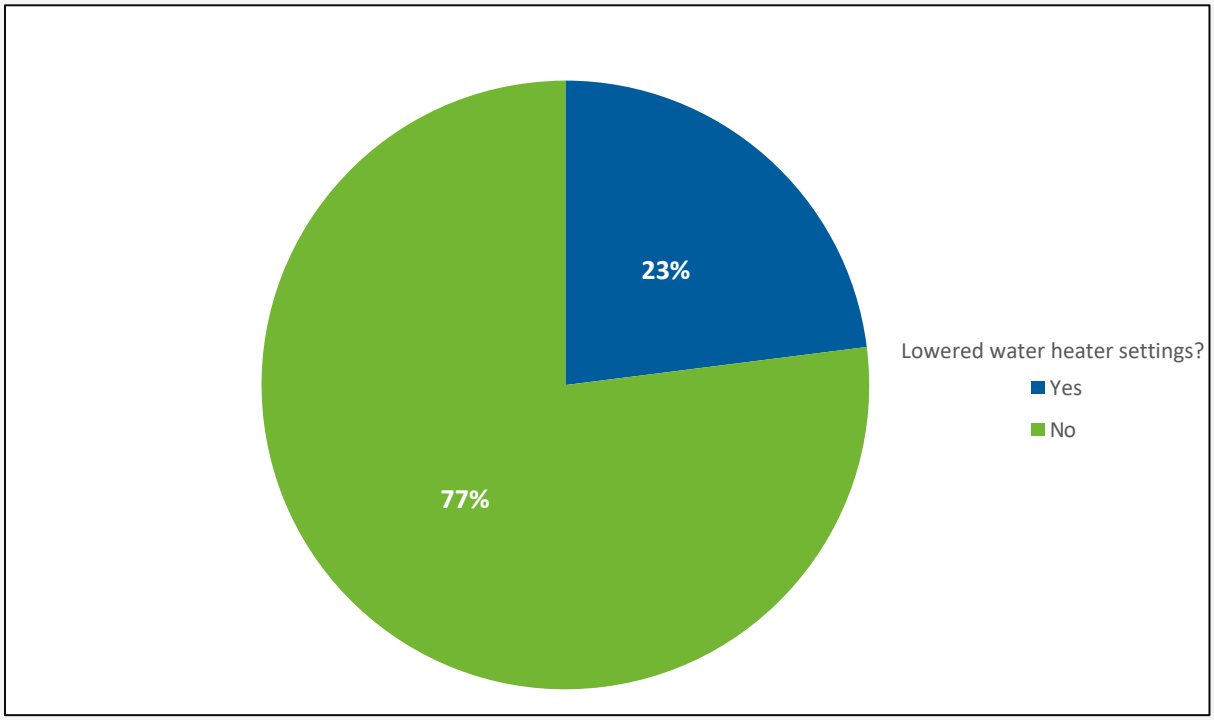


The high school students were asked if they installed the advanced power strip in their home. Out of the 154 students that responded, 43 percent stated that they installed it by themselves, 21 percent stated that they did it in collaboration with their family, and 9 percent reported someone else doing it for them. The remaining 27 percent of the respondents reported not having installed the power strip at all.

Similarly to the elementary school students, the high school students were asked by how much their families turned down the thermostat in winter for heating, and by how much they turned it up in the summer for cooling. Like the elementary school students, many high school students reported that they did not adjust their thermostat (41% for the winter and 38% for the summer, respectively). Among those who did make adjustments, the most common change in terms of heating was by 3 to 4 degrees (27%) and 5 or more degrees for cooling (29%).

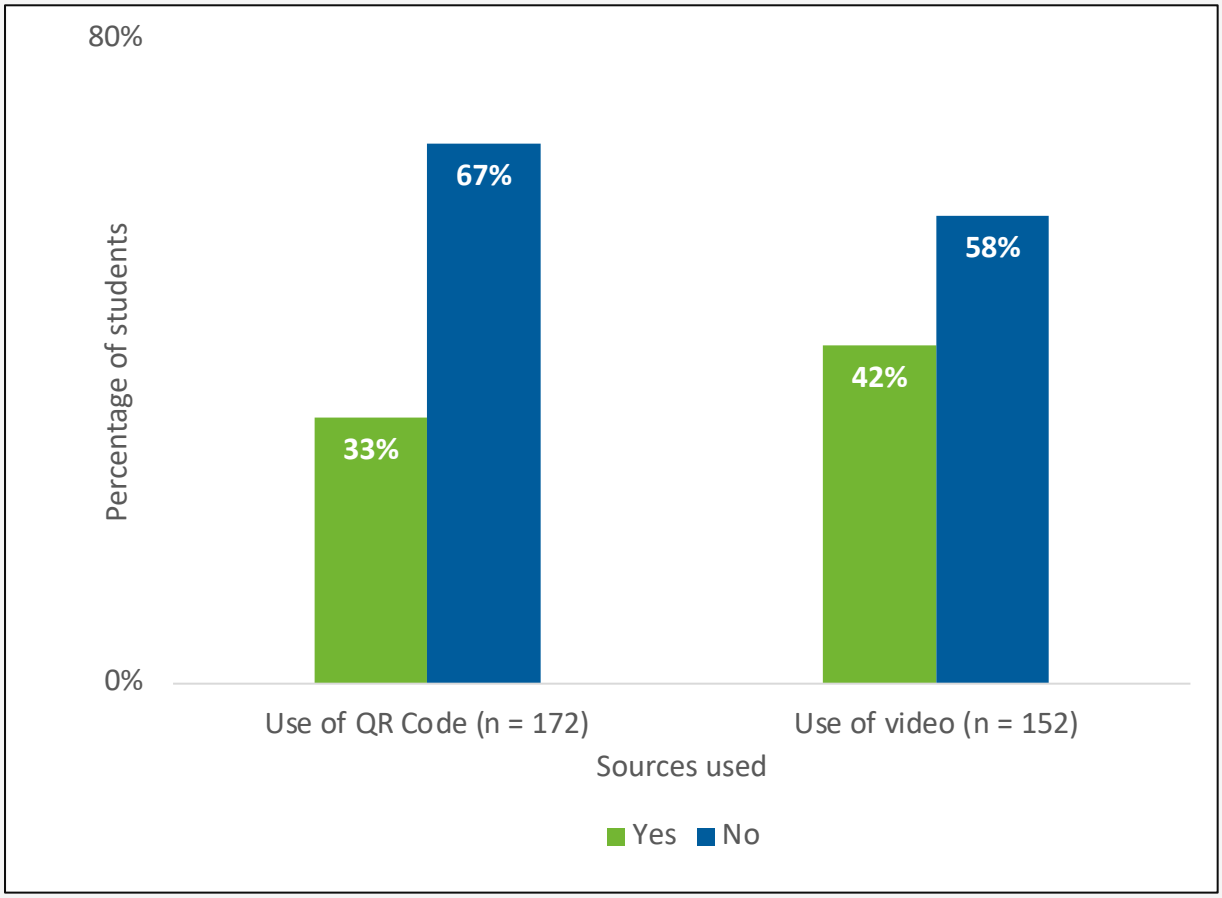
The high school students were asked if their families lowered the settings of their water heater. Similar to the 68 percent of elementary school students, 77 percent of high school students stated that they did not, compared to the 23 percent that did (Figure 13).

Figure 13: Change in Water Heater Settings (n = 148)



The high school students were asked if they used the QR code or watched the video that was designed to teach them how to read their EPE electric bill. Sixty-seven percent of students reported not using QR codes, while 33 percent did use them (Figure 14). Videos proved to be more popular than QR codes (42% reported using them), although neither tool reached a majority of students. There may be a need to explore more effective or accessible means of communication that resonate with a greater proportion of the student body. This preference for video also reflects broader trends in learning styles and the increasing importance of visual media as a tool for education.

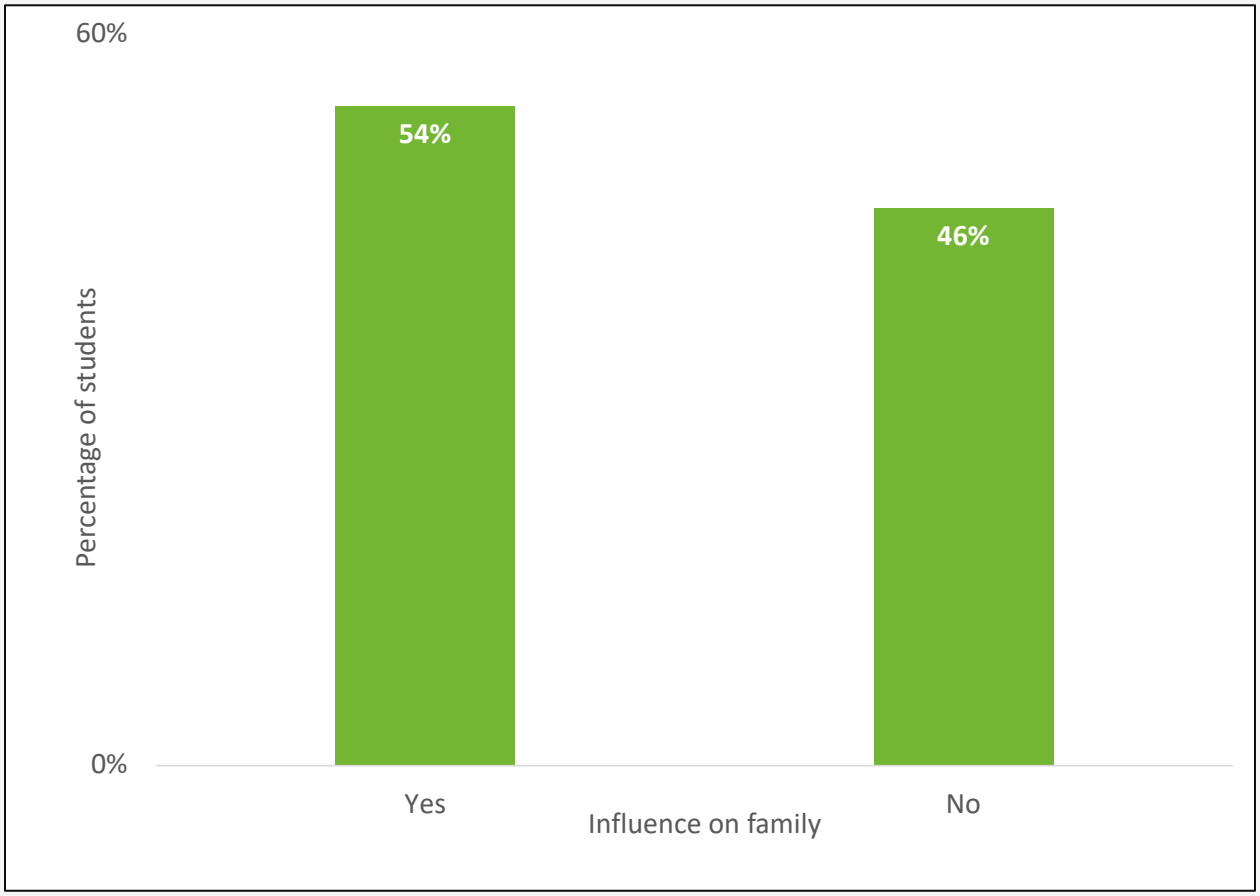
Figure 14: Utilization of QR Code and/or Video to Understand Electric Bills



7.3.3.3 Program Influence and Satisfaction

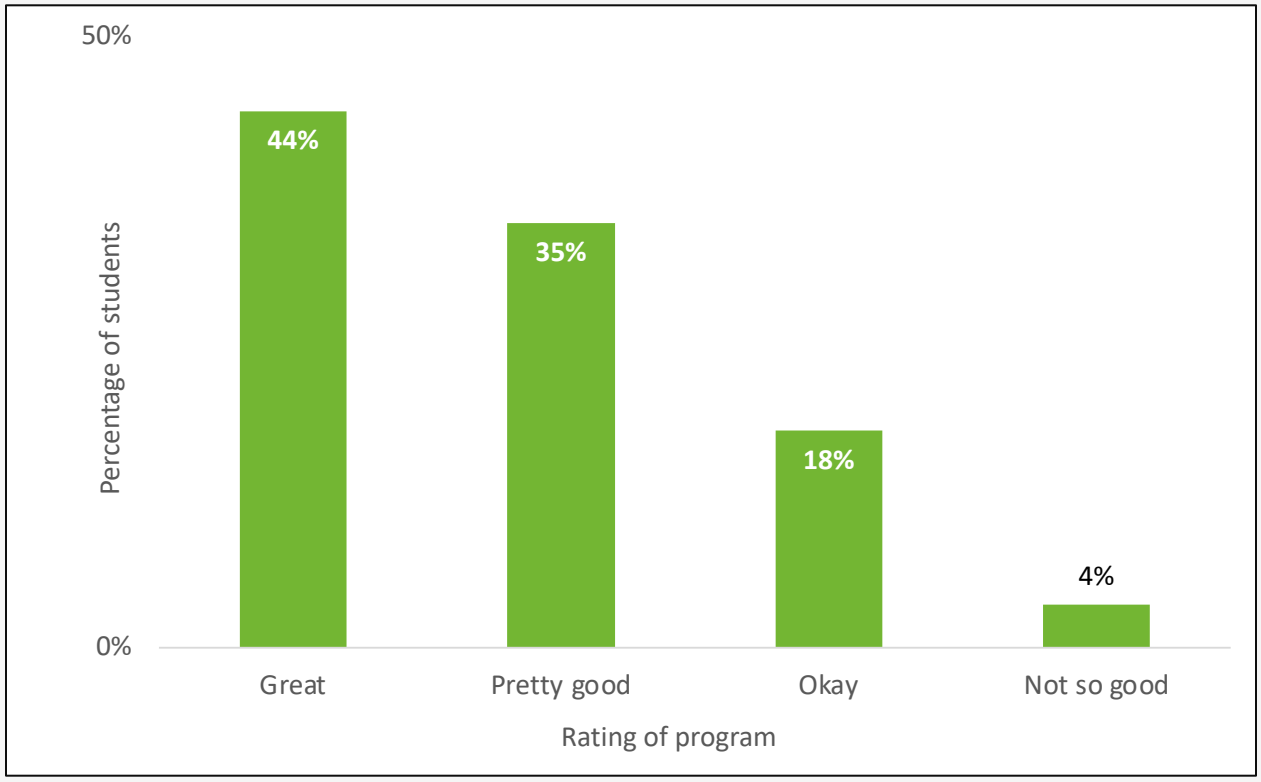
Within the Home Activities section of the survey, elementary and high school students were asked about the influence of the program and their satisfaction. First, students were asked if the program had any influence on how their family used energy. Fifty-four percent of the respondents reported that their family's energy use was influenced by the program (Figure 15), suggesting that these educational initiatives can play a crucial role in shaping energy consumption.

Figure 15: Program Influence on Family's Energy Use (n = 694)



All students were asked to rate their satisfaction with the program. Most students (44%) rated the program as "great" with a combined majority (79%) positively describing the program as either "great" or "pretty good" (Figure 16). Only four-percent of students rated the program as "not so good". This high level of satisfaction with the program highlights the effectiveness of the program's content and delivery, potentially fostering a supportive educational environment for these students to foster more energy-conscious behavior in the long term.

Figure 16: Students' Rating of the Program (n = 702)



7.3.4 PARENT SURVEYS

The parents of students participating in the program were also invited to provide their thoughts on the program. The three parents that were surveyed shared unanimous praise for the program's user-friendliness and educational value. The parents reported that the program was easily understood by themselves and their children. They appreciated that the program provided practical tools and information that they planned to continue using.

All parents expressed a desire for the continuation of the program in local schools, underlining its perceived value within the community. When asked about program aspects that resonated the most with them, parents pointed out aspects such as hands-on activities with their children, the provision of useful information that prepares students for future independence, and the introduction of practical home adjustments that enhance daily living.

Feedback for EPE was also highly positive, with one parent saying program as "great" and another extending thanks for the program's contribution to their child's education and its tangible benefits at home. Another parent also commended the program for its capacity to facilitate practical learning experiences and for its role in fostering informed adjustments within households. No specific

recommendations for improvement were voiced in the shared comments, suggesting high overall satisfaction with the program and its execution by EPE.

Other programs similar to EPE's Smart Students program have historically received positive feedback from parents, who mainly commented on the ease of installation and use of the kits and their appreciation of how the program was educating students on energy efficiency.[26, 27] The feedback from the parents illustrates a strong endorsement of energy efficiency and practical education programs in schools in forming an informed and proactive approach to energy conservation.

7.3.5 TEACHER SURVEYS

Elementary and high school teacher surveys yielded 20 complete responses. They overwhelmingly reported the program effectively engaged students and was well-received. The consensus was the educational materials were clearly written and well-organized, with 16 out of the 20 teachers "strongly agreeing." Additionally, the majority indicated that the kit's products were user-friendly, with 13 out of 20 teachers "strongly agreeing."

Furthermore, the majority of teachers (16 out of 20) noted that their students' parents supported the program. Three teachers reported the opposite, while one chose not to respond. Similarly, when asked whether they would conduct the program again or recommend it to colleagues, the majority (17 and 19 out of 20, respectively) were affirmative. Seventeen teachers expressed interest in enrolling in the program again if their school was eligible next year.

The surveyed teachers highlighted that the hands-on component was especially well-received among their students, with students appreciating the take-home kits, which not only provided a practical extension of classroom learning but also allowed them to engage in learning with their parents. The

26 Navigant Consulting, Inc. 2017. *ComEd: National Theatre for Children's Middle School Kits Program Evaluation Report*.

27 Evergreen Economics. 2023. *Evaluation of the 2022 Southwestern Public Service Company's Energy Efficiency Programs*.

provision of the kits was another highlight, as students could see the real-world application of conserving water and electricity in their homes. It also gave students a sense of contributing positively to their households. Additionally, educational activities, such as word searches and workbooks, added an element of fun while reinforcing key concepts about energy generation and conservation.

The teachers expressed a deep appreciation for the program's alignment with educational standards, noting its effectiveness in engaging the students. Educational materials such as student workbooks and a teacher resource book were highlighted as standout features, with the content being both clear and well-organized. Teachers appreciated the new, smaller books, which they found to be a helpful update. The program's structure encouraged new levels of parental involvement and allowed students to act as facilitators, fostering an interactive learning environment. The provision of science lessons, coupled with a curriculum that included additional charts and activity ideas, was deemed highly engaging and informative as the teachers unanimously felt that the content contributed positively to the students' understanding of science concepts.

The feedback was overwhelmingly positive from the teachers, stating that they hope to see such programs continue in the future.

Some teachers suggested enhancements such as the addition of more materials to the kits, an increase in student worksheets, and the incorporation of digital resources such as slideshows and videos to complement the curriculum. Timing adjustments were also proposed to prevent overlap with busy academic periods such as the state's testing season, with a preference for earlier in the school year. There was also a request for the materials in Spanish to cater to a wider student demographic. Other programs have similarly brought up such suggestions, suggesting the earlier distribution of kits for the sake of convenience for both the teachers and students and the deployment of in-language materials.[28]

The Smart Students program leverages a deemed 1.0000 NTG value.

28 Opinion Dynamics. 2018. *CLC and NGRID Education Kits Program Evaluation.*

8 ENERGY$MART (LI)

8.1 CUSTOMER INTERVIEWS

The EPE Energy$mart (LI) program provides weatherization and other efficiency improvements at no cost to low-income customers. Other measures provided include LEDs, thermostats, and water conservation measures for customers with electric water heaters. As part of the PY2023 evaluation, the evaluation team conducted telephone interviews with customers who participated in the EPE Energy$mart (LI) program. The evaluation team was provided with contact information for 37 customers, and a total of four interviews were successfully completed. However, one customer only partially completed the interview questions.

- The interview focused on the following topics:
- Role of contractor;
- Awareness and motivations for participation; and
- Role and influence of the EPE Energy$mart program.
- Due to the limited number of customers we interviewed, this section presents results in a qualitative fashion.

8.2 ROLE OF CONTRACTOR

All four customers interviewed used a contractor for their energy efficiency equipment installations. None of the customers had selected their equipment prior to discussing with the contractor. In one case, the contractor provided multiple equipment options. Two of the customers said that the contractor discussed the energy efficiency of the equipment options with them, and one customer decided to change the energy efficiency of the equipment after speaking with the contractor. Two of the customers said that the contractor was highly influential on their decision to purchase an energy efficient model. One customer said that the contractor was somewhat influential, and one customer said that the contractor was not very influential.

8.3 AWARENESS AND MOTIVATIONS FOR PARTICIPATION

The customers were next asked a series of questions about how they became aware of the EPE Energy$mart (LI) program and what their motivations were for participating. Three customers mentioned that they learned of the program through a referral. After learning of the program, two of the customers chose to increase the energy efficiency of the equipment they installed. Customers were

asked to evaluate the significance of various factors that influenced their decision to select specific energy efficient upgrades. Among the customers, environmental impact reduction was rated as extremely important by all three individuals, underscoring its significance in their decision-making process for home upgrades. Similarly, enhancing home comfort and adhering to contractor recommendations were also deemed extremely important by three customers, reflecting their influence on the selection of energy-efficient upgrades. Financial incentives were viewed as extremely important by two customers and very important by another, indicating a strong motivation driven by economic benefits. Regarding energy bill reduction, two customers rated it as extremely important, whereas one considered it somewhat important, suggesting a varied perception of its significance.

8.4 PROGRAM ROLE AND INFLUENCE

The customers were then asked a series of questions about program aspects to understand the factors that influenced their decision to choose energy efficient equipment. None of the customers had previously participated in any rebate programs offered by EPE. Customers were asked to assess the impact of various factors associated with the program on their decision to participate. The influence of the rebate's dollar value varied among customers; two found it to be extremely influential, and one considered it to be a little influential. Contractor recommendations were considered “extremely influential” by three customers, highlighting the importance of professional advice in their decision-making. In terms of the utility's marketing or promotional materials, their impact varied, with ratings of extremely influential and a little influential by different customers.

Customers were asked about when they became aware of the program and how likely they would have been to participate in the program’s absence. Two customers became aware of the rebate program after determining the desired energy efficiency level of their equipment, whereas one customer learned about the program prior to making this decision.[29] They were then asked to evaluate, on a

29 At this juncture in the interview process, one customer elected to discontinue their participation by prematurely ending the call. Subsequent references to customer responses pertain to the remaining three individuals.

scale of 0 to 10,[30] how likely they would have been to select the same level of energy efficiency in the absence of the rebate. One individual indicated that they were extremely likely to select the same energy efficiency level, regardless of the rebate, while another indicated that they were a little likely to do so. Furthermore, when considering the timing of their equipment installation and the availability of the rebate, one customer felt extremely likely to proceed with the installation at the same efficiency level even without the rebate, whereas two others felt a little likely to do so. When asked to describe the influence the rebate program had on the efficiency level of the equipment they chose, responses varied. One customer described it as "very good," another was uncertain (stating "I don't know"), and one simply provided a rating of "10." This variety in responses highlights the complexity of factors driving energy-efficient equipment selection among customers, indicating that while financial incentives such as rebates are significant, the influence of professional advice and personal values around energy efficiency also play crucial roles.

30 On the 0 to 10-point scale, 0 indicated "extremely unlikely" and 10 indicated "extremely likely."

9 LOAD MANAGEMENT PROGRAMS

9.1 COMMERCIAL LOAD MANAGEMENT

9.1.1 SUMMARY

As the statewide evaluator for New Mexico, EcoMetric was asked to verify savings calculated by Trane for purposes of settlement with participating customers. Average portfolio commitments and load reduction estimates are presented in Table 33. EcoMetric was able to replicate Trane's estimation of event reductions.

Table 33: Portfolio Results Summary per Event

Portfolio Committed Capacity (kW)	Mean Trane Gross Reported Savings (kW)	Mean Validation of Settlement Claims (kW)
1,195	1,196	1,196

Based on the findings of the 2023 evaluation, we offer the following recommendations:

- Since the participants are schools and the program is active during their summer break, EPE should keep in mind that the dispatchable load reduction is a function of the available load. We observed a trend on Fridays in July when the schools appear to be closed. While the baseline methodology credits some amount of load reduction, the loads were already down prior to the event.
- Agreements between EPE, Trane, and program participants should more clearly spell out how performance is measured when a site opts-out of an event or technical issue prevents the DR sequence from initiating. We saw this for the largest site on July 20th. While the site's load was slightly above the baseline, we set the performance to zero since the technical issues were documented. EcoMetric plans to work with EPE and Trane to memorialize how negative performance estimates will be handled going forward.

9.1.2 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. The Summer 2023 portfolio committed capacity was 1,195 kW for all events. Individual participant committed capacities ranged from 20 kW to 750 kW.

During the summer 2023 demand response season, EPE and the program implementer (Trane) called nine demand response events as summarized in Table 34. Each event lasted two hours, seven of which were from 3:00 PM to 5:00 PM Mountain Daylight Time (MDT).

Table 34: 2023 Demand Response Event Summary

Date	Weekday	Commitment (kW)	Start Time (MDT)	End Time (MDT)	Max Temp in Interval (°F) – Las Cruces
9-Jun	Friday	1,195	3:00 PM	5:00 PM	88
19-Jun	Monday	1,195	5:00 PM	7:00 PM	100
28-Jun	Monday	1,195	3:00 PM	5:00 PM	105
6-Jul	Thursday	1,195	3:00 PM	5:00 PM	105
7-Jul	Friday	1,195	3:00 PM	5:00 PM	105
12-Jul	Wednesday	1,195	3:00 PM	5:00 PM	104
13-Jul	Thursday	1,195	3:00 PM	5:00 PM	105
19-Jul	Wednesday	1,195	3:00 PM	5:00 PM	109
20-Jul	Thursday	1,195	4:00 PM	6:00 PM	107

9.1.3 VALIDATION OF SETTLEMENT CLAIMS

EcoMetric was asked to verify the savings calculated by Trane for purposes of settlement with participating customers. Trane's gross reported savings are displayed in Table 35.

Table 35: Gross Reported Savings

Date	Portfolio Committed Capacity (kW)	Portfolio Load Reduction (kW)	Actual Enabled Capacity Percentage
9-Jun	1,195	2,235	187%
19-Jun	1,195	1,585	133%
28-Jun	1,195	1,274	107%
6-Jul	1,195	1,205	101%
7-Jul	1,195	1,069	89%
12-Jul	1,195	1,052	88%
13-Jul	1,195	1,081	90%
19-Jul	1,195	981	82%
20-Jul	1,195	278	23%
Average	1,195	1,196	100%

9.1.4 METHODOLOGY

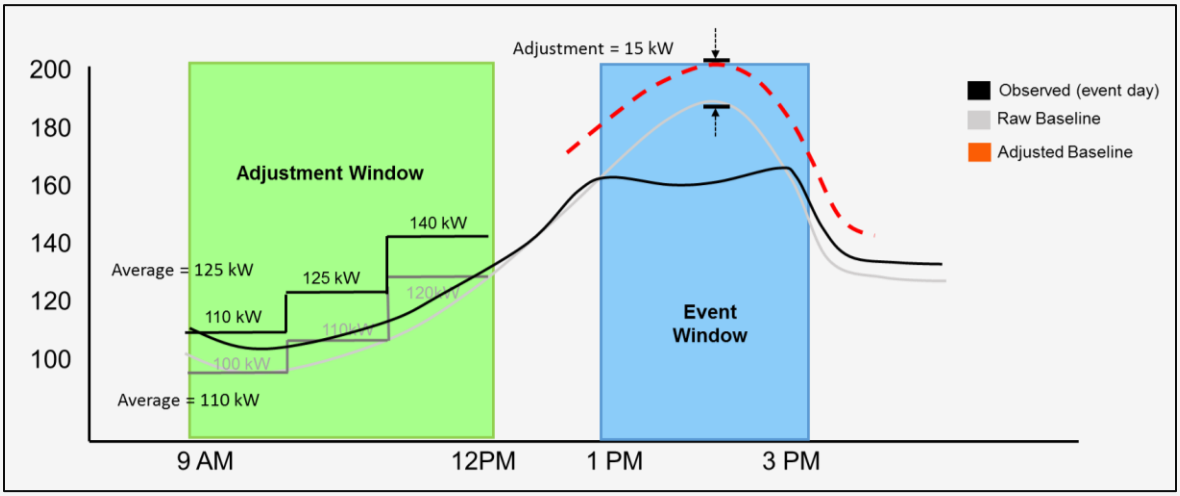
In 2018, EcoMetric worked closely with EPE and Trane to establish a mutual understanding of the mechanics of the DR performance calculation. This calculation centers on the baseline, or estimate of what load would have been in the participating facilities on event days if DR had not be called. The settlement calculations called for a "high 8-of-10" baseline with a capped, symmetric day-of 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 2023, the Event Window was 3:00 PM to 5:00 PM for seven of the nine events, was 4:00 PM to 6:00 PM once, and was 5:00 PM to 7:00 PM once.
- 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 2023, the Adjustment Window was 11:00 AM to 2:00 PM for seven of the nine events, was 12:00 PM to 3:00 PM once, and was 1:00 PM to 4:00 PM once.
- 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. We examine the impact of these shifts later in the report and conclude the cap is useful.
- 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. This is 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 17: Illustration of Adjusted Baseline Calculation



The program methodology is silent on what happens when a participating site's load exceeds its baseline during an event. This was the case for the largest site on 7/20/2023, Based on discussion with

Trane and New Mexico State University (NMSU) we understand that a communication issue prevented the DR control sequence from initiating for the event. The small negative performance estimate is just noise in the baseline – NMSU did not intentionally raise load. We set the site performance for the day to 0 kW against a 750 kW commitment.

9.1.5 RESULTS

EcoMetric recreated all of Trane's "high 8-of-10" calculations, as seen in Table 36.

Table 36: Gross Reported Savings

Date	Trane's Portfolio Load Reduction (kW)	EcoMetric's Portfolio Load Reduction (kW)	Trane / EcoMetric
9-Jun	2,235	2,235	100%
19-Jun	1,585	1,585	100%
28-Jun	1,274	1,274	100%
6-Jul	1,205	1,205	100%
7-Jul	1,069	1,069	100%
12-Jul	1,052	1,052	100%
13-Jul	1,081	1,081	100%
19-Jul	981	981	100%
20-Jul	278	278	100%
Average	1,196	1,196	100%

In 2022 Trane struggled to correctly implement the "8-of-10" method. They frequently used the top 4 or 5 days instead of 8. The errors were likely compounded by Trane's practice of keeping each site's interval data in multiple files corresponding to event days and calculating each saving estimate independently in separate excel files. This resulted in correctly calculating the savings only 19% of the time. In addition, multiple overlapping data sources resulted in occasional conflicting load histories. It was suggested that some errors could have been avoided if Trane consolidated data and made calculations in one place.

This year, Trane continued its practice of maintaining the data and evaluating savings in separate excel files for each site for each event. Unlike last year, however, EcoMetric did not find any data integrity issues and was able to replicate Trane's calculations.

9.1.6 DETAILED RESULTS

9.1.6.1 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. EcoMetric'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, EcoMetric 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 12:00 AM.[31] 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 because of pre-cooling or other load-shifting activities.

Table 37 shows the portfolio net energy savings for each event and in total. Total energy savings across the nine events was 21,983 kWh.

31 The cutoff hours of 8:00 AM and 12:00 AM 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 but do not seem to converge again later that night.

Table 37: Energy Savings by Event Day

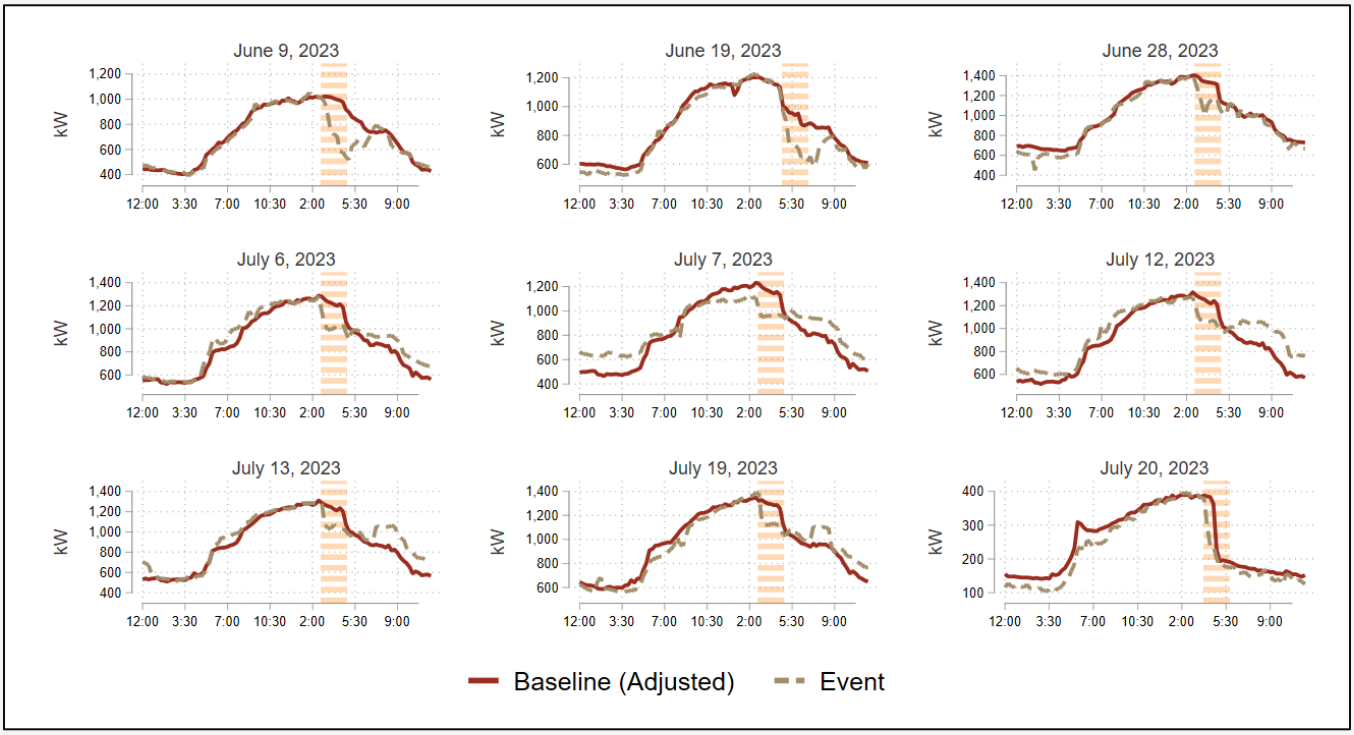
Date	Energy Savings (kWh)
9-Jun	6,333
19-Jun	6,129
28-Jun	4,378
6-Jul	-2,363
7-Jul	235
12-Jul	-6,489
13-Jul	-4,629
19-Jul	-804
20-Jul	1,576
Total	4,367

EcoMetric's 8-of-10 estimate for the mean savings of 1,196 kW during events translates into a total of 21,528 kWh savings during event hours. When compared to daily total savings estimate in Table 37 of 4,367 kWh, this suggests that much of the energy avoided during event hours was shifted to the hours before and after the events. The next section demonstrates limited evidence of pre-event demand shifting, but large demand impacts in the hours after an event during the hottest days in July, presumably as sites ramp up AC after the event to cool the buildings back down their typical indoor temperature.

9.1.6.2 Baseline and Event Load Visualization

Figure 18 shows the average event-day and baseline-day (calculated using the same 8-of-10 methodology used in prior sections of the study) site loads for each event. There is a clear reduction in load during event hours on all nine event days. Note that July 20th's baseline and y-axis are different because NMSU, by far the largest site, did not participate in that event so their load is removed from both the baseline and event load.

Figure 18: Average Baseline and Event Loads for each Event

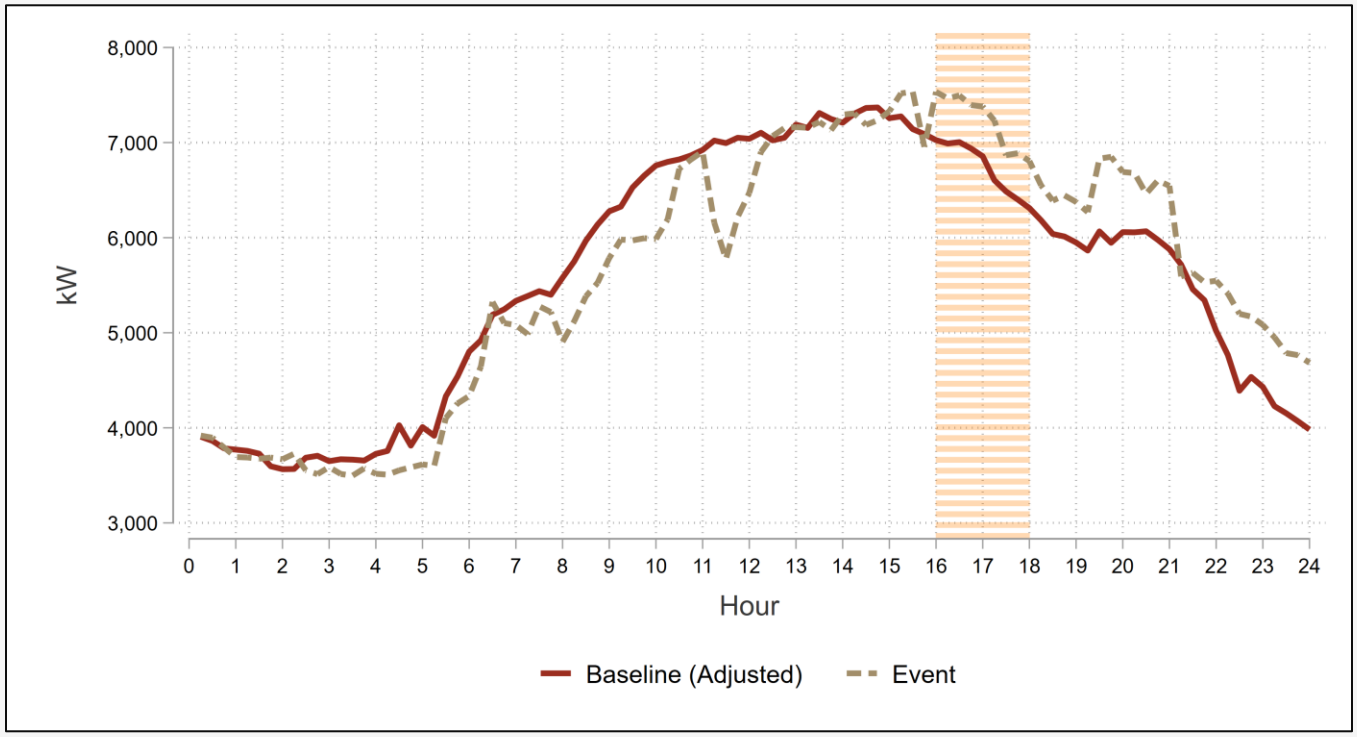


There does not seem to be pronounced anticipatory displacement of demand before events. In the first two events, which were notably cooler than the rest, the reduction in demand persists for at least another hour after the event. However, during events on the hottest days in mid-July, sites seem to be increasing demand in the evenings. This may be the result of increased AC usage returning to a desired temperature after the event. In the future, if fewer cool event days are called, EcoMetric anticipates lower total energy savings as these sites shift demand to the evenings.

9.1.6.3 Negative Performance from Non-Participation

Figure 19 shows adjusted baseline and metered load for NMSU on 7/20/2023. A communications issue prevented the DR control sequence from happening so the site effectively skipped this event. The EcoMetric team set performance equal to zero kW for the day rather than counting negative performance. Going forward, we recommend EPE document in its agreements with Trane and program participants how performance will be measured on days when a site opts out of an event or fails to perform for technical reasons. On such days, there is a 50:50 chance that the metered load will exceed the baseline so it will be important to document how performance estimates are treated for settlement and end-of-season reporting.

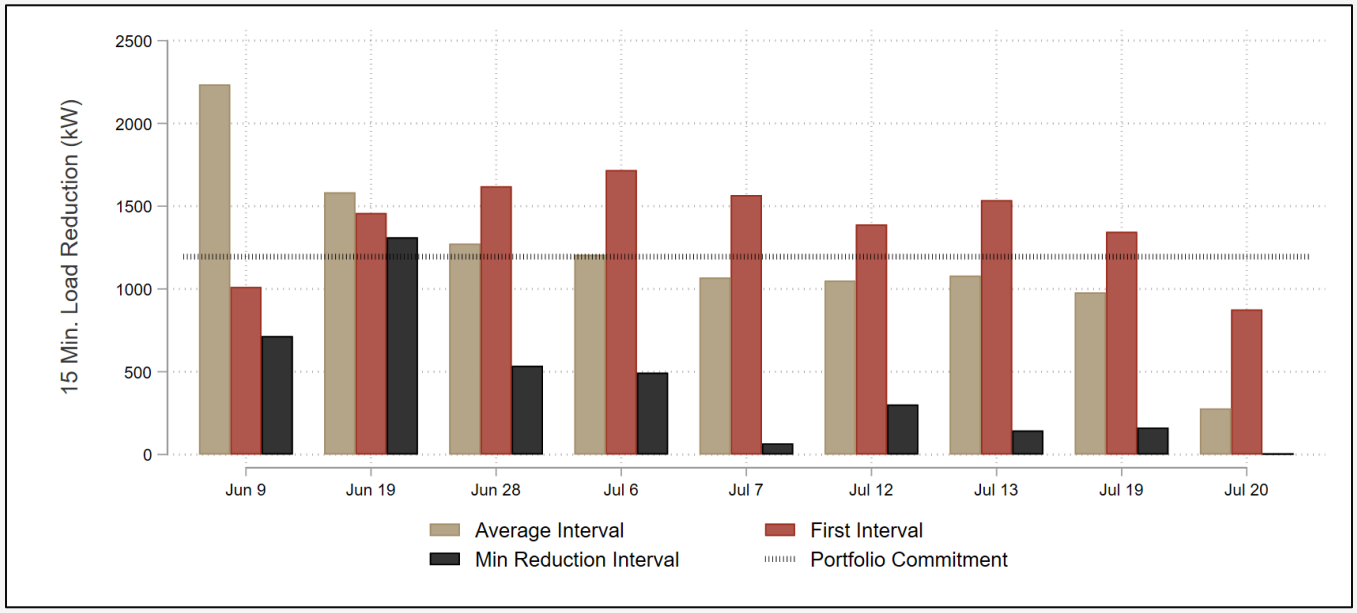
Figure 19: NMSE Baseline and Observed Load on July 20th



9.1.6.4 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 20 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 tan, corresponds to the values presented in Table 36.

Figure 20: Average, Minimum, and First-Interval Load Reduction by Event



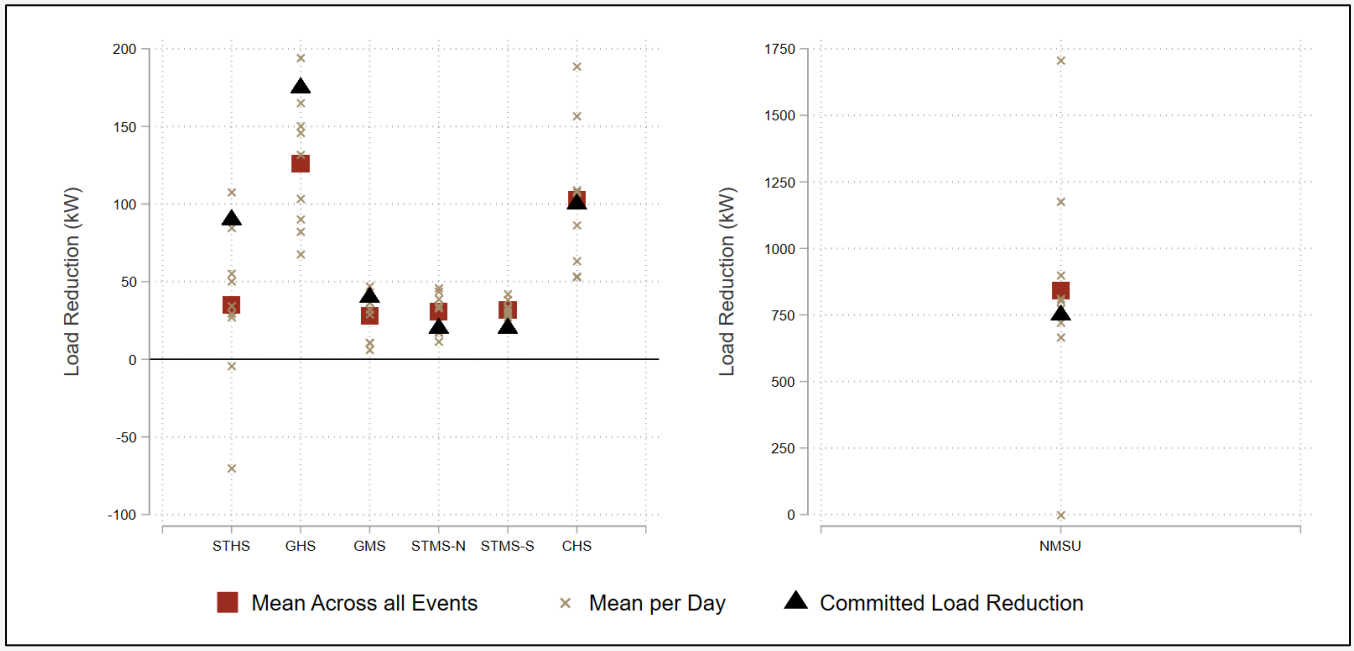
In almost every case, demand reductions start strong, but tail off later in the two-hour period. This is not because demand rebounds in the period, but generally because demand remains flat while the baseline drops (as schools turn off their AC on non-event days as students and faculty leave campus at the end of the day). Schools can offer real demand reductions at the beginning of most event periods (typically 3:00 PM) but struggle to provide load reductions later in the afternoon (i.e., at 5:00 PM).

9.1.6.5 Load Reduction by School

Figure 21 shows the variance by site of the average event load reductions across the nine summer 2023 DR events. The gold x marks represent average load reduction for each of the nine events, and the maroon square represents the average load reduction across all nine events. The black 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 two sites – Santa Teresa High School and Gadsen High School – consistently underperformed their committed reductions. Most notably, NMSU, who for the past two years performed below their committed reductions on all event days, exceeded their goal for all but three days, although they did not participate in the final event day, which brought down their mean contribution. NMSU's mean load reductions was padded out by far exceeding their goal of 750 kW during the first two event days, which were notably cooler than the rest.

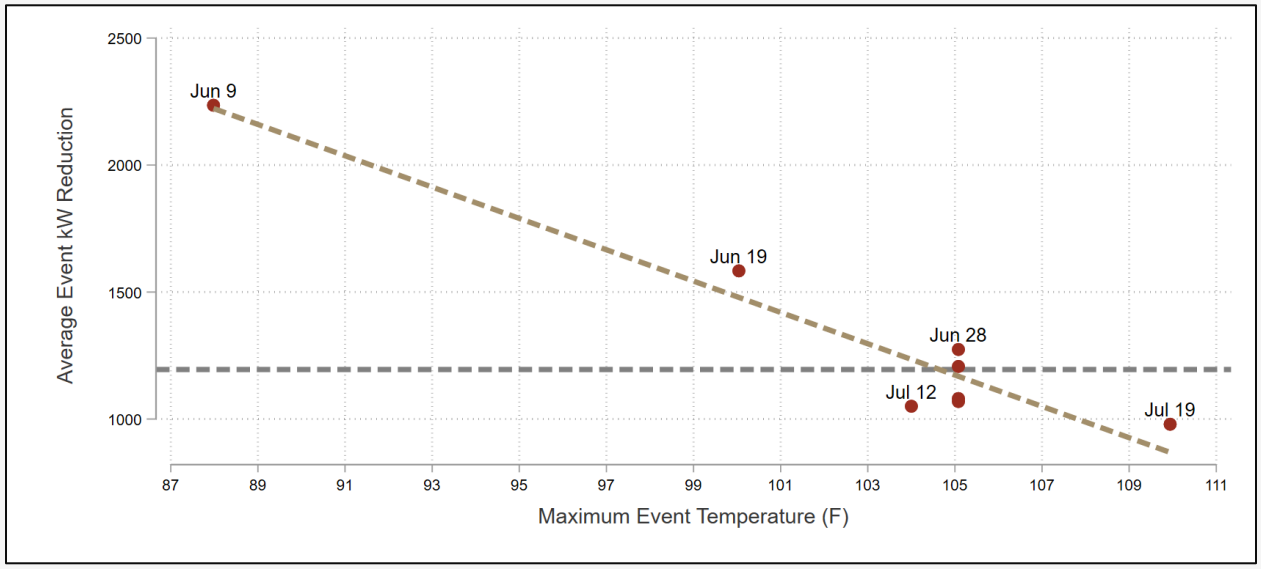
Figure 21: Average Event Reduction by Day



9.1.6.6 Reductions by Max Temperature

Figure 22 shows the relationship between the maximum temperature recorded during each event interval and the mean demand reduction in kW. The July 20th event, which NMSU did not participate in, was omitted. The gold line is fit to minimize the sum of squared residuals, while the gray dotted line represents the reduction goal of 1,195 kW. The event on June 9th was a significant outlier in both temperature and demand savings and was a pre-scheduled event.

Figure 22: Average Event Reduction by Day

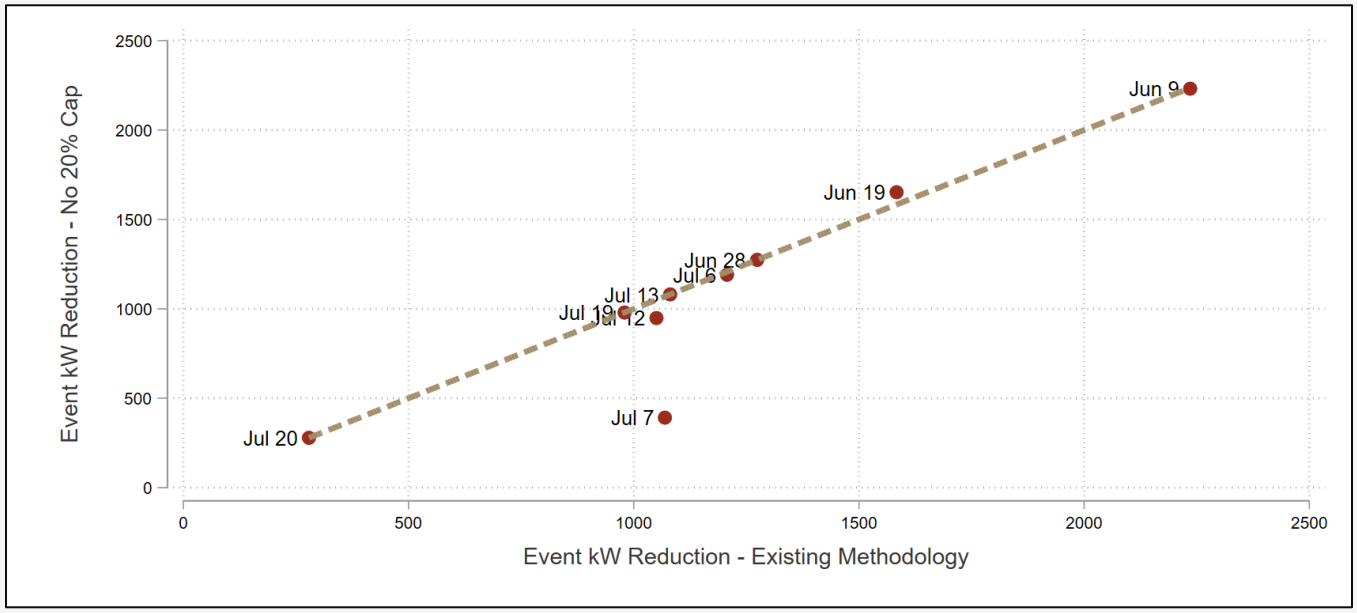


While the line of best fit clearly is impacted most by three outliers, June 9, June 19, and July 19, it strongly suggests that the demand reduction possible from these sites is closely related to temperature with performance dropping at the most extreme temperatures.

9.1.6.7 Assessing the Usefulness of the Adjustment Cap

One feature of 8-of-10 settlement baseline is that the day-of adjustment is capped at +/- 20%. With numerous hot days in 2023, the adjustment cap may not be adequately increasing the baseline, thus underestimating reductions. EcoMetric re-estimated the 8-of-10 baselines with full uncapped day-of adjustments and re-calculated event savings, seen on the y-axis of Figure 23 vs existing estimates on the x-axis and a y = x dotted line for reference.

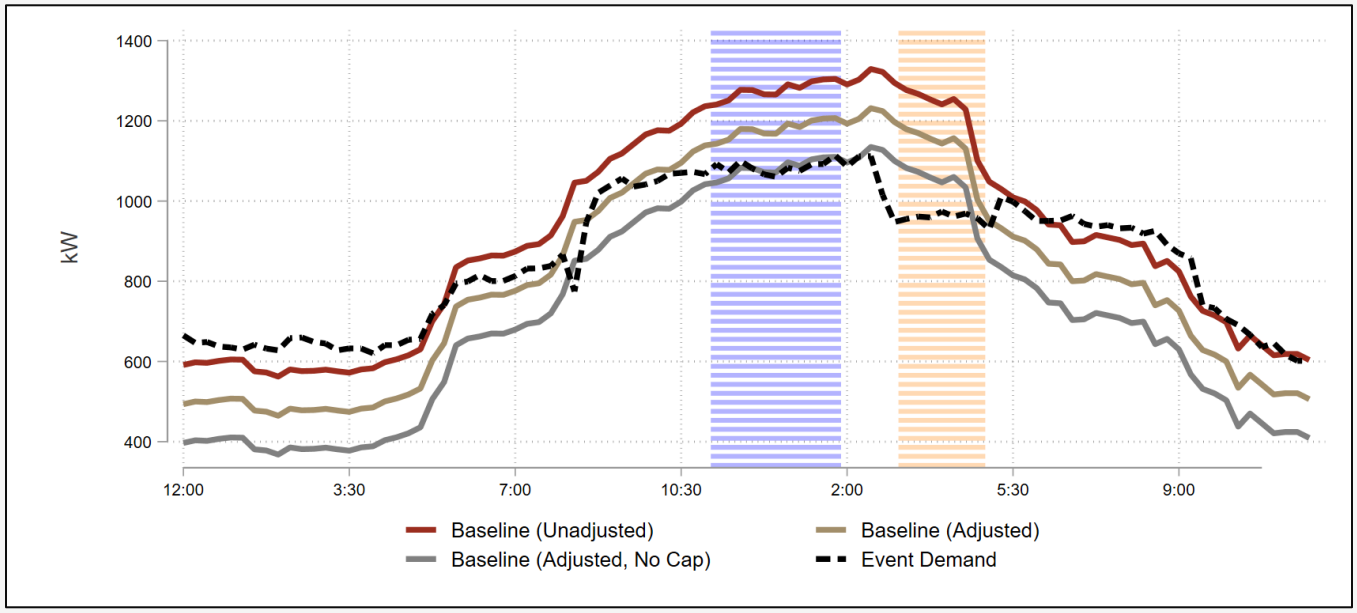
Figure 23: kW Reductions with Capped and Uncapped Adjustments



It appears the cap does not result in underestimated savings, and is rarely used, with most estimates unchanged or almost unchanged (appearing right on the y = x line). The one difference is July 7th, where a *negative* cap was implemented, and requires its own investigation. A deeper dive into the July 7th event day, seen in Figure 24, shows a completely unadjusted 8-of-10 baseline in maroon, the normal adjusted baseline with a 20% cap in gold, and a baseline with no adjustment cap in gray. The actual demand (black dotted line) was above the baseline in the early morning, suggesting that sites were still recovering from the event the day before, or were dealing with a very hot night in general.

The event demand during the day never reached the unadjusted baseline, and in fact, during the adjustment period (in blue), is well below 20% of the unadjusted baseline. There is some response during the event, but the dip is smaller than normal. The estimated savings from each baseline is recorded in the bottom of Table 38. Without any adjustment, the delivered savings would have been 1,753 kW, with the 20% cap, the savings were 1,069 kW, and without any cap, the savings would have only been 392 kW.

Figure 24: Baselines Calculated with Different Adjustments, July 7, 2023



To better understand this scenario, EcoMetric plotted actual energy demand of each site against the unadjusted baseline in

Figure 25. It is immediately evident that the demand shape does not look at all like the baseline for 5 of the 7 sites. EcoMetric found that July 7th was a Friday, and most sites' (except NMSU) demand looked more like a weekend on Friday June 23rd, Friday June 30th, and Friday July 7th. It appears that those schools simply did not turn on their AC those days. Because of this, their demand shapes did not match their baselines, meaning the 8-of-10 methodology was inappropriate.

EcoMetric instead suggests a better way to measure the delivered savings would be to either zero out their savings for that day (since it is clear little effort was made to reduce demand by those sites on those days) or to create a new baseline. EcoMetric created a new baseline for those five sites by using the two prior Fridays and two prior weekends (for a total of 6 days), and then adjusted those baselines without a cap based on the normal 11:00 AM to 2:00 PM pre-period. EcoMetric did not cap this adjustment because while the prior weekends and Fridays look like July 7th in shape, they did not always look like July 7th in level. The new baselines are displayed in Figure 26, where the unadjusted baselines are in maroon, and the (recommended) uncapped baselines are in gold.

Figure 25: Demand vs. Unadjusted Baseline by Site, July 7, 2023

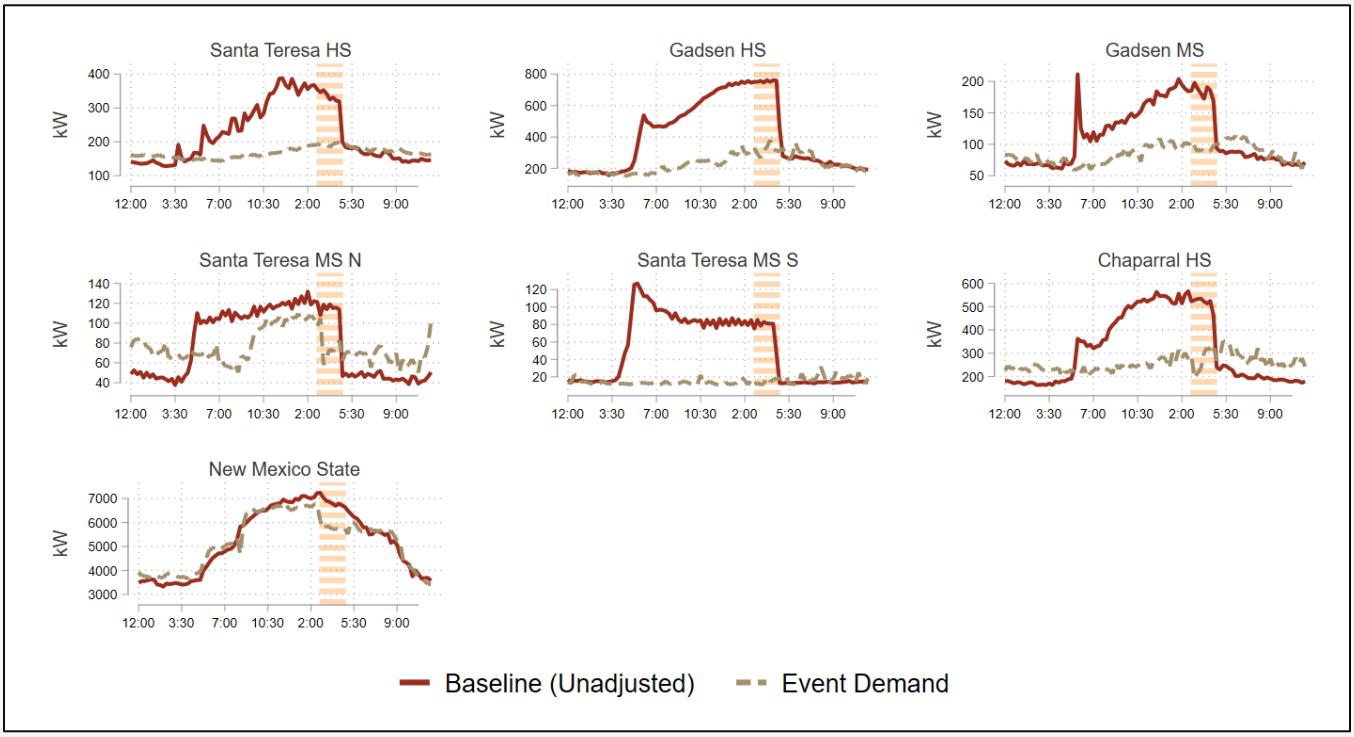
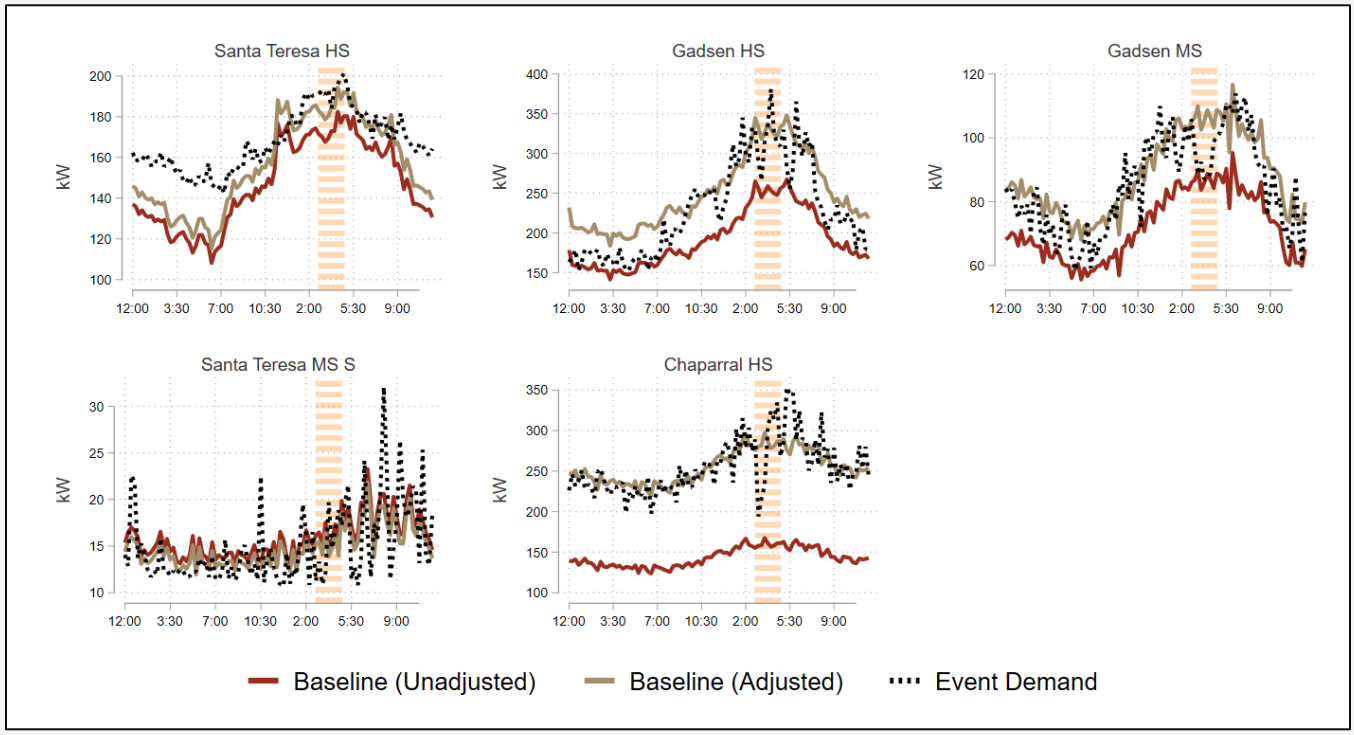


Table 38 records the delivered savings under the various baselines. Using the 8-of-10, 20% adjustment cap baseline, delivered savings are 1,195 kW, but they are only 735 kW or 749 kW under EcoMetric's suggested baselines. Utilizing an uncapped adjustment (or a capped adjustment that is uncapped in the negative) is not recommended. In that scenario, multiple sites have negative savings. That is because the baselines dive down very quickly at the end of the event window when the schools normally turn off their AC. In all other cases, this means that near zero savings are recorded for the final 15 minutes, but in this case, because of the large negative adjustment, the baselines dive far below the actual demand (and are negative themselves in most cases). This results in high negative savings in the final 15-minute period.

Table 38: July 7th Delivered Savings by Site Using Different Baselines

Site	Commitment	Adjusted, Capped	Unadjusted	Adjusted, Uncapped	Zeroed	EcoMetric Baseline
Chaparral HS	100	54	161	-104	0	1
Gadsden HS	175	194	338	-111	0	7
Gadsden MS	40	29	66	-18	0	14
NMSU	750	723	1,013	723	723	723
S Teresa HS	90	30	103	-85	0	-7
ST MS North	20	12	29	12	12	12
ST MS South	20	27	44	-25	0	-1
TOTAL	1.195	1,069	1,753	392	735	749

Figure 26: EcoMetric Calculated Baselines for July 7, 2023



The July 7th event should serve as a reminder that this program is dependent on schools during their summer break, and those schools may not act predictably during that period. These sites have less capacity to cut on Fridays in late June and early July (because their baselines are so low). NMSU, which represents nearly three quarters of the commitment, is available on those days.

9.1.6.8 Historical Results

Table 39 below offers a year-over-year comparison of EcoMetric's gross verified demand savings estimates for the Commercial Load Management program. Portfolio committed capacity increased significantly with the inclusion of NMSU in 2020. Largely due to NMSU's much improved performance, the program met its goal for the first time in three years.

Table 39: 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%
2023	7	9	1,195	1,196	100%
Average	6.8	6.4	1,019	861	91%

9.1.7 ALTERNATIVE METHOD – REGRESSION ANALYSIS

As a check on the 8-of-10 method employed by Trane, EcoMetric modeled summer 2023 impact using a regression methodology. Regression analysis is generally considered to be a more robust method but is more complicated to implement than an X-of-Y baseline. Instead of averaging the top 8 highest days, EcoMetric used Trane provided data from May 25th to July 20th along with temperature data to run a panel Ordinary Least Squares regression with the aim of estimating baselines. The regression took the following form:

$$y_{it} = \alpha F_{it} I_i + \beta F_{it}^2 I_i + D_t I_i + T_t I_i + \varepsilon_{it}$$

Where y_{it} is the kW at site i and time t, F_{it} is temperature in Fahrenheit, D_{it} are a vector of date controls, T_t are a vector of time controls, and I_i are a vector of site controls. This regression was used to estimate new baselines for the event time periods. Only demand data from 12:00 AM to 1:00 PM was included on event days because those hours were least likely to be affected by the event. The estimates of y_{it} were then used to make a regression baseline, and the observed event demand was compared to the new estimated baseline to create the alternate reduction estimates in Table 40.

Table 40: Results Comparison: Regression vs. 8-of-10 Settlement Baseline

Date	8-of-10 Load Reduction Estimate (kW)	Regression Load Reduction Estimate (kW)	8-of-10 / Regression
9-Jun	2,235	1,651	135%
19-Jun	1,585	1,668	95%
28-Jun	1,274	679	188%
6-Jul	1,205	1,161	104%
7-Jul	1,069	1,143	94%
12-Jul	1,052	1,182	89%
13-Jul	1,081	929	116%
19-Jul	981	745	131%
20-Jul	278	316	88%
Average	1,196	1,052	114%

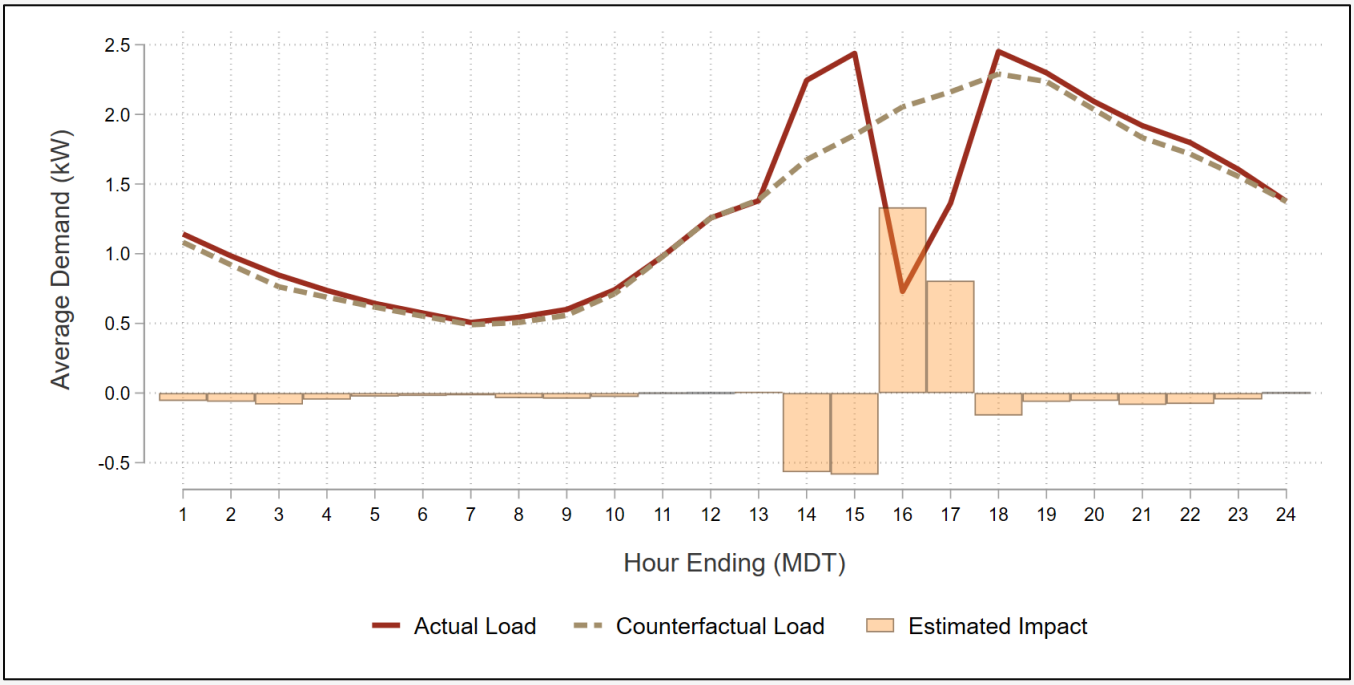
The alternate method found savings slightly lower than the traditional 8-of-10 method, but those differences are minor in both percent (14%) and magnitude (142 kW). This alternate method validates that the settlement method is reasonably accurate.

9.2 RESIDENTIAL LOAD MANAGEMENT

9.2.1 INTRODUCTION

El Paso Electric's (EPE) Residential Load Management program is a demand response (DR) program with over 3,100 enrolled smart thermostats. 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 the WiFi-enabled smart thermostats. Cooling setpoints are remotely increased, which translates to reduced air conditioning (AC) runtimes and reduced electric loads. Figure 27 illustrates the impact of event dispatch on cooling load during a typical two-hour event from 3:00 PM until 5:00 PM. The spike in cooling load prior to the event is due to pre-precooling.

Figure 27: Residential Load Management Example – Average Two-Hour Event



During the summer 2023 DR season, EPE and the program implementer (Uplight) called eleven DR events. One event was three hours in duration and the remainder were two hours. Table 41 provides some information on these eleven events. The first event of the season was called when temperatures and cooling loads were relatively low. This event was called due to a regulatory requirement that states an event must be dispatched during the first week of the season to obtain an estimate of the available DR capacity for the season. Since conditions on June 9th were quite unlike conditions on other event days, impacts from this event are not included in our averages.

Table 41: 2023 Residential Load Management Event Summary

Date	Weekday	Start Time (MDT)	End Time (MDT)	Max Temperature (°F)
June 9	Friday	3:00 PM	5:00 PM	85.6
June 19	Monday	5:00 PM	8:00 PM	98.5
June 26	Monday	4:00 PM	6:00 PM	107.2
June 27	Tuesday	4:00 PM	6:00 PM	106.2
June 28	Wednesday	3:00 PM	5:00 PM	102.0
July 6	Thursday	3:00 PM	5:00 PM	103.6
July 7	Friday	3:00 PM	5:00 PM	105.3
July 12	Wednesday	3:00 PM	5:00 PM	102.7
July 13	Thursday	3:00 PM	5:00 PM	103.3
July 19	Wednesday	3:00 PM	5:00 PM	109.3
July 20	Thursday	4:00 PM	6:00 PM	108.6

By the end of summer 2023, there were 3,144 devices and approximately 2,600 unique accounts enrolled in the program. In addition to providing peak demand reductions, new thermostat installations are also treated as an energy efficiency measure with annual kWh savings over the life of the device. As part of the Residential Load Management program, EPE rebated 121 new WiFi thermostats in 2023. These 121 thermostats are not included in the counts or savings for the Residential Marketplace. As the statewide evaluator for New Mexico, EcoMetric was asked to perform an independent evaluation of program performance and verify the savings achieved by the program. Table 42 shows the verified savings results. Subsequent sections describe our methods and findings in greater detail.

Table 42: Evaluation Results

Resource	Number of Devices	Savings			Measure Life (Years)
		Reported	Verified	Realization Rate	
Demand (kW)	3,144	2,812	2,812	100%	1
Energy (kWh)	121	77,181	77,181	100%	10

9.2.2 METHODOLOGY

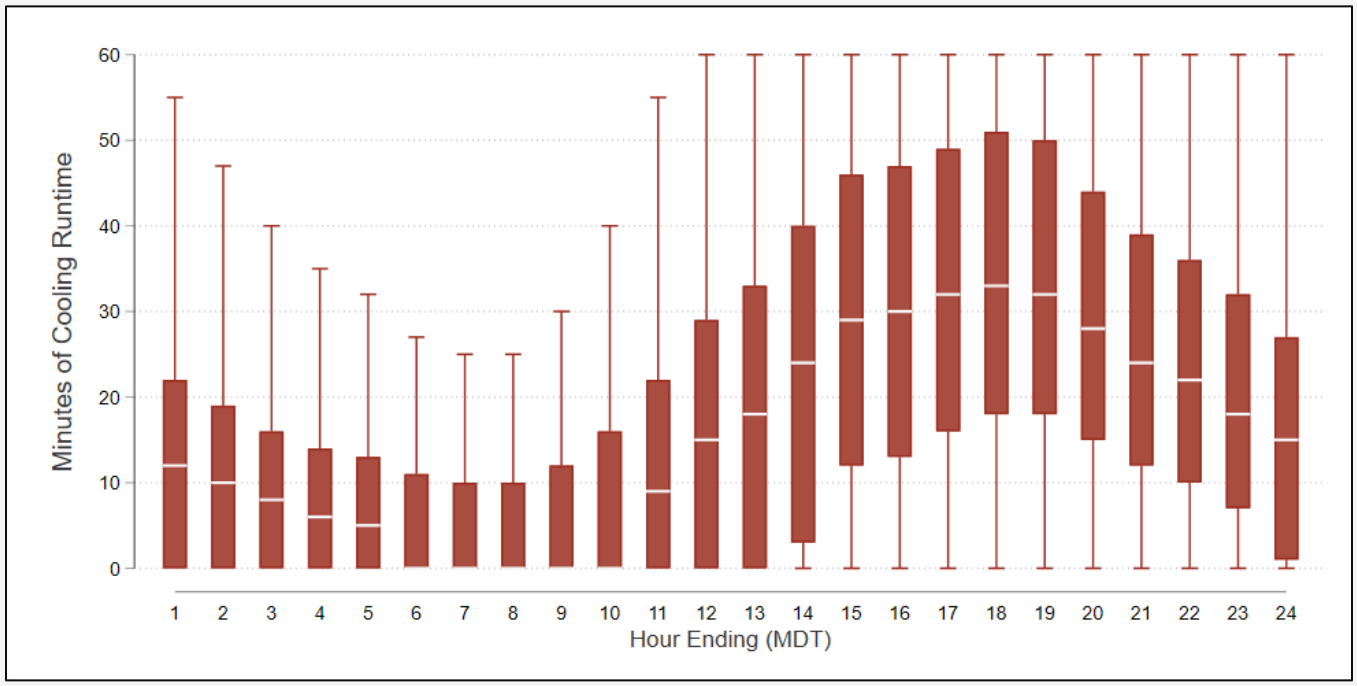
9.2.2.1 Input Data

The evaluation relied on two key data streams: hourly thermostat telemetry data and hourly weather data. The thermostat telemetry data is hourly interval data with cooling runtime (in minutes) for every device in the program. Several other fields, such as thermostat status, are included in the telemetry data. The weather data is used in estimating counterfactual load on DR event days. Both streams are described in greater detail below.

Thermostat Telemetry Data

Uplight provided the EcoMetric team with hourly device-level telemetry data covering a period between June 2023 and September 2023. This data included device-level information such as the thermostat's serial number, location, minutes of AC runtime, M&V status, device setpoint, and other device-specific data. Figure 28 shows the distribution of cooling runtime by hour of day across the 2023 summer. As expected, loads are highest in the late afternoon when the outdoor temperatures are high.

Figure 28: Distribution of Cooling Runtime, June-September 2023



NOAA Weather Data

The EcoMetric team identified some concerns with the outdoor temperature and humidity values contained in the thermostat telemetry data. Therefore, we downloaded hourly NOAA records from Las

Cruces and merged the NOAA weather data with our analysis file. By date, Figure 29 shows the average and maximum daily temperature for the 2023 summer. Event days are denoted with black circles. There were several non-event days where the maximum temperature exceeded 100°F. Events were dispatched on the two hottest days (July 19th and July 20th) of the summer. Figure 30, which shows average cooling runtime (in minutes per hour) by outdoor air temperature, confirms the trend seen in Figure 28 – cooling load is higher when it is warmer outside.

Figure 29: Las Cruces Weather, Summer 2023

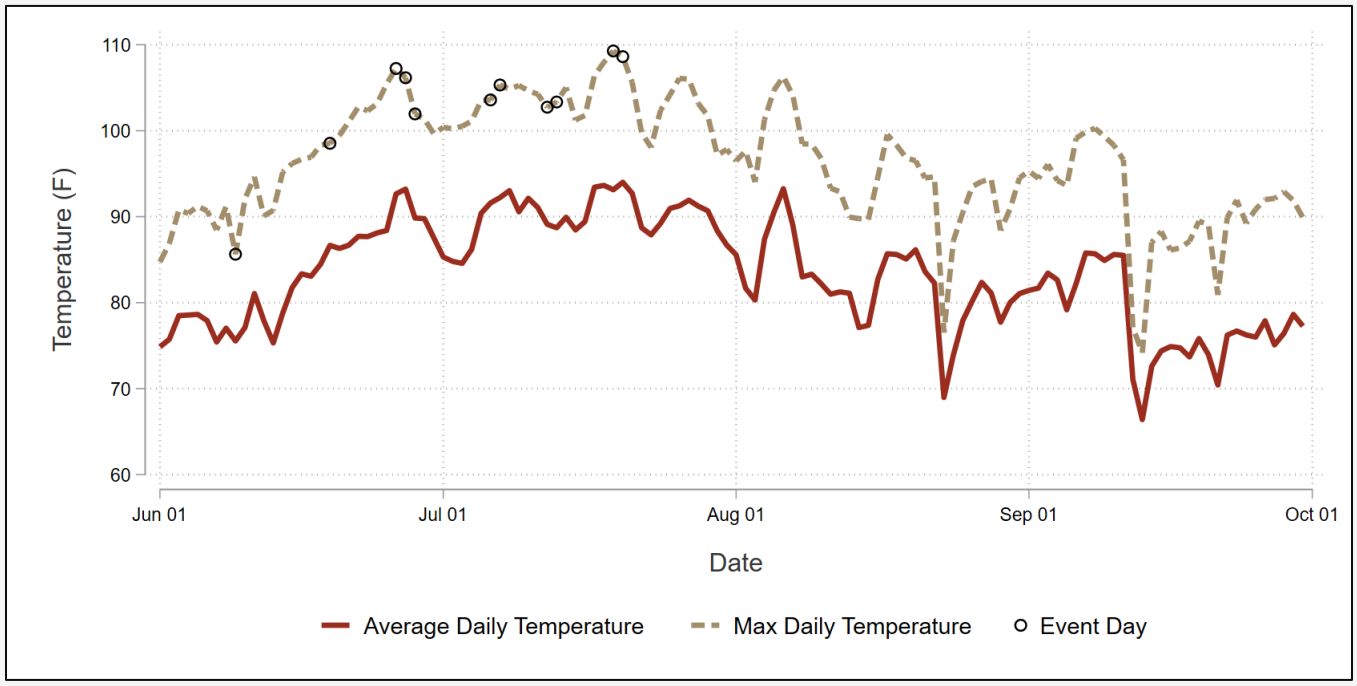
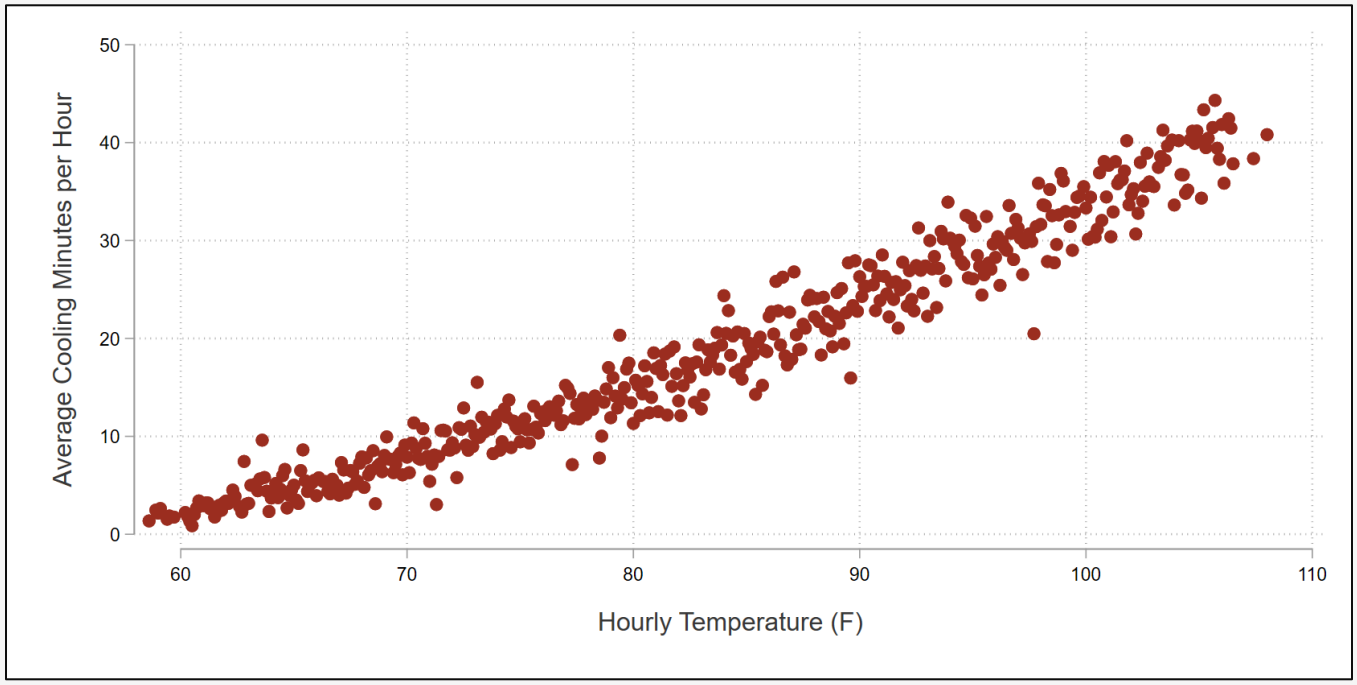


Figure 30: Average Cooling Runtime (Minutes/Hour) by Outdoor Temperature



9.2.2.2 Converting Cooling Runtime to Cooling Load

The thermostat telemetry data contains cooling runtime in minutes rather than cooling load. To convert cooling minutes to cooling load, we used the connected load assumptions in the New Mexico TRM (as 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 (2023 TRM Section 4.19.3)
- EER = -0.02 * SEER2 + 1.12 * SEER = 11.18 (2023 TRM Section 4.6.4)
    - Assuming SEER = 13 (2023 TRM Section 4.19.3)

Suppose the runtime for a given device during some hour is 30 minutes (out of 60 total minutes). Cooling load for this hour would be 1.61 kW (30 / 60 * 3.22).

9.2.2.3 Estimating Demand Response Impacts

Estimating the Counterfactual

For a given event hour, the DR impact is the difference between actual load and counterfactual load, where counterfactual load represents what load would have been absent the DR event. Actual load can be measured via the telemetry data (and a connected load assumption), while the counterfactual load must be estimated. This step – estimating the counterfactual – is critical in developing an unbiased DR impact estimate. Our team tested out nine different regression-based techniques for estimating the counterfactual. The explanatory variables included in the nine regression models are shown in Table 43.

To determine which of the nine model specifications produces the least amount of bias, we used an out-of-sample testing technique known as cross validation. At a high level, this technique entails splitting the non-event day telemetry data into testing and training data sets.[32] The regression models are fit using the training data set, and then the models are used to estimate load in the testing data set. Predicted load in the testing data set is then compared with actual load. "Bias" can be measured in many ways but fundamentally, it's a function of the difference between actual load and predicted load. Our team found that Model 6 produced the least amount of bias (as measured by root mean squared error) when estimating non-event day load. As such, this was the model we used to estimate DR counterfactuals.

Table 43: Details on Regression Models

Model Number	Explanatory Variables[1]
1	mean15, temperature*dewpoint, maximum daily temperature, maximum daily dewpoint
2	mean15, maximum daily temperature, maximum daily dewpoint

32 Event day data is not included in the out-of-sample testing procedure. Additionally, we did not include records from weekends, holidays, or days where the average outdoor temperature was less than 75°F.

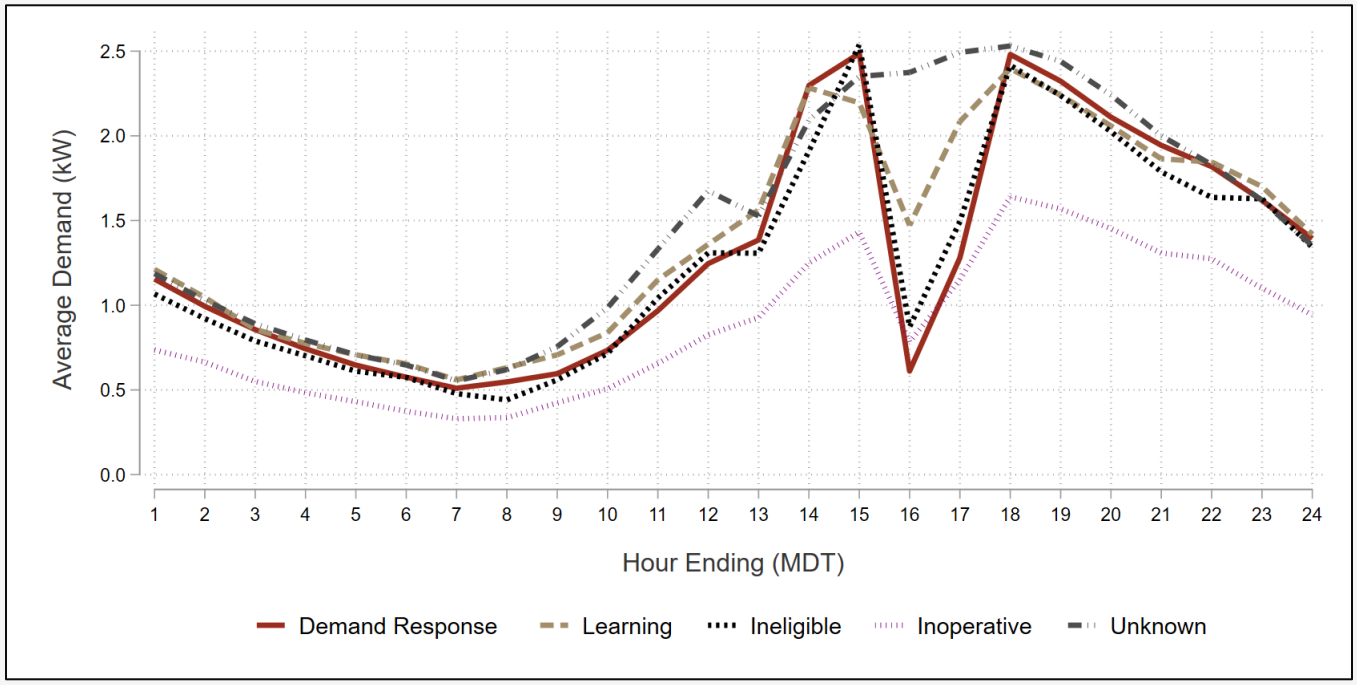
Model Number	Explanatory Variables[1]
3	maximum daily temperature, temperature*dewpoint
4	mean15, temperature
5	mean15, temperature*dewpoint, pre_event_kw
6	temperature*dewpoint, pre_event_kw
7	mean15, temperature*dewpoint, maximum daily temperature, maximum daily dewpoint, pre_event_kw
8	mean15, temperature*dewpoint, maximum daily temperature, maximum daily dewpoint, pre_event_kw, day of week
9	mean15, temperature*dewpoint, pre_event_kw, day of week

[1] The variable "mean15" represents the average temperature between midnight and 3:00 PM. The variable "pre_event_kw" represents device-specific kW consumption between 11:00 AM and 12:00 PM. Several models include an interaction term, represented by the "*" symbol. For example, Model 1 includes an interaction between temperature and dewpoint as an explanatory variable.

Aggregating Impacts

During the 2023 DR season, EPE and Uplight utilized a full dispatch model where all devices were curtailed on event days. We were able to use a "device status" field in the telemetry data to track which devices actually received the curtailment dispatch. On event days, devices were set to the "Demand Response" status to receive curtailment. On non-event days, devices were uncontrolled and allowed to operate based on customer preferences, indicated by the "Learning" status. Devices could also fall under the categories of "Ineligible," "Inoperative," and "Unknown" on any given day throughout the program. As seen in Figure 31, 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 31: Average Load by Status Over a Typical Event Day



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 2023 season and the average proportion of devices that were not missing AC runtime data during the 2023 events. This product was our estimate of the aggregate program impact.

Table 44 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." The "Unknown" status very rarely occurred on non-event days. Note that the total number of devices increased by approximately 3.0% from the first event to the last but decreased slightly (by approximately ten devices) after the last event.

Table 44: Device Counts by Status on Event Days

Date	Demand Response	Learning	Ineligible	Inoperative	Unknown	Offline	Total
June 9	2,259	7	75	127	123	474	3,064
June 19	2,280	9	78	125	176	422	3,088
June 26	2,295	20	66	110	173	411	3,074
June 27	2,326	15	64	80	190	403	3,077
June 28	2,308	19	82	77	177	418	3,080
July 6	2,352	83	62	100	108	416	3,119
July 7	2,333	101	62	102	112	411	3,119
July 12	2,373	104	56	82	106	406	3,126
July 13	2,358	99	62	88	111	415	3,132
July 19	2,369	91	59	77	130	425	3,150
July 20	2,358	112	60	70	128	426	3,153

9.2.3 RESULTS

This section contains information about our verified demand reductions, net energy impacts, participation rates, and time-of-use (TOU) interference for ecobee devices. The June 9th event is omitted from any summaries, as this event was called due to a regulatory requirement and June 9th was one of the cooler days of the 2023 summer.

9.2.3.1 Demand Impacts

Overall Impacts

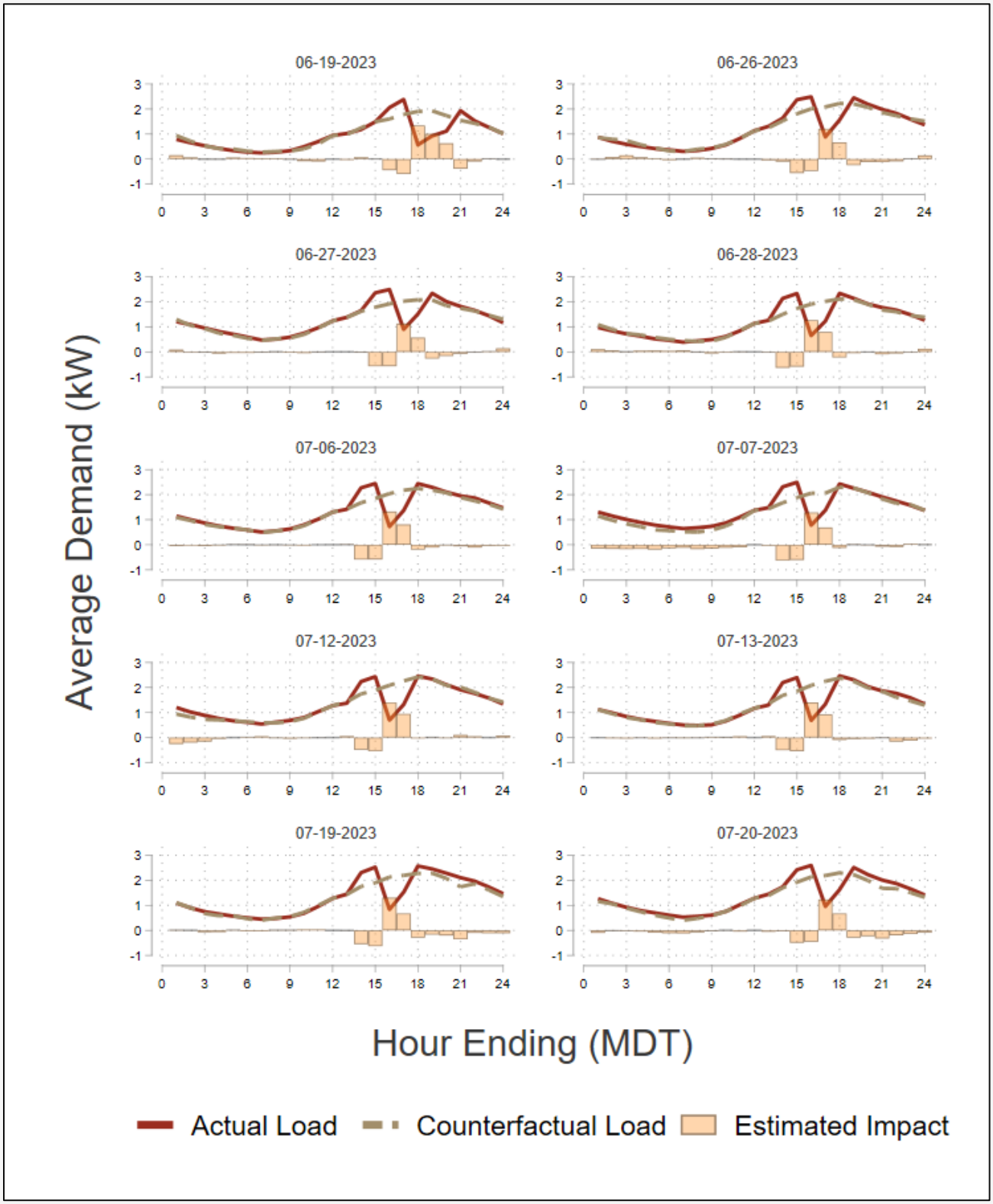
For each event hour, Table 45 shows our verified DR impacts, a count of total and online devices, and the average outdoor air temperature.

Figure 32 visualizes the hourly impacts. Notably, impacts during the first event hour are always the largest (1.29 kW/device impact in the first hour, on average, and 0.78 kW/device in the second hour). This occurs primarily for two reasons: (1) the pre-cooling that occurs before the event and (2) the control strategy. The pre-cooling essentially shifts load out of the first event hour and into the pre-event window. Regarding control strategy, thermostat setpoints are increases by a few degrees during the event (rather than cycled). Inevitably, indoor temperatures will surpass the adjusted setpoint and the AC will turn on for a period of time. This is more likely to occur in the second event hour than the first (partially due to the pre-cooling). EPE resource planners and system operators should be aware of this decay, as it could ultimately affect the value of the program as a demand resource if/when events last over longer periods of time.

Table 45: DR Impacts by Date and Hour

Date	Total Devices	Online Devices	Hour Ending (MDT)	Temp. (°F)	Impact per Device (kW)	Total Impact (kW)
June 9	3,064	2,592	16	82.9	0.591	1,533
	3,064	2,589	17	82.8	0.729	1,888
June 19	3,088	2,663	18	98.5	1.340	3,568
	3,088	2,667	19	98.2	1.008	2,688
	3,088	2,672	20	94.9	0.628	1,679
June 26	3,074	2,662	17	106.3	1.209	3,219
	3,074	2,665	18	106.3	0.671	1,787
June 27	3,077	2,674	17	106.2	1.136	3,037
	3,077	2,675	18	104.4	0.571	1,528
June 28	3,080	2,661	16	102.0	1.269	3,377
	3,080	2,663	17	101.5	0.798	2,126
July 6	3,119	2,702	16	103.6	1.328	3,587
	3,119	2,705	17	103.4	0.810	2,191
July 7	3,119	2,708	16	105.0	1.289	3,489
	3,119	2,709	17	103.2	0.691	1,871
July 12	3,126	2,721	16	101.8	1.403	3,816
	3,126	2,720	17	102.7	0.946	2,574
July 13	3,132	2,718	16	103.0	1.406	3,820
	3,132	2,717	17	103.3	0.920	2,501
July 19	3,150	2,727	16	109.3	1.306	3,563
	3,150	2,723	17	108.6	0.674	1,836
July 20	3,153	2,726	17	108.3	1.238	3,375
	3,153	2,728	18	107.4	0.675	1,841
Average	**3,112**	**2,697**	**---**	**104.1**	**1.034**	**2,790**

Figure 32: Event Impacts by Date



The gross verified impacts in Table 46 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 (3,144).[33] This number was then multiplied by the average percentage of devices that were online (not missing AC runtime data) during the 2023 events. Focusing on the first two hours allows for equal contribution from the ten events and returns an estimate of expected performance during a typical two-hour dispatch.

Table 46: Gross Verified Program Impacts

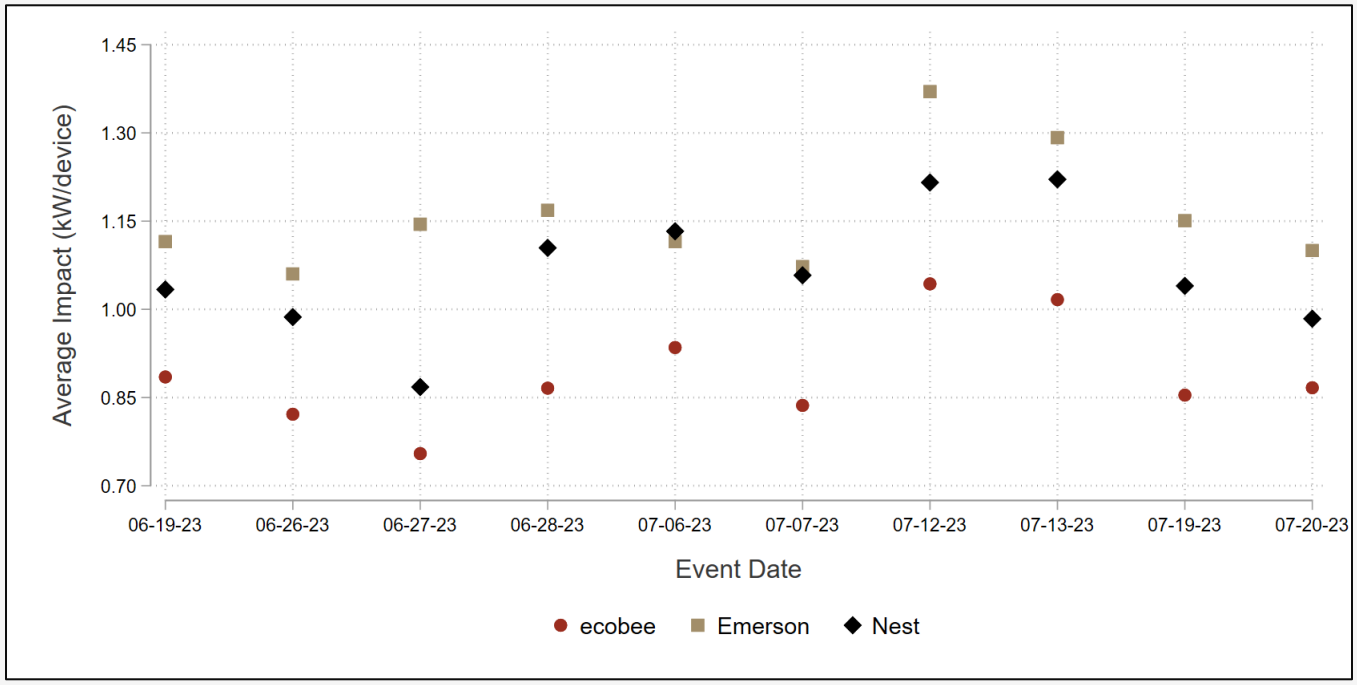
Impact per Online Device (kW)	End of Season Enrollment	Online Rate	Estimated Program Load Reduction (kW)
1.034	3,144	86.5%	2,812

Impacts by Device Brand

Figure 33 shows the average impact (per device) for each thermostat brand. Impacts from ecobee devices are consistently smaller than impacts from Emerson and Nest devices. Across all events other than the first (which was dispatched due to a regulatory requirement), the average impact (kW/device) was 0.89 for ecobee, 1.16 for Emerson, and 0.96 for Nest.

33 Since 27 of 30 events over the last four program years have been two hours in duration, we believe that the average impact for a two-hour event is most appropriate when reporting the program's verified impacts.

Figure 33: Average Impact by Device Brand (kW/Device)

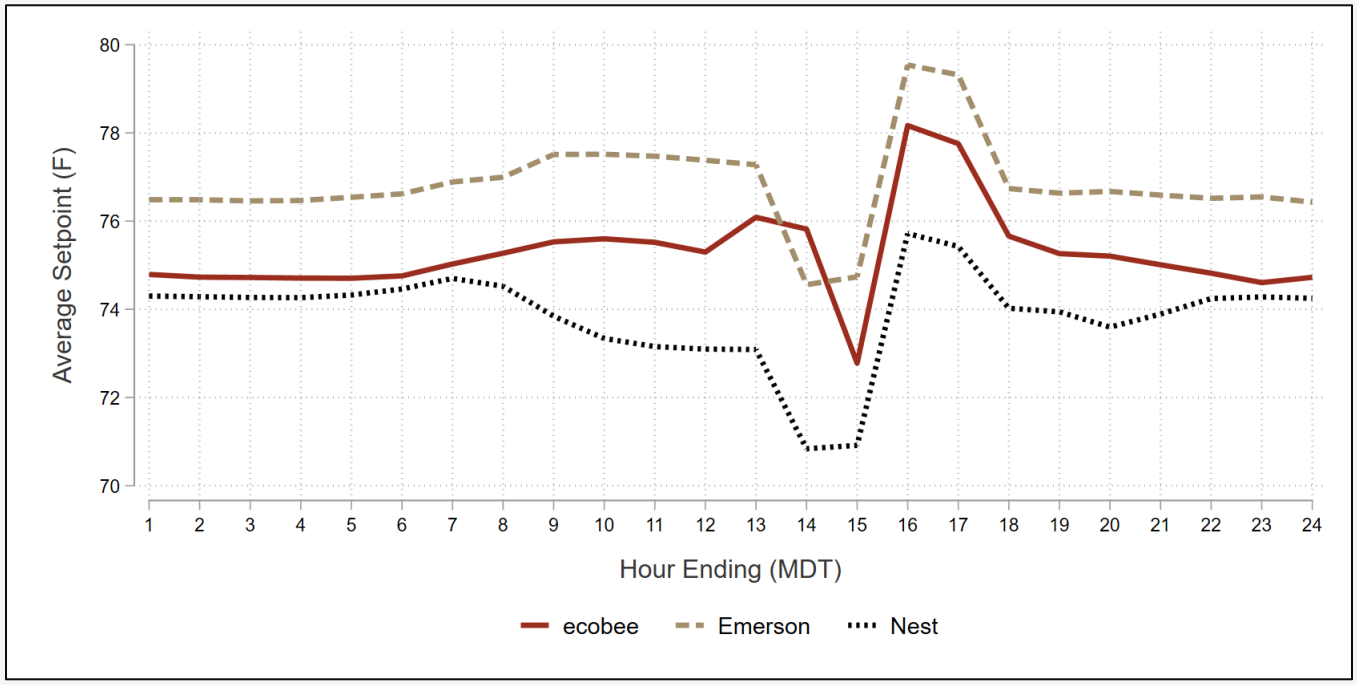


Differences in impacts by device brand can partially be explained by pre-cooling and differences in thermostat setpoints.

Figure 34 shows the average thermostat setpoint by device brand across the six events that were called from 3:00 PM to 5:00 PM (June 28th event through the July 19th event). Notably, ecobee devices pre-cool for one hour but Emerson and Nest devices pre-cool for two hours. This helps explain why participants with ecobee devices generate smaller impacts, on average. Participants with Emerson devices generally have the highest setpoints. During the typical event, the average setpoints for ecobee, Emerson, and Nest are 78.0, 79.4, and 75.6 respectively.

Another important factor here is the rate at which participants opt out of the events. Lower participation rates lead to lower impacts. Participation rates are discussed in more detail in section 0.

Figure 34: Average Thermostat Setpoints during a Typical Event (3:00 PM – 5:00 PM)



9.2.3.2 Net Energy Impacts

Net Energy Impacts During DR Events

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 lead to an overall energy usage increase, even if there are significant peak demand savings.

Table 47 shows the net energy impact (per device) across each full event day. Energy impacts varied by event day, with a positive impact for six event days and negative impact for four event days. The average net energy impact across event days did not meaningfully differ from zero (p-value = 0.56). 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 mentioned in section 9.2.1 and discussed in greater detail in section 0.

Table 47: Device-Level Net Energy Impacts by Event Day

Date	kWh Impact
June 19	1.72
June 26	0.67
June 27	-0.04
June 28	0.77
July 6	0.09
July 7	-1.23
July 12	0.84
July 13	0.69
July 19	-0.64
July 20	-1.07
Average	**0.18**

Marketplace

New smart thermostat devices that are purchased from the EPE marketplace and enrolled in the demand response program are treated as an energy efficiency measure. In 2023, EPE provided incentives for a total of 121 eligible smart thermostat devices. Using assumptions from the New Mexico TRM, EcoMetric calculated 77,181 kWh of annual energy savings (in alignment with EPE's reported total of 77,181 kWh).[34] Note these devices and savings are not aggregated with Residential Marketplace savings. Table 48 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.

34 For a home with unknown heating type, annual energy savings are 637.86 kWh/device per the TRM.

Table 48: Annual Energy Savings Values

Brand	Total Devices	Total Energy Savings (kWh)	Measure Life (Years)	Lifetime kWh Savings
ecobee	15	9,568	10	95,679
Emerson	19	12,119	10	121,193
Google	87	55,494	10	554,937
Total	121	77,181	10	771,810

9.2.3.3 Event Participation

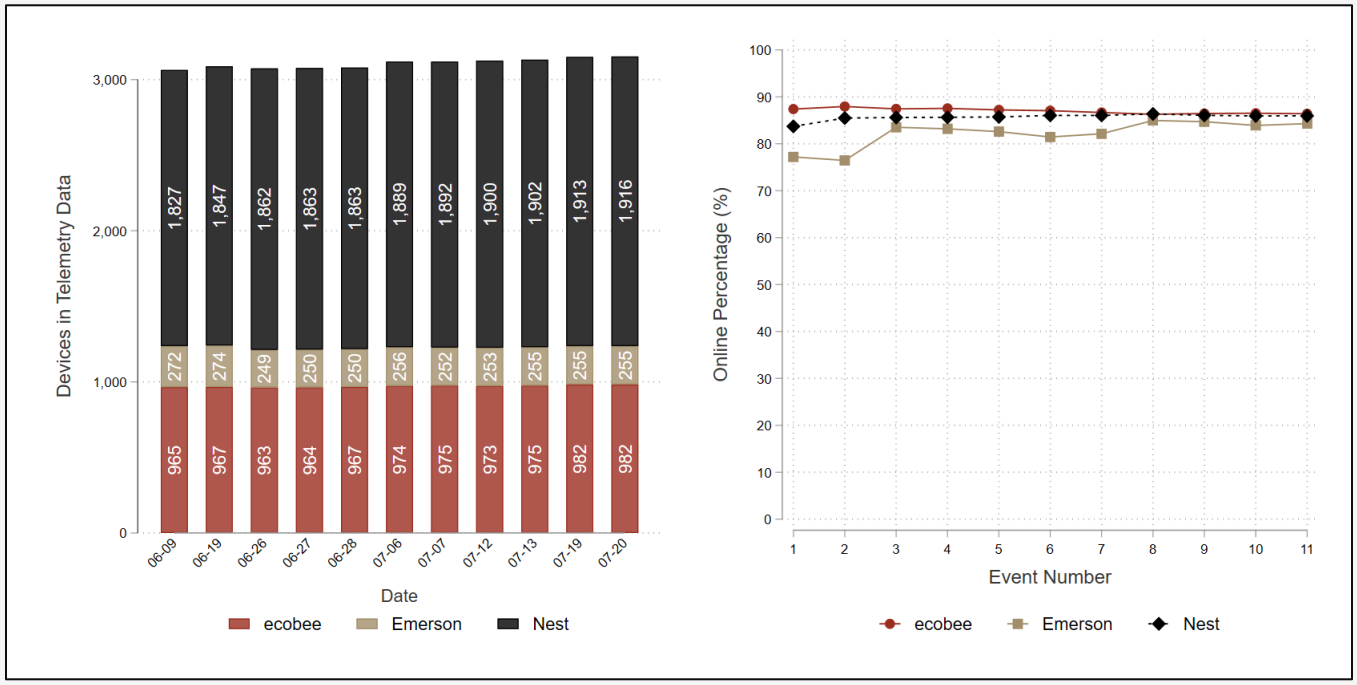
Devices enrolled in the load management program have the option to decline participation or opt out of an event mid-event. Devices that are offline do not receive the event dispatch and therefore cannot participate. This section details our findings regarding participation rates and online rates.

Online Devices

Our impacts were only estimated for *online* devices, or devices that were not missing AC runtime data during the event period. The left pane of

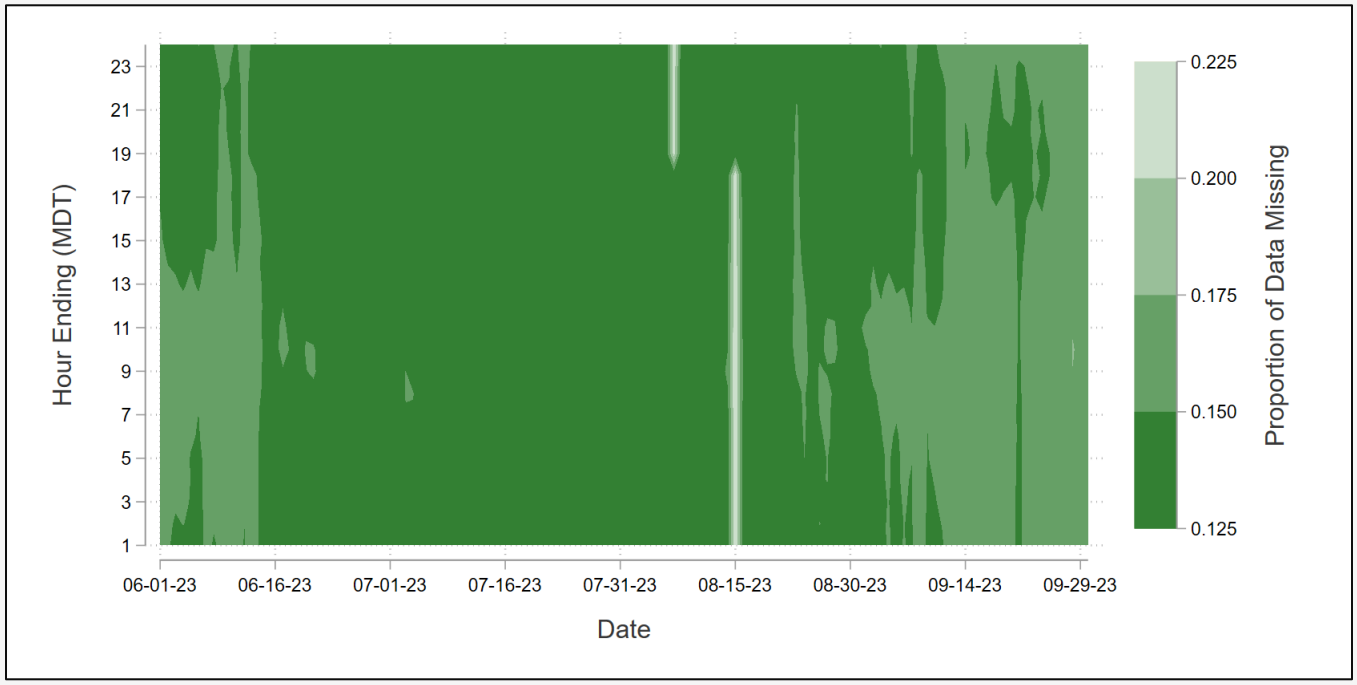
Figure 35 displays device counts on each event day, while the right pane shows each brand's proportion of devices that were online. On average, about 13% of devices were offline during events. Online rates were similar across brands, but Emerson devices had a lower proportion than both ecobee and Nest for each event.

Figure 35: Total Count and Devices Online by Device Brand on Event Days



On non-event days, approximately 14% of the observations in the telemetry data were missing AC runtime values. This value remained stable throughout most of the summer, but it was slightly higher in early June and late September. Figure 36 highlights when missing data was most prevalent. Lighter pockets represent times with more missing data.

Figure 36: Missing Data Heat Map



Participation Rates

In conjunction with the telemetry data, the EcoMetric 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 or if the thermostat set point was changed during the event. Table 49 shows participation and completion rates by date and device brand. "Completion Percentage" denotes the percentage of devices that did not opt out of the event. "Participation Percentage" denotes the percentage of the event that devices participated in. (If a device opts out halfway through the event, their participation percentage would be 50%.) These percentages are largely consistent across events and generally higher for Nest devices relative to ecobee or Emerson devices. The lowest percentages occurred during the June 19th event, which was the only three-hour event of the season.

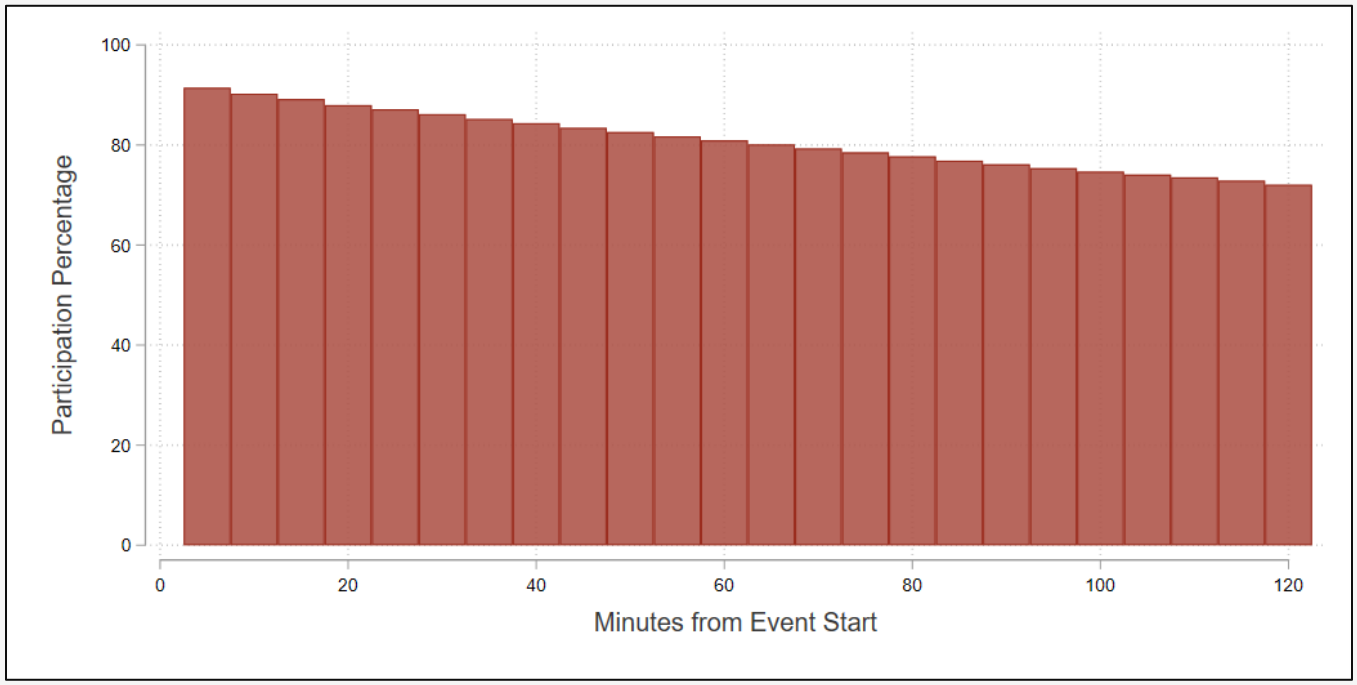
Table 49: Runtime Overview

Date	Brand	Participation Percentage	Completion Percentage
June 19	ecobee	71%	61%
	Emerson	71%	65%
	Nest	80%	69%
June 26	ecobee	73%	65%
	Emerson	75%	66%
	Nest	84%	74%
June 27	ecobee	74%	67%
	Emerson	73%	64%
	Nest	84%	75%
June 28	ecobee	78%	70%
	Emerson	77%	75%
	Nest	85%	76%
July 6	ecobee	78%	73%
	Emerson	75%	61%
	Nest	84%	73%
July 7	ecobee	74%	66%
	Emerson	76%	73%
	Nest	84%	74%
July 12	ecobee	76%	70%
	Emerson	76%	65%
	Nest	83%	73%
July 13	ecobee	76%	69%
	Emerson	78%	73%
	Nest	84%	74%
July 19	ecobee	74%	68%
	Emerson	79%	75%
	Nest	83%	72%
July 20	ecobee	72%	64%
	Emerson	75%	71%

Date	Brand	Participation Percentage	Completion Percentage
	Nest	80%	69%
Average		81%	72%

Figure 37 depicts participation percentages throughout the event for the typical two-hour event. Around 91% of devices accept the event and the participation rate drops slowly throughout the event By the end of the typical event, approximately 72% of devices are still participating.

Figure 37: Average Two-Hour Event Participation Rates

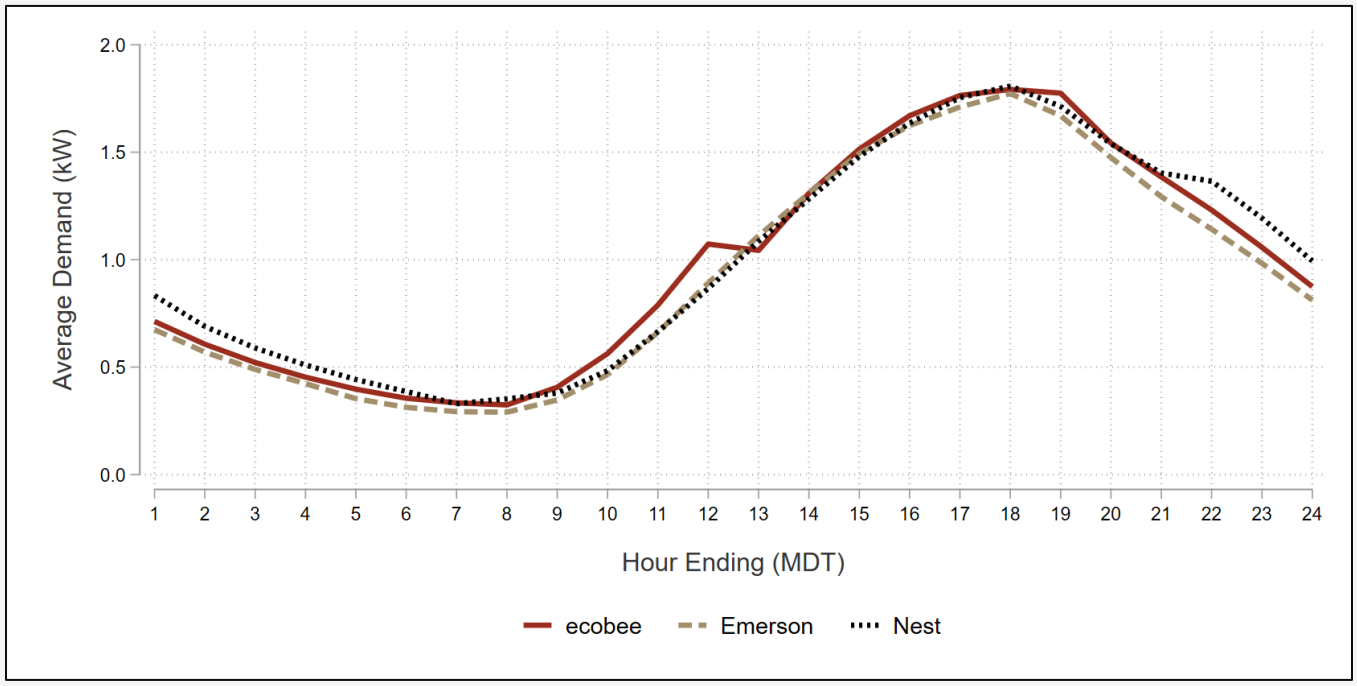


Time of Use Rate Interference

Figure 38 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 EcoMetric team suspects that this is due to ecobee's Time-of-Use (TOU) feature offered

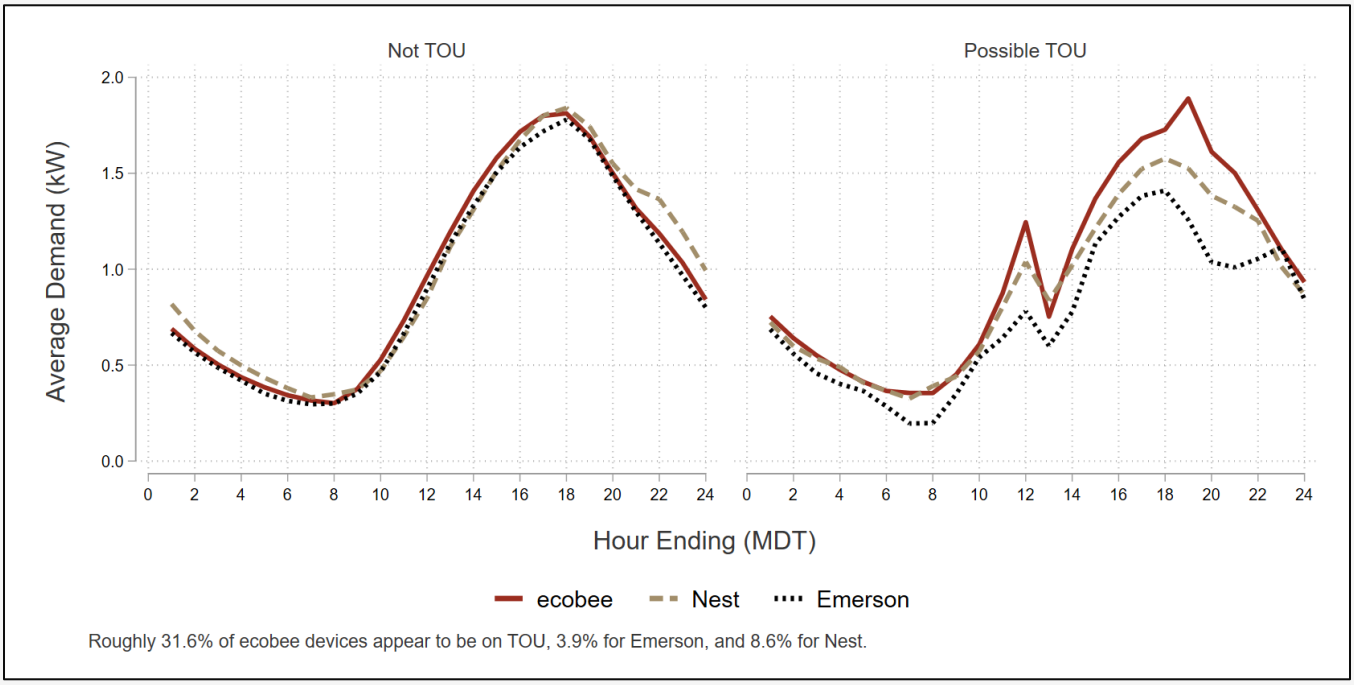
to customers who are on a time-varying rate such as EPE's Power Hours Time-of-Day program.[35] If a participant is on a TOU rate and enables the optimization feature, ecobee thermostats will automatically pre-cool a home prior to a price increase and then reduce cooling consumption when prices are higher. 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 one third of ecobee thermostats showed signs of this behavior.

Figure 38: Average Non-Event Day Device-Level Loads



35 https://www.epelectric.com/customers/rates-and-regulations/residential-rates-and-information/power-hours-time-of-use-rate

Figure 39: Average Non-Event Day Device-Level Loads by Possible TOU Status



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 40 displays snap shots of these rates taken from the EPE's website.

Figure 40: 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

9.2.4 CONCLUSIONS & RECOMMENDATIONS

Based on our impact evaluation of the 2023 Residential Load Management Program, the EcoMetric team offers the following conclusions and recommendations:

- Overall, we estimated that the average DR impact was 1.034 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 0.894 kW per *enrolled* device, which is slightly higher than the estimate from 2022 (0.802 kW per enrolled device) but lower than the estimate from 2021 (0.957 kW per enrolled device).
- The 2021 impact evaluation assumed that offline devices delivered the same capacity reduction as online devices. The 2022-2023 evaluations assume devices without telemetry deliver zero kW reduction.
- The 2021 impact evaluation averaged results from eight event hours across five distinct event days. Since kW impacts throughout the event, a one-hour event will generate larger impacts than a two-hour event. The 2022-2023 estimates are based on two-hour events.
- In comparing results from 2022 and 2023, we'd note that the average temperature during events was greater in 2023 (104.1°F compared to 101.5°F) and participation rates were higher in 2023 (81% compared to 75%). Additionally, the device count increased by nearly 20% from 2022 to 2023, so the pool of participants looked a little different in 2023.
- On average, approximately 13% of devices were missing data during event hours. Emerson saw the highest amount of missing data during events.

- 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 2024 to boost availability and communication with program thermostats.
- Demand response impacts diminish in the second and third event hours. When considering demand response as a resource, it is important to understand that the capability of the program is a function of event duration. The timing of the event is also an important consideration since homes are pre-cooled prior to the event. For an event that begins at 5:00 PM, for example, participant loads between 3:00 PM and 5:00 PM will spike as a result of pre-cooling.
- Ecobee devices had the largest average reference load but the lowest average kW reduction per online device of the three device manufacturers.
- The magnitude of reductions can partially be explained by pre-cooling. Emerson and Nest devices pre-cool for two hours, but ecobee devices only pre-cool for one hour. Emerson and ecobee devices had similar opt-our rates (both a little below Nest).
- Our analysis of non-event day load shapes suggests nearly a third of homes with ecobee devices have enabled TOU rate optimization (compared to approximately 4% for homes with Emerson devices and 9% for homes with Nest devices). Interestingly, the on-peak optimization window appears to align with EPE's Texas tariff rather than the New Mexico rate.
- EPE should reach out to ecobee, Emerson, and Nest to ensure users can select the New Mexico rate when they enable TOU optimization on their thermostat.

10 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.[36] The evaluation team conducted these tests in a manner consistent with the California Energy Efficiency Policy Manual.[37] 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 50.

Table 50: Utility Cost Test Benefits and Costs

Benefits	Costs
• Utility avoided energy-related costs	• Program overhead/ administrative costs
• Utility avoided capacity-related costs, including generation, transmission, and distribution	• 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 51. The portfolio overall was found to have a UCT ratio of 1.35.

36 The Utility Cost Test is sometimes referred to as the Program Administrator Cost Test, or PACT.
37 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 51: PY2023 Cost Effectiveness

Program	Utility Cost Test (UCT)
Smart Students	0.57
ENERGY STAR New Homes	1.07
Residential Marketplace	0.08
Commercial Comprehensive	1.39
SCORE Plus	1.47
Commercial Load Management	0.70
Residential Load Management	1.51
Residential Comprehensive	1.14
Residential Lighting	1.70
NM Energy Saver (LI)	1.24
Energy$mart (LI)	4.34
Overall Portfolio	**1.35**

11 FINDINGS AND RECOMMENDATIONS

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

11.1 COMMERCIAL COMPREHENSIVE PROGRAM

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

The evaluation team adjusted savings for two out of three agricultural lighting projects based on several factors. Project number 23LGT28 was evaluated using IL TRM v.10 as the sole technical reference based on discussions during the time of the project. The other two projects were evaluated using the building area methodology in IL TRM v.10, with inputs (i.e., LPD, HOU, and CFs) from the 2023 NM TRM.

- The following findings and recommendations apply to project number 23LGT28:
  - **Finding 1**: The ex ante calculation utilized a total area of 1,920 square feet, which includes spaces the grow lights do not operate (e.g., storage space, walkways, etc.). The evaluation team conducted a phone interview with the customer to confirm the lighted area. Based on this interview, the ex post calculation utilized the verified total area of 709 square feet, which is the area of the racks where the crops are located. The verified area was determined by taking the sum of the lighted area for the flowering crops (325 square feet) and the vegetative crops (384 square feet).
    Recommendation 1: Utilize the square footage of the grow areas for which the agricultural lighting fixtures operate.
  - **Finding 2**: The ex ante calculation used one lighting power density (LPD) value for the total area of the project, 36.0 W/ft^2, for a facility with grow lights for crops in both the flowering cycle and vegetative cycle.
    Recommendation 2A: Utilize an LPD of 40.0 W/ft^2 for areas with crops in the vegetative cycle. This LPD is derived from baseline technology wattage of 640 W per 16

ft^2.[38]

Recommendation 2B: Use an LPD of 46.824 W/ft^2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft^2 for medical cannabis and 576 W per 16 ft^2 for recreational cannabis.[39] The LPD was weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.

- **Finding 3**: The ex ante calculation used HOU and CFs for only the flowering crop type. The project involved both flowering and vegetative crops. Vegetative crops require more HOU and subsequently have higher CFs than flowering crops according to the IL TRM.
  Recommendation 3: Utilize HOUs and CFs based on crop type (i.e., flowering, or vegetative) per the IL TRM v.10.
- **Finding 4**: The ex ante calculation swapped the waste heat factors.
  Recommendation 4: The evaluation team used a WHF $_{demand}$ of 1.22 and a WHF $_{energy}$ of 1.21. This modification increased demand savings (kW) and decreased energy savings (kWh).

- **Finding 5**: In project number 23LGT33, the ex ante calculation used an LPD of 46.824 W/ft^2 for flowering crops, which is based on IL TRM v.10. The evaluation team applied an LPD of 68.75 W/ft^2 based on the 2023 NM TRM. The implementer applied appropriate LPDs to crops in the vegetative cycle and crops in the propagation cycle based on the 2023 NM TRM.
  Recommendation 5: Use an LPD of 68.75 W/ft^2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft^2 for both medical cannabis and recreational cannabis based on the 2023 NM TRM.
- **Finding 6**: The evaluation team adjusted installed fixture wattages for all three agricultural lighting projects to align with the applicable DLC certificates.

38 IL TRM v.10.
39 Ibid.

Recommendation 6: Use the tested fixture wattages as provided by the DLC-approved product database.

- **Finding 7**: The evaluation team adjusted lighting hours of use (HOU) for four projects. The NM TRM states "when sufficient information exists, using hours on an area-type basis is preferred to using building weighted average hours." If the Space Use is not present in the NM TRM, the evaluation team recommends utilizing the building weighted average hours across the entire project. In this case, the TRM does not provide a Space Use representative of restrooms, for a small retail facility or a single-story large retail facility.
  Recommendation 7: Use either the building weighted average HOU or the area type HOU. It is preferable to use the latter method for HOU because more granular energy savings can be calculated. If no specific area type exists in the NM TRM, the evaluation team recommends utilizing the area type most representative of this space, instead of using building weighted average hours for the space.
- **Finding 8**: The evaluation team adjusted installed fixture wattages in six projects to align with the applicable DLC certificates.
  Recommendation 8: Use the fixture wattages as provided by the DLC-approved product database.

11.2 SCORE PLUS PROGRAM

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

The evaluation team adjusted savings for the one agricultural lighting project based on several factors. This project was evaluated using IL TRM v.10 as the sole technical reference based on discussions during the time of the project.

- **Finding 1**: The ex ante calculation utilized a total area of 59,620 square feet, whereas the ex post calculation utilized the verified total area of 56,250 square feet. The evaluation team calculated this area by taking the sum of the lighted area for the flowering crops (45,000 square feet) and the lighted area for the vegetative crops (11,250 square feet).
  Recommendation 1: Utilize the square footage of the grow areas for which the agricultural lighting fixtures operate.
- **Finding 2**: The ex ante calculation used one lighting power density (LPD) value for the total area of the project, 46.824 W/ft^2. The evaluation team applied LPDs to areas based on the crop type (e.g., flowering, vegetative, etc.).

Recommendation 2A: Utilize an LPD of 40.0 W/ft^2 for areas with crops in the vegetative cycle. This LPD is derived from baseline technology wattage of 640 W per 16 ft^2.[40]
Recommendation 2B: Use an LPD of 46.824 W/ft^2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft^2 for medical cannabis and 576 W per 16 ft^2 for recreational cannabis.[41] The LPD was weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.

- **Finding 3**: The ex ante calculation used HOU and CFs for the flowering crop type.
  Recommendation 3: The evaluation team utilized HOUs and CFs based on crop type (i.e., flowering or vegetative) per the IL TRM v.10.
- **Finding 4**: The ex ante calculation swapped the waste heat factors.
  Recommendation 4: The evaluation team used a WHF $_{demand}$ of 1.22 and a WHF $_{energy}$ of 1.21. This modification increased demand savings (kW) and decreased energy savings (kWh).
- **Finding 5**: The evaluation team adjusted installed fixture wattages to align with the applicable DLC certificates.
  Recommendation 5: Use the tested fixture wattages as provided by the DLC-approved product database.
- **Finding 6**: In one project, the kW RR is affected by the deemed kW per HP savings value for HVAC VFDs for Cooling Water Pumps. The project included two 10 HP and two 20 HP Cooling Water Pumps. The ex ante calculation utilized 0.259 kW per HP, which is from an older version of the NM TRM. The ex post calculation utilized 0.185 kW per HP, which is in both the 2021 and 2023 NM TRMs for the Las Cruces climate zone.
  Recommendation 6: Utilize deemed values from the 2023 NM TRM.
- **Finding 7**: The evaluation team adjusted installed fixture wattages in one project to align with the applicable DLC certificates.

40 IL TRM v.10.
41 Ibid.

Recommendation 7: Use the fixture wattages as provided by the DLC-approved product database.

11.3 ENERGY STAR NEW HOMES PROGRAM

Conclusions and recommendations resulting from the evaluation of the ENERGY STAR Program include the following:

- **Finding 1**: The evaluation team utilized HVAC equipment cooling capacities as specified in AHRI certificates. For example, HVAC equipment with a cooling capacity of 57,000 Btu/h corresponds to 4.75 tons. The ex post calculation utilized a value of 4.75 tons in savings calculations, whereas the ex ante calculation used a value of 5.0 tons.
  Recommendation 1: Use the HVAC equipment capacity as provided by the AHRI certificate.
- **Finding 2**: Ex ante HVAC calculations converted $SEER_{efficient}$ to $EER_{efficient}$ for peak demand savings. The ex post calculation utilized the $EER_{efficient}$ rating per the AHRI certificate as indicated by the NM TRM to calculate the peak demand savings.
  Recommendation 2: Use the HVAC equipment $EER_{efficient}$ rating as provided by the AHRI certificate for calculating peak demand savings.
- **Finding 3:** For HVAC equipment manufactured ***before*** January 1, 2023, the evaluation team utilized SEER, EER, and HSPF baselines and efficient ratings in the HVAC savings calculations per the 2023 NM TRM.
  Recommendation 3: The evaluation team recommends using AHRI 210/240 - 2017[42, 43] ratings and corresponding baselines for HVAC equipment manufactured ***before*** January 1, 2023 per the 2023 NM TRM. The year of manufacture is indicated by equipment serial number.

42 https://www.ahrinet.org/system/files/2023-09/AHRI_Standard_210-240_2017_add1.pdf.
43 If AHRI 210/240 – 2017 ratings are not available, then utilize AHRI 210/240 – 2023 ratings.

- **Finding 4**: For HVAC equipment manufactured ***after*** January 1, 2023, the evaluation team utilized SEER2, EER2, and HSPF2[44] baselines and efficient ratings in the HVAC savings calculations per the 2023 NM TRM.
  Recommendation 4: The evaluation team recommends using AHRI 210/240 - 2023[45] ratings and corresponding baselines for HVAC equipment manufactured ***after*** January 1, 2023 per the 2023 NM TRM. The year of manufacture is indicated by equipment serial number.
- **Finding 5:** In one project, the ex ante calculation utilized a SEER2 value of 14.3 for a high efficiency split system air conditioner manufactured after January 1, 2023. This value is for a system with a cooling capacity less than 45,000 Btu/h. The evaluation team utilized a SEER2 value of 13.8 because the AHRI 210/240- 2023 cooling capacity of 56,000 Btu/h is more than 45,000 Btu/h.
  Recommendation 5: Select baseline efficiency values for split system air conditioners based on the cooling capacity, as indicated by the NM TRM.

11.4 RESIDENTIAL MARKETPLACE

Conclusions and recommendations resulting from the evaluation of the Residential Marketplace Program include the following:

- **Finding 1**: The evaluation team adjusted the quantity of smart thermostats purchased through the program. The ex ante calculation claimed savings for 93 units and the ex post calculation utilized 83 units. Five customers returned equipment, and two rows were created in the program tracking data: one for the purchase and one for the return.
  Recommendation 1: When customers return smart thermostats, zero out savings for both the purchase line items and the return line items.

44 The evaluation sample did not include any Heat Pumps manufactured after January 1, 2023. HSPF2 was added to this finding for consistency and clarity.
45 https://www.ahrinet.org/system/files/2023-09/AHRI%20Standard%20210.240-2023%20%282020%29.pdf

11.5 SMART STUDENTS

Conclusions and recommendations resulting from the evaluation of the Smart Students Program include the following:

- **Finding 1**: For the high school program, the ex ante savings for Advanced Power Strips utilized deemed kWh and kW values for an Unspecified Application.
  Recommendation 1: Utilize the deemed kWh and kW savings based on the Application of the Advanced Power Strip (i.e., Home Entertainment, Home Office, or Unspecified) as indicated in the NM TRM.
- **Finding 2**: For the high school program, two survey questions regarding the installation of advanced power strips were posed to students. The first asked if the APS was installed and 113 students answered "yes." The second question was a follow up to the first only if students answered "yes," and asked where the APS was installed. There were 128 responses to this second question and 29 blank answers.
  Recommendation 2: A total of 113 students answered "yes" to the first question, thus only 113 students should have answered the second question. The evaluation team recommends combining questions to avoid student confusion. The ex post calculation multiplied the percent of responses to each location from the second question with the 113 students who answered "yes" to the first question. This weighted number was then multiplied by the deemed savings for each installed location.
- **Finding 3**: For both elementary and high school programs, the ex ante savings utilized in-service-rates based on "data reported from program participants."
  Recommendation 3: The evaluation team utilized participant survey responses to calculate in-service-rates. The number of students who indicated a measure was installed was divided by the total number of responses (i.e., blank responses did not factor into this total).
- **Finding 4**: The implementer applied a 67% net-to-gross ratio to LEDs in both the high school and elementary school kits.
  Recommendation 4: Net-to-gross ratios are applied to realized gross savings and not expected gross savings. The net-to-gross ratio for the PY2023 Smart Students program is 1.000.

11.6 RESIDENTIAL LOAD MANAGEMENT

Based on our impact evaluation of the 2023 Residential Load Management Program, the evaluation team offers the following conclusions and recommendations:

- **Finding 1:** Overall, we estimated that the average DR impact was 1.034 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 0.894 kW per *enrolled* device, which is slightly higher than the estimate from 2022 (0.802 kW per enrolled device) but lower than the estimate from 2021 (0.957 kW per enrolled device).
    - The 2021 impact evaluation assumed that offline devices delivered the same capacity reduction as online devices. The 2022-2023 evaluations assume devices without telemetry deliver zero kW reduction.
    - The 2021 impact evaluation averaged results from eight event hours across five distinct event days. Since kW impacts decrease throughout the event, a one-hour event will generate larger impacts than a two-hour event. The 2022-2023 estimates are based on two-hour events.
    - In comparing results from 2022 and 2023, we'd note that the average temperature during events was greater in 2023 (104.1°F compared to 101.5°F) and participation rates were higher in 2023 (81% compared to 75%). Additionally, the device count increased by nearly 20% from 2022 to 2023, so the pool of participants looked a little different in 2023.
- **Finding 2:** On average, approximately 13% of devices were missing data during event hours. Emerson saw the highest amount of missing data during events.

  Recommendation 2: 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 2024 to boost availability and communication with program thermostats.
- **Finding 3:** Demand response impacts diminish in the second and third event hours.

  Recommendation 3: When considering demand response as a resource, it is important to understand that the capability of the program is a function of event duration. The timing of the event is also an important consideration since homes are pre-cooled prior to the event. For an event that begins at 5:00 PM, for example, participant loads between 3:00 PM and 5:00 PM will spike as a result of pre-cooling.
- **Finding 4:** Ecobee devices had the largest average reference load but the lowest average kW reduction per online device of the three device manufacturers. The magnitude of reductions can partially be explained by pre-cooling. Emerson and Nest devices pre-cool for two hours,

but ecobee devices only pre-cool for one hour.

Recommendation 4: Consider discussing the pre-cooling approach with ecobee.

- **Finding 5:** Our analysis of non-event day load shapes suggests nearly a third of homes with ecobee devices have enabled TOU rate optimization (compared to approximately 4% for homes with Emerson devices and 9% for homes with Nest devices). Interestingly, the on-peak optimization window appears to align with EPE's Texas tariff rather than the New Mexico rate.

  Recommendation 5: EPE should reach out to ecobee, Emerson, and Nest to ensure users can select the New Mexico rate when they enable TOU optimization on their thermostat.

11.7 COMMERCIAL LOAD MANAGEMENT

Based on our impact evaluation of the 2023 Commercial Load Management Program, the evaluation team offers the following conclusions and recommendations:

- **Finding 1:** The participants are schools and the program is active during their summer break. We observed a trend on Fridays in July when the schools appear to be closed.

  Recommendation 1: EPE should keep in mind that the dispatchable load reduction is a function of the available load.

- **Finding 2:** For the largest participant, technical issues prevented the DR sequence from initiating on July 20th. While the site's load was slightly above the baseline, we set the performance to zero since the technical issues were documented.

  Recommendation 2: Agreements between EPE, Trane, and program participants should more clearly spell out how performance is measured when a site opts-out of an event or technical issue prevents the DR sequence from initiating. EcoMetric plans to work with EPE and Trane to memorialize how negative performance estimates will be handled going forward.

PY2023 EVALUATION OF EL PASO ELECTRIC ENERGY EFFICIENCY PROGRAMS

FINAL REPORT - APPENDICES

Date: May 24, 2024

Prepared for: El Paso Electric

Prepared by: EcoMetric Consulting LLC

TABLE OF CONTENTS

A. ENERGY STAR NEW HOMES SURVEY INSTRUMENT

A.1 INTRODUCTION

Talking Points for Recruitment

- Evergreen Economics is conducting an evaluation of EPE Energy Star New Homes Program for the New Mexico Public Regulation Commission and the state's utilities.
- We have identified selected builders that installed equipment that received rebates from the efficiency programs in 2023 for brief telephone interviews.
- We would need about 20 minutes for the interview.
- Your responses will be anonymous but will be very helpful in helping the state's utilities ensure their energy efficiency programs best serve their customers.
- When would be a good time to talk?

Talking Points for Starting the Interview

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

A.2 INTERVIEWEE BACKGROUND

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

1. To start, please tell me a bit about your company.
   Probe to understand:

- Services offered.
- Types of customers (esp. sector – residential, commercial, or both).
- Regions served.
- Interviewee role.

A.3 PROGRAM AWARENESS AND ENGAGEMENT

2. Do you recall how you first learned about and got involved with the EPE Energy Star New Homes rebate programs through EPE?
   Listen (and probe as needed) for:

- Any reservations about participating.
- Any barriers to participating.
- Whether or not they work with any other EPE rebate programs.

3. Could you describe what involvement is required from the builder to participate in the EPE rebate program?
   Probe as needed:

- In what ways do you interact with EPE or their implementers about this program?
- What information or services do you receive from EPE

4. In what ways is the EPE program helpful to you in your business?
   Probe, as needed:

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

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

- What could EPE do to involve you more in the program?

6. Does EPE make it clear which of your products or services are eligible for EPE rebates?
   Probe as needed:

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

7. Have the programs influenced what equipment install in your homes?

8. Do you have any suggestions for EPE contractor services and support – either overall or for the ESNH specifically?

A.4 PROGRAM PROCESS

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

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

10. When and how, and/or do you bring up either EPE rebates or the equipment they rebate when talking with customers?
    Listen for (and probe as needed):

- What share of customers are already aware of rebates before the contractor brings it up?
- What it is the most effective sales tool or message to get customers to upgrade to high efficiency?
- What role the EPE rebates play in motivating upgrades?
- What particular equipment is easier or harder to get customers to upgrade to high efficiency and why?

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

A.5 MARKET RESPONSE

12. Overall, to what degree do you see the program increasing the interest and demand for energy efficient equipment?
    Probe to understand:

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

13. Are there markets that you feel EPE [residential/commercial] energy efficiency programs are reaching well? Not well?
    Probe to understand:

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

14. Overall, what issue(s), if any, would effect future program participation by builders? [INTERVIEWER NOTE: Example issues are changes to building codes and standards being promoted and program incentive levels].

A.6 PROGRAM INFLUENCE

15. 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 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?]

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

17. The rebate available from El Paso Electric.

18. Any technical assistance, recommendations, or information from El Paso Electric or its program representatives, including CLEAResult.

19. You (or your colleagues') previous participation in a El Paso Electric program.

20. 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?

- Timing – before or during consideration of the project.

m Influence Component Questions

21. 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].

No Program Component

22. 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 installed the same equipment with the same efficiency level or reached the same building energy efficiency level (or higher)? Zero means not at all likely, and 10 means extremely likely.

23. 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.

24. [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.

A.7 PROGRAM SATISFACTION

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

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

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

Probe if needed:

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

26. Have you had any feedback from your homes' occupants/customers' about their experiences with the program that you think EPE should know?

27. Aside from anything we've already discussed, was there ever an occasion when the program didn't meet your expectations? Please explain.

A.8 CLOSING

28. Is there anything else we didn't cover that you'd like to mention or discuss about your experiences with the EPE program?

[THANK AND END]

B. ENERGY$MART (LI) SURVEY INSTRUMENT

B.1 SECTION A: INTRODUCTION

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

A. (Once correct respondent is reached) Hello, my name is (*YOUR NAME*) from Research & Polling, Inc. I am calling on behalf of EL PASO ELECTRIC.

I'm calling because our records show that you recently participated in the EL PASO ELECTRIC Energy Smart program at your home located at [SITE_ADDRESS] 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?

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

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

B.2 SECTION B: ROLE OF CONTRACTOR/RETAILER

1. (B 1) Did you purchase your [MEASURE_TYPE1] through a contractor or did you purchase it directly from a retailer (for example, The Home Depot or Lowe's)?

1. Through a contractor
2. Purchased at a retailer *(SKIP TO Q. 6)*
3. Prefer not to answer *(SKIP TO Q. 6) (DO NOT READ)*
4. Don't know *(SKIP TO Q. 6) (DO NOT READ)*

2. **(B 2) Had you already selected equipment before discussing options with the contractor?**

    1. Yes
    2. No
    3. Don't Know

3. **(B 3) Did the contractor present multiple equipment options?**

    1. Yes
    2. No
    3. Don't Know

4. **(B 4) Did the contractor discuss the energy efficiency of the equipment options with you?**

    1. Yes
    2. No
    3. Don't Know

5. **(B 5) Did you decide to change the energy efficiency of the equipment after speaking with the contractor?**

    1. Yes
    2. No
    3. Don't Know

6. **(B 6) Using a scale of 0 to 10, where 0 *means not at all influential* and 10 means *extremely influential*, how influential was the contractor/retailer on your decision to purchase an energy efficient model?**

Extremely *Not at all* *DK/*

Influential *Influential* *WS*

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

7. **(B 7) Did you use a contractor to install the equipment, or did you do it yourself?**

    1. Contractor installed
    2. Did it myself
    3. Prefer not to answer *(DO NOT READ)*
    4. Don't know *(DO NOT READ)*

B.3 SECTION C: AWARENESS AND MOTIVATIONS FOR PARTICIPATION

8. **(C 3) How did you <u>first</u> hear about EL PASO ELECTRIC's rebates for energy efficient equipment?** *(DO NOT READ CATEGORIES) (TAKE UP TO 3 RESPONSES)*

    01. TV / Radio
    02. Social Media / LinkedIn
    03. Newspaper / Magazine
    04. Bill Insert
    05. Friend / Referral
    06. Contractor
    07. Distributor / Supplier
    08. Retailer
    98. Prefer not to answer
    99. Don't know

    Other *(SPECIFY)* _____

9. **(C 4) After learning of the program did you choose to increase the energy efficiency of the equipment you installed?**

    1. Yes
    2. No
    3. Don't Know

(C 5) Next, I will read a list of reasons you may have considered when you chose to make the 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…on your decision to make the upgrade?

(RANDOMIZE)	*Extremely Important*	*Very Important*	*Somewhat Important*	*A little Important*	*Not imp At All*	*Don't Know*	*Prefer not to answer*	*N/A*

10. (C5a) Reducing the environmental impact of your home.....5 .....4 .....3 .....2 .....1 .....6 .....7 8

POLLER NOTE: Is program category Space Heating? (REFER TO LIST)

1. **Yes (CONTINUE TO Q.16)**
2. **No (SKIP TO Q.17)**

11. (C5d) Improving comfort of your home .....5 .....4 .....3 .....2 .....1 .....6 .....7 8

12. (C5e) Receiving a financial incentive.....5 .....4 .....3 .....2 .....1 .....6 .....7 8

13. (C5f) Reducing energy bill amounts.....5 .....4 .....3 .....2 .....1 .....6 .....7 8

14. (C5g) The contractor recommendation.....5 .....4 .....3 .....2 .....1 .....6 .....7 8

15. (C 6) Were there any other reasons that you installed the equipment that were more important than the ones we have mentioned?

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

_____

_____

_____

02. No, none in particular

03. Prefer not to answer

04. Don't know

B.4 SECTION D: CUSTOMER DECISION MAKING PROCESS, FREE-RIDERSHIP

(D 1) Next, I'm going to ask a few questions about your decision to participate in the EL PASO ELECTRIC rebate program, and to choose energy efficient equipment for your home.

16. (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?

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

(D 3) Next, I will read a list of program aspects that may have been influential in your decision to choose energy efficient equipment. Please focus on what made you decide to purchase a more energy efficient model.

For each one, please tell me how influential it was in determining how energy efficient your new equipment would be. Please use a scale of 0 to 10, where 0 means *not at all influential* and 10 means *extremely influential*. How influential was…on your decision to purchase the equipment?

(RANDOMIZE)	*Extremely Influential*										*Not at all Influential*	*Don't Know*	*Prefer not to answer*	*N/A*
17. (D3a) The dollar amount of the rebate	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	**97**	**98**	**99**
18. (D3b) The contractor recommendation	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	**97**	**98**	**99**
19. (D3c) Information from EL PASO ELECTRIC marketing or promotional materials	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	**97**	**98**	**99**

20. (D3d) Previous participation

in a EL PASO ELECTRIC program ..... 10...9...8...7...6...5...4...3...2...1...0 .. 97 ..... 98 99

21. (D 4) Did you first learn about the EL PASO ELECTRIC rebate program BEFORE or AFTER you decided how energy efficient your equipment would be?

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

22. (D 5) Now I would like you to think about the <u>energy efficiency level of the equipment</u>. 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 energy efficiency level of equipment without the EL PASO ELECTRIC rebate.

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

23. (D 6) 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 the same type of equipment of any efficiency level if the rebate had NOT been available.

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

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

24. (D 7) In your own words, how would you describe the influence the EL PASO ELECTRIC rebate program had on the energy efficiency level of the equipment you chose?

(RECORD VERBATIM)

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

NOTE TO INTERVIEWER, WAS RESPONDENT:

1. Male
2. Female

Unique ID #:____ ____ ____

Respondent's Phone Number:_____

Interviewer's Name:_____

Interviewer's Code:_____

C. SCORE PLUS PARTICIPANT SURVEY INSTRUMENT

C.1 TALKING POINTS FOR RECRUITMENT

Evergreen Economics is conducting an evaluation of utility energy efficiency programs for El Paso Electric.

We have identified selected efficiency projects that were supported by the efficiency programs in 2023 for brief telephone interviews; one of those was an upgrade in [insert general description of end-uses, not specific measures].

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?

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?

C.2 CONTEXT AND MEASURES

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

1. 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.

2. 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.

3. 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.

4. 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?

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

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

C.3 ROLE OF UTILITY PROGRAM

7. 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.

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

9. [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?

10. [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?

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

C.4 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].]

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?]

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

13. The rebate available from El Paso Electric.

14. Any technical assistance, recommendations, or information from El Paso Electric or its program representatives, including CLEAResult.

15. You (or your colleagues') previous participation in a El Paso Electric program.

16. [RETROFITS ONLY] The age or condition of the old equipment.

17. [RETROFITS ONLY] Routine maintenance practices.

18. Corporate policy, guidelines or pre-existing energy efficiency goals.

19. The financial benefits of the efficiency upgrade through reduced operating costs.

20. 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].

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.

21. How much of the efficiency upgrades was due to the program elements together?

22. How much was due to non-program factors together?

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

23. 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.

24. 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.

25. [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.

26. 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?

C.5 PROGRAM SATISFACTION

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

27. 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.]

28. El Paso Electric as an energy provider
29. Can you tell me why you gave that rating?
30. The rebate program overall
31. Can you tell me why you gave that rating?
32. The equipment installed through the program [INTERVIEWER NOTE: THIS MAY NOT APPLY TO SOME NEW CONSTRUCTION PARTICIPANTS. RECORD "NOT APPLICABLE" AS NEEDED.]
33. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?
34. [IF CONTRACTOR INVOLVED] The contractor who installed the equipment.
35. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?
36. [IF CONTRACTOR INVOLVED] The overall quality of the equipment installation.
37. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?
38. The amount of time it took to receive your rebate.
39. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?
40. The dollar amount of the rebate.
41. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?
42. Interactions with El Paso Electric.
43. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?
44. 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.]
45. [IF RATING = 1 OR 2] Can you tell me why you gave that rating?

46. The amount of time and effort required to participate in the program.

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

48. The project application process.

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

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

C.6 CLOSING

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

[Thank the interviewee.]

D. COMMERCIAL COMPREHENSIVE DESK REVIEW DETAILED RESULTS

Project ID	23LGT04	23CUST01	23LGT17
Utility	EPE	EPE	EPE
Program	Commercial Comprehensive	Commercial Comprehensive	Commercial Comprehensive
Subprogram	Agricultural Lighting	Other	Lighting
Project Description	New construction installation of agricultural grow lights for crops in the vegetative cycle.	Installation of ENERGY Star Windows	Interior and exterior lighting retrofit
Measure Type	Other:	Other:	Lighting
Measure Type (if Other)	Agricultural Lighting	Custom	
Building Type	Agriculture	Condominium	Retail - Small & Exterior
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	208,799	3,770	63,780
Gross Reported First Year Peak Demand Savings (kW)	28.83	6.92	9.30
Gross Verified First Year Energy Savings (kWh)	208,770	3,770	63,045
Gross Verified First Year Peak Demand Savings (kW)	28.83	6.92	9.30
kWh RR	1.00	1.00	0.99
kW RR	1.00	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	Other:	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source	IL TRM v.10 and 2023 NM TRM		
Ex Ante Calculation Description	The ex ante savings calculations utilized the IL TRM v.10 algorithms for Commercial LED Grow Lights. Inputs (i.e., LPD, HOU, WHFs, and CF) for these algorithms were from the 2023 NM TRM.	Cooling kWh and peak kW savings per sq. ft. of window area are taken from the TRM, and the total are (square feet) of window is calculated based on the invoice. Hours of use were determined based on the facility schedule.	The ex ante calculation utilized the NM TRM to calculate savings. Interior and exterior light fixtures were replaced in Retail - Small and Exterior building types, respectively.
Reasons for RR(s) <> 1	The minor discrepancy in RRs is due to the use of DLC wattages in the ex post savings calculations.		The minor discrepancy in savings is due to the use of the building weighted average operating hours for a Retail - Small building type. The NM TRM states that either the building weighted average or the area type method should be used for determining equipment operating hours. The latter is preferred if enough information exists. In this case, the TRM does not provide area type hours for some of the spaces, such as restrooms, for a small retail facility. Additionally, the use of DLC wattage for one fixture type had a minor impact on RRs.

Project ID	23LGT05	23LGT02	23LGT13
Utility	EPE	EPE	EPE
Program	Commercial Comprehensive	Commercial Comprehensive	Commercial Comprehensive
Subprogram	Lighting	Lighting	Lighting
Project Description	Interior lighting retrofit	Interior lighting retrofit	Interior lighting retrofit
Measure Type	Lighting	Lighting	Lighting
Measure Type (if Other)			
Building Type	Storage - Conditioned	Office - Small	Retail - Small
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	92,494	17,230	26,355
Gross Reported First Year Peak Demand Savings (kW)	19.66	5.14	2.49
Gross Verified First Year Energy Savings (kWh)	92,393	17,230	26,041
Gross Verified First Year Peak Demand Savings (kW)	19.63	5.14	2.47
kWh RR	1.00	1.00	0.99
kW RR	1.00	1.00	0.99
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized the NM TRM to calculate savings. Interior light fixtures were replaced in a Storage - Conditioned building type.	The ex ante calculation utilized the NM TRM to calculate savings. Interior light fixtures were replaced in an Office - Small building type.	The ex ante calculation utilized the NM TRM to calculate savings. Interior and exterior light fixtures were replaced in Retail - Small and Exterior building types, respectively.
Reasons for RR(s) <> 1	The minor discrepancy in RRs is due to the use of DLC wattages in the ex post savings calculations.		The minor discrepancy in savings is due to the use of the building weighted average operating hours for a Retail - Small building type. The NM TRM states that either the building weighted average or the area type method should be used for determining equipment operating hours. The latter is preferred if enough information exists. In this case, the TRM does not provide area type hours for some of the spaces, such as restrooms, for a small retail facility. Additionally, the use of DLC wattage for one fixture type had a minor impact on RRs.

Project ID	23EF04	23EC01	23LGT33
Utility	EPE	EPE	EPE
Program	Commercial Comprehensive	Commercial Comprehensive	Commercial Comprehensive
Subprogram	Other	Other	Agricultural Lighting
Project Description	Installation of Evaporator Fan Controller	Installation of Evaporative Cooling system	New construction installation of agricultural grow lights for crops in the flowering, vegetative, and propagation cycles.
Measure Type	Other:	Other:	Other:
Measure Type (if Other)	Evaporator Fan Control	HVAC	Agricultural Lighting
Building Type	Restaurants - Fast Food	Assembly	Agriculture
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	3,973	2,590	497,345
Gross Reported First Year Peak Demand Savings (kW)	0.45	2.09	76.45
Gross Verified First Year Energy Savings (kWh)	3,973	2,590	857,347
Gross Verified First Year Peak Demand Savings (kW)	0.45	2.09	134.45
kWh RR	1.00	1.00	1.72
kW RR	1.00	1.00	1.76
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	Other:	New Mexico TRM - 2023	Other:
Other Savings Source	Texas TRM v. 9		IL TRM v.10 and 2023 NM TRM
Ex Ante Calculation Description	The ex ante calculation used Texas TRM v9 because the Evaporator Fan Controls measure is not present in New Mexico TRM. All the factors used were consistent with the TX TRM.	Cooling EFLH is considered as per the Assembly building type. Default Cooling Capacity is considered based on the installation location of Las Cruces. Minimum SEER of the existing AC is considered as 14. EER is calculated using formula from the minimum SEER of the existing AC. Minimum SEER of the existing AC is based on the TRM default value of Single Package AC. Ex post considered the same type of AC, as no photos of the existing unit were provided.	The ex ante savings calculations utilized the IL TRM v.10 algorithms for Commercial LED Grow Lights. Inputs (i.e., LPD, HOU, WHFs, and CF) for these algorithms were from the 2023 NM TRM.
Reasons for RR(s) <> 1			The ex ante calculation used a lighting power density (LPD) value of 46.824 W/ft2 for the flowering crops. The evaluation team utilized an LPD of 68.75 W/ft2 for flowering crops, which is derived from baseline technology wattage of 1,100 W per 16 ft2 for medical cannabis and 1,100 W per 16 ft2 for recreational cannabis based on the 2023 NM TRM. Lastly, the evaluation team adjusted the installed fixture wattages to align with the applicable DLC certificates.

Project ID	23LGT32	23LGT31	23LGT26
Utility	EPE	EPE	EPE
Program	Commercial Comprehensive	Commercial Comprehensive	Commercial Comprehensive
Subprogram	Lighting	Lighting	Lighting
Project Description	Installation of LEDs	Installation of LEDs	Installation of LEDs
Measure Type	Lighting	Lighting	Lighting
Measure Type (if Other)			
Building Type	Retail - Small	Storage - Conditioned	Retail - Single Story Large
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	32,804	25,018	45,102
Gross Reported First Year Peak Demand Savings (kW)	6.85	5.34	7.19
Gross Verified First Year Energy Savings (kWh)	31,957	25,018	35,367
Gross Verified First Year Peak Demand Savings (kW)	6.86	5.32	7.29
kWh RR	0.97	1.00	0.78
kW RR	1.00	1.00	1.01
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized the Lighting - New Construction algorithm from the NM TRM. Square footage for each space type was calculated by multiplying the total area by the energy efficient kWh for each space divided by the total energy efficient kWh.	The ex ante calculation utilized a prescriptive lighting retrofit methodology from the 2023 NM TRM for a Storage - Conditioned building type.	The ex ante calculation utilized the Lighting - New Construction algorithm from the NM TRM. Square footage for each space type was calculated by multiplying the total area by the energy efficient kWh for each space divided by the total energy efficient kWh.
Reasons for RR(s) <> 1	The discrepancy in savings is due to the use of the building weighted average operating hours for a Retail - Small building type in the ex post interior lighting calculation. The NM TRM states "when sufficient information exists, using hours on an area-type basis is preferred to using building weighted average hours." If the Space Use is not present in the NM TRM, the evaluation team recommends to utilize the building weighted average hours across the entire project. In this case, the TRM does not provide a Space Use representative of restrooms, for a small retail facility. Additionally, the evaluation team adjusted the installed fixture wattages to align with the applicable DLC certificates.	kW savings are slightly affected due to rounding.	The discrepancy in savings is due to the use of the building weighted average operating hours for a Retail - Single-Story Large building type in the ex post interior lighting calculation. The NM TRM states "when sufficient information exists, using hours on an area-type basis is preferred to using building weighted average hours." If the Space Use is not present in the NM TRM, the evaluation team recommends to utilize the building weighted average hours across the entire project. In this case, the TRM does not provide a Space Use representative of restrooms, for a single-story large retail facility. Additionally, the evaluation team adjusted the installed fixture wattages to align with the applicable DLC certificates.

Project ID	23DH02	23ST01	23CLG3
Utility	EPE	EPE	EPE
Program	Commercial Comprehensive	Commercial Comprehensive	Commercial Comprehensive
Subprogram	Other	Other	Other
Project Description	Installation of dehumidifiers	Installation of smart thermostat	New construction HVAC installation
Measure Type	Other:	Other:	Other:
Measure Type (if Other)	Agricultural Dehumidifiers	Smart Thermostat	HVAC
Building Type	Agriculture	Office - Small	Retail - Small
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	229,864	593	5,659
Gross Reported First Year Peak Demand Savings (kW)	29.52	0.51	0.00
Gross Verified First Year Energy Savings (kWh)	229,864	593	5,659
Gross Verified First Year Peak Demand Savings (kW)	29.52	0.51	0.00
kWh RR	1.00	1.00	1.00
kW RR	1.00	1.01	N/A
Ex Ante Calculation Methodology	Other:	Prescriptive (TRM, Workpaper)	Utility Calculator
Other Ex Ante Calculation Methodology	Michigan C&I Measures TRM v. 1.2		
Ex Ante Savings Source		New Mexico TRM - 2023	New Mexico TRM - 2023, IECC 2018
Other Savings Source			
Ex Ante Calculation Description	kWh savings are calculated by multiplying the quantity of units by the sum of the dehumidifier kWh savings and the HVAC kWh savings. kW savings are calculated by multiplying the quantity of units by the difference between the baseline kW savings and the energy efficient kW savings.	The ex ante calculation utilized the Commercial Smart Thermostat algorithms in the TRM for a small office in the Las Cruces climate zone with no heating. Since the HVAC equipment was manufactured in 2023, ratings are in accordance with AHRI 210/240 - 2023, where the cooling capacity is 39,500 Btuh, SEER2 is 13.4 and EER2 is 10.6. The latter inputs were converted to SEER and EER, respectively, by utilizing the conversion equation in the NM TRM. Inputs include: Cooling capacity (AHRI 210/240 - 2023) = 39,500 Btuh SEER2 = 13.4 (13.85 SEER) EER2 = 10.6 (11.04 EER) EFLHc = 1,174 hours Reduction_cool = 17.7% BAF (Manual) = 1 CF = 0.81	kWh savings were calculated by multiplying the quantity of installed units x (Cooling Cap (Btuh)/1,000)*EFLHc*(1/Existing IEER) - (1/Installed IEER) Cooling capacity (Btuh) = 70,000 EFLHc (Retail - Small) = 1,361 Existing IEER (Heating Section Type "All Other") = 12.6 in IECC 2018 Installed IEER (AHRI Cert.) = 15.5 kW savings were calculated by multiplying the quantity of installed units x (Cooling Cap (Btuh)/1,000)*CF*(1/Existing EER) - (1/Installed EER). Since existing and installed EER values were the same, there were zero kW savings claimed. Cooling capacity (Btuh) = 70,000 CF (Retail - Small) = 0.83 Existing EER (Heating Section Type "All Other") = 11.0 in IECC 2018 Installed EER (AHRI Cert.) = 11.0
Reasons for RR(s) <> 1		kW savings are slightly affected due to rounding.	

Project ID	23LGT28
Utility	EPE
Program	Commercial Comprehensive
Subprogram	Agricultural Lighting
Project Description	New construction installation of agricultural grow lights for crops in the flowering and vegetative cycles.
Measure Type	Other:
Measure Type (if Other)	Agricultural Lighting
Building Type	Agriculture
Site Visit Being Conducted	Phone Verification
Documentation Review	Yes
Gross Reported First Year Energy Savings (kWh)	240,756
Gross Reported First Year Peak Demand Savings (kW)	43.21
Gross Verified First Year Energy Savings (kWh)	74,365
Gross Verified First Year Peak Demand Savings (kW)	11.79
kWh RR	0.31
kW RR	0.27
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology	
Ex Ante Savings Source	Other:
Other Savings Source	IL TRM v.10
Ex Ante Calculation Description	The ex ante calculation utilized the Commercial LED Grow Lights algorithm from IL TM v.10. The lighting power density (LPD) value is weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.
Reasons for RR(s) <> 1	RRs were affected by several factors: (1) The total lighted area was modified based on the M&V phone interview. The ex ante calculation utilized a total area of 1,920 square feet, which includes spaces outside of the growing racks, and assumed all crops to be in the flowering cycle. The ex post calculation utilized the verified total area of 709 square feet. The verified area was determined by taking the sum of the lighted area for the flowering crops (325 square feet) and the vegetative crops (384 square feet).(2) The ex ante calculation used one lighting power density (LPD) value for the total area of the project, 36.0 W/ft2. The evaluation team applied LPDs to areas based on the crop type as described in more detail in points (a) and (b).(a) The evaluation team utilized an LPD of 40.0 W/ft2 for areas with crops in the vegetative cycle. This LPD is derived from baseline technology wattage of 640 W per 16 ft2. (b) The evaluation team utilized an LPD of 46.824 W/ft2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft2 for medical cannabis and 576 W per 16 ft2 for recreational cannabis. The LPD was weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.(3) The evaluation team utilized HOUs and CFs based on crop type (i.e., flowering or vegetative) per the IL TRM v.10. (4) Waste heat factors were swapped in the ex ante calculation. The evaluation team utilized a WHFd of 1.22 and a WHFe of 1.21. (5) Lastly, the evaluation team adjusted the installed fixture wattages to align with the applicable DLC certificates.

E. SCORE PLUS DESK REVIEW DETAILED RESULTS

Project ID	RBT-2961200
Utility	EPE
Program	SCORE Plus
Subprogram	Agricultural Lighting
Project Description	New construction installation of agricultural grow lights for crops in the flowering and vegetative cycles.
Measure Type	Other:
Measure Type (if Other)	Agricultural Lighting
Building Type	Agriculture
Site Visit Being Conducted	Yes
Documentation Review	Yes
Gross Reported First Year Energy Savings (kWh)	11,575,612
Gross Reported First Year Peak Demand Savings (kW)	2,077.47
Gross Verified First Year Energy Savings (kWh)	11,240,876
Gross Verified First Year Peak Demand Savings (kW)	1,963.85
kWh RR	0.97
kW RR	0.95
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology	
Ex Ante Savings Source	Other:
Other Savings Source	IL TRM v.10
Ex Ante Calculation Description	The ex ante calculation utilized the Commercial LED Grow Lights algorithm from IL TM v.10. The lighting power density (LPD) value is weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.
Reasons for RR(s) <> 1	RRs were affected by several factors: (1) The total lighted area was modified based on the site visit. The ex ante calculation utilized a total area of 59,620 square feet for flowering crops only, whereas the ex post calculation utilized the verified total area of 56,250 square feet. The verified area was determined by taking the sum of the lighted area for the flowering crops (45,000 square feet) and the vegetative crops (11,250 square feet).(2) The ex ante calculation used one lighting power density (LPD) value for the total area of the project, 46.824 W/ft2. The evaluation team applied LPDs to areas based on the crop type as described in more detail in points (a) and (b).(a) The evaluation team utilized an LPD of 40.0 W/ft2 for areas with crops in the vegetative cycle. This LPD is derived from baseline technology wattage of 640 W per 16 ft2. (b) The evaluation team utilized an LPD of 46.824 W/ft2 for areas with crops in the flowering cycle. This is derived from baseline technology wattage of 1,100 W per 16 ft2 for medical cannabis and 576 W per 16 ft2 for recreational cannabis. The LPD was weighted based on the medical (33%) and recreational (67%) split from actual New Mexico Regulation and Licensing Department sales data.(3) The evaluation team utilized HOUs and CFs based on crop type (i.e., flowering or vegetative) per the IL TRM v.10. (4) Waste heat factors were swapped in the ex ante calculation. The evaluation team utilized a WHFd of 1.22 and a WHFe of 1.21. (5) Lastly, the evaluation team adjusted the installed fixture wattages to align with the applicable DLC certificates.

Project ID	RBT-3171367	RBT-3165814	RBT-2974012
Utility	EPE	EPE	EPE
Program	SCORE Plus	SCORE Plus	SCORE Plus
Subprogram	Other	Other	Other:
Project Description	Installation of dehumidifiers	Installation of VFDs	Packaged DX Air Conditioner Retrofit
Measure Type	Other:	Other:	Other:
Measure Type (if Other)	Agricultural Dehumidifiers	VFD	HVAC - High Efficiency Packaged/Split Air Conditioning/Heat Pump System
Building Type	Agriculture	Hospital	Education - Primary School
Site Visit Being Conducted	Yes	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	486,771	137,160	13,016
Gross Reported First Year Peak Demand Savings (kW)	62.51	15.54	19.69
Gross Verified First Year Energy Savings (kWh)	486,771	137,160	13,016
Gross Verified First Year Peak Demand Savings (kW)	62.51	11.10	19.69
kWh RR	1.00	1.00	1.00
kW RR	1.00	0.71	1.00
Ex Ante Calculation Methodology	Other:	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology	Michigan C&I Measures TRM v. 1.2		
Ex Ante Savings Source	Other:	Other:	New Mexico TRM - 2023
Other Savings Source	Michigan C&I Measures TRM v. 1.2	NM TRM 2019	
Ex Ante Calculation Description	kWh savings are calculated by multiplying the quantity of units by the sum of the dehumidifier kWh savings and the HVAC kWh savings. kW savings are calculated by multiplying the quantity of units by the difference between the baseline kW savings and the energy efficient kW savings.	The ex ante calculation utilized deemed kWh and kW per HP. The deemed values were derived from either the 2019 NM TRM or an older version.	
Reasons for RR(s) <> 1		The kW RR is affected by the deemed savings value. The ex ante calculation utilized 0.259 kW per HP, which is from an older version of the NM TRM. The ex post calculation utilized 0.185 kW per HP, which is in both the 2021 and 2023 NM TRMs. This modification decreased the kW RR.	

Project ID	RBT-3016208	RBT-3177104	EA-0002189234
Utility	EPE	EPE	EPE
Program	SCORE Plus	SCORE Plus	SCORE Plus
Subprogram	Lighting	Lighting	Lighting
Project Description	Exterior lighting retrofit	Lighting Retrofit	Lighting Retrofit
Measure Type	Lighting	Lighting	Lighting
Measure Type (if Other)			
Building Type	Exterior	Storage - Unconditioned	Retail - Single-Story Large
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	7,546	10,835	31,203
Gross Reported First Year Peak Demand Savings (kW)	0.00	2.22	4.91
Gross Verified First Year Energy Savings (kWh)	7,546	10,835	31,094
Gross Verified First Year Peak Demand Savings (kW)	0.00	2.22	4.94
kWh RR	1.00	1.00	1.00
kW RR	N/A	1.00	1.01
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized the NM TRM to calculate savings. Exterior light fixtures were replaced in an Exterior building type.	The ex ante calculation utilized a prescriptive lighting retrofit methodology from the 2023 NM TRM for a Storage - Unconditioned building type.	The ex ante calculation utilized the Commercial Lighting - Retrofit algorithm in the NM TRM to calculate savings. Hours of use were based on Area Type, with the Space Use being Retail Sales and Wholesale Showroom for the Retail - Single-Story Large building type.
Reasons for RR(s) <> 1			The minor discrepancy in RRs is due to the use of DLC wattages in the ex post savings calculations.

Project ID	EA-0002078345	EA-0001267477	EA-0001700024
Utility	EPE	EPE	EPE
Program	SCORE Plus	SCORE Plus	SCORE Plus
Subprogram	Lighting	Lighting	Other
Project Description	Installation of LEDs	LED installation	HVAC installation
Measure Type	Lighting	Lighting	Other:
Measure Type (if Other)			HVAC
Building Type	Assembly	Manufacturing - Light Industrial	Office - Small
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Invoices were not available and post inspection photos were utilized to verify the equipment installed quantity.
Gross Reported First Year Energy Savings (kWh)	23,243	144,301	4,941
Gross Reported First Year Peak Demand Savings (kW)	6.66	43.31	3.03
Gross Verified First Year Energy Savings (kWh)	23,243	144,302	4,941
Gross Verified First Year Peak Demand Savings (kW)	6.66	43.32	3.02
kWh RR	1.00	1.00	1.00
kW RR	1.00	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized the NM TRM to calculate savings. Interior light fixtures were replaced in an Assembly building type and Auditorium space type.	The ex ante calculation utilized the NM TRM to calculate savings. Interior light fixtures were replaced in a Manufacturing - Light Industrial building type and Comm/Ind Work (General, High-Bay) space type.	kWh savings were calculated by multiplying the quantity of installed units x (Cooling Cap (Btuh)/1,000)*EFLHc*(1/Existing IEER or SEER) - (1/Installed IEER or SEER). IEER values were used for units with over 5.4 tons of cooling capacity. SEER values were used for units with under 5.4 tons of cooling capacity. kW savings were calculated by multiplying the quantity of installed units x (Cooling Cap (Btuh)/1,000)*CF*(1/Existing EER) - (1/Installed EER).
Reasons for RR(s) <> 1		kWh and kW savings are slightly affected due to rounding.	

Project ID	EA-0001513387	EA-0001566251
Utility	EPE	EPE
Program	SCORE Plus	SCORE Plus
Subprogram	Lighting	Other
Project Description	HVAC Retrofit	Installation of dehumidifiers
Measure Type	Other:	Other:
Measure Type (if Other)	HVAC	Agricultural Dehumidifiers
Building Type	Office - Small	Agriculture
Site Visit Being Conducted	No	No
Documentation Review	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	4,210	388,975
Gross Reported First Year Peak Demand Savings (kW)	1.10	49.95
Gross Verified First Year Energy Savings (kWh)	4,210	388,975
Gross Verified First Year Peak Demand Savings (kW)	1.10	49.95
kWh RR	1.00	1.00
kW RR	1.00	1.00
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Other:
Other Ex Ante Calculation Methodology		Michigan C&I Measures TRM v. 1.2
Ex Ante Savings Source	New Mexico TRM - 2023	Other:
Other Savings Source		Michigan C&I Measures TRM v. 1.2
Ex Ante Calculation Description	kWh savings were calculated by multiplying the quantity of installed units x (Cooling Cap (Btuh)/1,000)*EFLHc*(1/Existing SEER) - (1/Installed SEER). kW savings were calculated by multiplying the quantity of installed units x (Cooling Cap (Btuh)/1,000)*CF*(1/Existing EER) - (1/Installed EER).	kWh savings are calculated by multiplying the quantity of units by the sum of the dehumidifier kWh savings and the HVAC kWh savings. kW savings are calculated by multiplying the quantity of units by the difference between the baseline kW savings and the energy efficient kW savings.
Reasons for RR(s) <> 1		

F. ENERGY STAR NEW HOMES DESK REVIEW DETAILED RESULTS

Project ID	HP1-1562	HP2-6121	HP3-4558
Utility	EPE	EPE	EPE
Program	Energy Star New Homes	Energy Star New Homes	Energy Star New Homes
Subprogram	Performance Path	Performance Path	Performance Path
Project Description	Assessment of home energy performance at least 10% above the IECC 2018 standard	Assessment of home energy performance at least 10% above the IECC 2018 standard	Assessment of home energy performance at least 10% above the IECC 2018 standard
Measure Type	Other:	Other:	Other:
Measure Type (if Other)	Energy performance at least 10% above the IECC 2018 standard	Energy performance at least 10% above the IECC 2018 standard	Energy performance at least 10% above the IECC 2018 standard
Building Type	Residential	Residential	Residential
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	Yes
Gross Reported First Year Energy Savings (kWh)	1,430	1,835	2,343
Gross Reported First Year Peak Demand Savings (kW)	0.20	0.90	1.10
Gross Verified First Year Energy Savings (kWh)	1,430	1,835	2,343
Gross Verified First Year Peak Demand Savings (kW)	0.20	0.90	1.10
kWh RR	1.00	1.00	1.00
kW RR	1.00	1.00	1.00
Ex Ante Calculation Methodology	Other:	Other:	Other:
Other Ex Ante Calculation Methodology	REM/Rate - Residential Energy Analysis and Rating Software v16.0.6	REM/Rate - Residential Energy Analysis and Rating Software v16.0.6	REM/Rate - Residential Energy Analysis and Rating Software v16.0.6
Ex Ante Savings Source	Other:	Other:	Other:
Other Savings Source	Fuel Summary	Fuel Summary	Fuel Summary
Ex Ante Calculation Description	The ex ante calculation utilized Residential Energy Analysis and Rating Software (REM/Rate) v.16.0.6 for calculating total energy savings (kWh), demand savings (kW) & therm savings. Reported savings matched with fuel summary report. Savings meet the overall thermal performance requirements and verifications of the International Energy Conservation Code 2018, based on a climate zone of 3B.	The ex ante calculation utilized Residential Energy Analysis and Rating Software (REM/Rate) v.16.0.6 for calculating total energy savings (kWh), demand savings (kW) & therm savings. Reported savings matched with fuel summary report. Savings meet the overall thermal performance requirements and verifications of the International Energy Conservation Code 2018, based on a climate zone of 3B.	The ex ante calculation utilized Residential Energy Analysis and Rating Software (REM/Rate) v.16.0.6 for calculating total energy savings (kWh), demand savings (kW) & therm savings. Reported savings matched with fuel summary report. Savings meet the overall thermal performance requirements and verifications of the International Energy Conservation Code 2018, based on a climate zone of 3B.
Reasons for RR(s) <> 1			

Project ID	HP4-6059	HP5-4562	P1-3758
Utility	EPE	EPE	EPE
Program	Energy Star New Homes	Energy Star New Homes	Energy Star New Homes
Subprogram	Performance Path	Performance Path	Prescriptive/Products Path
Project Description	Assessment of home energy performance at least 10% above the IECC 2018 standard	Assessment of home energy performance at least 10% above the IECC 2018 standard	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment
Measure Type	Other:	Other:	Other:
Measure Type (if Other)	Energy performance at least 10% above the IECC 2018 standard	Energy performance at least 10% above the IECC 2018 standard	HVAC & LED Lighting
Building Type	Residential	Residential	Residential
Site Visit Being Conducted	No	No	No
Documentation Review	Yes	Yes	No, LED model numbers are missing.
Gross Reported First Year Energy Savings (kWh)	2,227	2,403	1,196
Gross Reported First Year Peak Demand Savings (kW)	1.10	1.10	0.60
Gross Verified First Year Energy Savings (kWh)	2,226	2,403	1,140
Gross Verified First Year Peak Demand Savings (kW)	1.10	1.10	0.48
kWh RR	1.00	1.00	0.95
kW RR	1.00	1.00	0.80
Ex Ante Calculation Methodology	Other:	Other:	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology	REM/Rate - Residential Energy Analysis and Rating Software v16.0.6	REM/Rate - Residential Energy Analysis and Rating Software v16.0.6	
Ex Ante Savings Source	Other:	Other:	New Mexico TRM - 2023
Other Savings Source	Fuel Summary	Fuel Summary	
Ex Ante Calculation Description	The ex ante calculation utilized Residential Energy Analysis and Rating Software (REM/Rate) v.16.0.6 for calculating total energy savings (kWh), demand savings (kW) & therm savings. Reported savings matched with fuel summary report. Savings meet the overall thermal performance requirements and verifications of the International Energy Conservation Code 2018, based on a climate zone of 3B.	The ex ante calculation utilized Residential Energy Analysis and Rating Software (REM/Rate) v.16.0.6 for calculating total energy savings (kWh), demand savings (kW) & therm savings. Reported savings matched with fuel summary report. Savings meet the overall thermal performance requirements and verifications of the International Energy Conservation Code 2018, based on a climate zone of 3B.	The ex ante calculation utilized algorithms from the 2023 NM TRM.
Reasons for RR(s) <> 1			The ex ante HVAC calculation utilized a capacity of 5 tons. The ex post calculation utilized a capacity of 57,000 Btuh, or 4.75 tons, per the AHRI Certificate. The ex ante HVAC calculation converted SEEReff to EEReff for peak demand savings. The ex post calculation utilized the EEReff per the AHRI certificate as indicated by the NM TRM.

Project ID	P2-6225	P3-6206	P4-1429
Utility	EPE	EPE	EPE
Program	Energy Star New Homes	Energy Star New Homes	Energy Star New Homes
Subprogram	Prescriptive/Products Path	Prescriptive/Products Path	Prescriptive/Products Path
Project Description	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment
Measure Type	Other:	Other:	Other:
Measure Type (if Other)	HVAC & LED Lighting	HVAC & LED Lighting	HVAC & LED Lighting
Building Type	Residential	Residential	Residential
Site Visit Being Conducted	No	No	No
Documentation Review	No, LED model numbers are missing.	No, LED model numbers are missing.	No, LED model numbers are missing.
Gross Reported First Year Energy Savings (kWh)	542	888	723
Gross Reported First Year Peak Demand Savings (kW)	0.25	0.43	0.36
Gross Verified First Year Energy Savings (kWh)	1,085	878	723
Gross Verified First Year Peak Demand Savings (kW)	0.66	0.47	0.40
kWh RR	2.00	0.99	1.00
kW RR	2.70	1.09	1.11
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized algorithms from the 2023 NM TRM.	The ex ante calculation utilized algorithms from the 2023 NM TRM.	The ex ante calculation utilized algorithms from the 2023 NM TRM.
Reasons for RR(s) <> 1	The ex ante calculation utilized a baseline SEER value of 15, which assumes the HVAC equipment was manufactured after January 1, 2023. The ex post calculation determined the baseline SEER value to be 13, based on the 2022 invoice date and as indicated by the serial number.The ex ante HVAC calculation utilized a capacity of 3.5 tons. The ex post calculation utilized a capacity of 41,500 Btuh, or 3.46 tons, per the AHRI Certificate. The ex ante HVAC calculation converted SEEReff to EEReff for peak demand savings. The ex post calculation utilized the EEReff per the AHRI certificate as indicated by the NM TRM.	The ex ante HVAC calculation utilized a capacity of 3.5 tons. The ex post calculation utilized a capacity of 41,500 Btuh, or 3.46 tons, per the AHRI Certficate. The ex ante HVAC calculation converted SEEReff to EEReff for peak demand savings. The ex post calculation utilized the EEReff per the AHRI certificate as indicated by the NM TRM.	The ex ante HVAC calculation converted SEEReff to EEReff for peak demand savings. The ex post calculation utilized the EEReff per the AHRI certificate as indicated by the NM TRM.

Project ID	P5-3922	P6-6257	P7-3030
Utility	EPE	EPE	EPE
Program	Energy Star New Homes	Energy Star New Homes	Energy Star New Homes
Subprogram	Prescriptive/Products Path	Prescriptive/Products Path	Prescriptive/Products Path
Project Description	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment	Installation of LEDs and efficient HVAC (Heat Pump) equipment
Measure Type	Other:	Other	Other
Measure Type (if Other)	HVAC & LED Lighting	Lighting, HVAC	HVAC & LED Lighting
Building Type	Residential	Residential	Residential
Site Visit Being Conducted	No	No	No
Documentation Review	No, LED model numbers are missing.	No, LED model numbers are missing.	No, LED model numbers are missing.
Gross Reported First Year Energy Savings (kWh)	611	505	1,095
Gross Reported First Year Peak Demand Savings (kW)	0.30	0.20	0.38
Gross Verified First Year Energy Savings (kWh)	596	542	1,773
Gross Verified First Year Peak Demand Savings (kW)	0.33	0.99	-0.71
kWh RR	0.98	1.07	1.62
kW RR	1.09	4.93	-1.87
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized algorithms from the 2023 NM TRM.	The ex ante calculation utilized algorithms from the 2023 NM TRM.	The ex ante calculation utilized algorithms from the 2023 NM TRM.
Reasons for RR(s) <> 1	The ex ante HVAC calculation utilized a capacity of 2.5 tons. The ex post calculation utilized a capacity of 29,200 Btuh, or 2.43 tons, per the AHRI Certificate. The ex ante HVAC calculation converted SEEReff to EEReff for peak demand savings. The ex post calculation utilized the EEReff per the AHRI certificate as indicated by the NM TRM.	RR discrepancies are due to the utilization of SEER2 and EER2 baseline and efficient ratings in the HVAC (Central AC, Split Unit) savings calculations. The evaluation team recommends using AHRI 210/240 - 2023 ratings and corresponding baselines for For HVAC equipment manufactured after January 1, 2023.	The ex ante calculations for the HVAC equipment (split heat pump) utilized a SEEReff value of 16, an approximated capacity of 5 tons, and an HSPF baseline value of 8.8. The installed HVAC equipment was manufactured in 2022 as indicated by the serial number, thus AHRI 210/240 - 2017 ratings were utilized in the ex post calculations, including a SEEReff value of 15.5 and a cooling capacity of 56,000 Btuh, or 4.67 tons. The ex post calculation additionally utilized a baseline HSPF value of 8.2 for split heat pumps manufactured after January 2015 and before January 1, 2023 per the NM TRM. The kW savings were further affected by the EEReff value. The ex ante HVAC calculation converted SEEReff to EEReff and the ex post calculation utilized the EEReff per the AHRI certificate as indicated by the NM TRM.

Project ID	P8-6250	P9-4233	P10-4380
Utility	EPE	EPE	EPE
Program	Energy Star New Homes	Energy Star New Homes	Energy Star New Homes
Subprogram	Prescriptive/Products Path	Prescriptive/Products Path	Prescriptive/Products Path
Project Description	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment	Installation of LEDs and efficient HVAC (Central AC, Split Unit) equipment	Installation of LED lights, efficient AC, and smart thermostat
Measure Type	Other	Other	Other
Measure Type (if Other)	Lighting, HVAC	Lighting, HVAC	Lighting, HVAC, Smart Thermostat
Building Type	Residential	Residential	Residential
Site Visit Being Conducted	No	No	No
Documentation Review	No, LED model numbers are missing.	No, LED model numbers are missing.	No, LED model numbers are missing.
Gross Reported First Year Energy Savings (kWh)	505	672	1,265
Gross Reported First Year Peak Demand Savings (kW)	0.20	0.28	0.32
Gross Verified First Year Energy Savings (kWh)	542	777	1,018
Gross Verified First Year Peak Demand Savings (kW)	0.99	1.15	0.32
kWh RR	1.07	1.16	0.80
kW RR	4.93	4.10	0.99
Ex Ante Calculation Methodology	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)	Prescriptive (TRM, Workpaper)
Other Ex Ante Calculation Methodology			
Ex Ante Savings Source	New Mexico TRM - 2023	New Mexico TRM - 2023	New Mexico TRM - 2023
Other Savings Source			
Ex Ante Calculation Description	The ex ante calculation utilized algorithms from the 2023 NM TRM.	The ex ante calculation utilized algorithms from the 2023 NM TRM.	The ex ante calculation utilized algorithms from the 2023 NM TRM.
Reasons for RR(s) <> 1	RR discrepancies are due to the utilization of SEER2 and EER2 baseline and efficient ratings in the HVAC (Central AC, Split Unit) savings calculations. The evaluation team recommends using AHRI 210/240 - 2023 ratings and corresponding baselines for For HVAC equipment manufactured after January 1, 2023.	RR discrepancies are due to the utilization of SEER2 and EER2 baseline and efficient ratings in the HVAC (Central AC, Split Unit) savings calculations. The evaluation team recommends using AHRI 210/240 - 2023 ratings and corresponding baselines for For HVAC equipment manufactured after January 1, 2023.	The ex ante calculation for the HVAC equipment (Split AC) utilized a SEER2base value of 14.3, a SEEReff value of 16, and an approximated capacity of 5 Tons. The installed HVAC equipment was manufactured in 2023 as indicated by the serial number, thus AHRI 210/240- 2023 ratings were utilized in the ex post calculation. This included a SEER2base value of 13.8 (based on cooling capacity) , a SEER2eff value of 14.7, and a cooling capacity of 56,000 Btuh, or 4.67 tons. The kW savings were also affected further by the EER2base and EER2eff values used. The ex ante HVAC calculation converted SEER2eff to EER2eff and SEER2base to EER2base. The ex post calculation used EER2base value per the AHRI 210/240-2023 rating, and an EER2eff value per the AHRI certificate of the Split AC unit as indicated by the NM TRM.

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 on July 29, 2024 **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 2024 Annual Report for Energy Efficiency Programs, Program Year 2023** was emailed to each of the following:

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DATED this 29th day of July 2024.

/s/ Kari E. Olson
Kari E. Olson